



Framework 8.0

T-Server for Siemens HiPath 4000 CSTA III

Deployment Guide

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Preface

Welcome to the *Framework 8.0 T-Server Deployment Guide*. This document introduces you to the concepts, terminology, and procedures relevant to T-Servers® in general and provides detailed reference information about T-Server for Siemens HiPath 4000 CSTA III. The reference information includes, but is not limited to, configuration options, limitations, and switch-specific functionality. You must configure the configuration objects and options described in this document in the Framework Configuration Layer.

Use this document only after you have read through the *Framework 8 Deployment Guide*, and the Release Note for your T-Server.

This document is valid only for the 8.0 release of this product.

Note: For versions of this document created for other releases of this product, visit the Genesys Technical Support website, or request the Documentation Library DVD, which you can order by e-mail from Genesys Order Management at orderman@genesyslab.com.

This preface contains the following sections:

- [About T-Server for Siemens HiPath 4000 CSTA III, page 11](#)
- [Intended Audience, page 12](#)
- [Making Comments on This Document, page 12](#)
- [Contacting Genesys Technical Support, page 13](#)

For information about related resources and about the conventions that are used in this document, see the supplementary material starting on [page 291](#).

About T-Server for Siemens HiPath 4000 CSTA III

T-Server is the Genesys software component that provides an interface between your telephony hardware and the rest of the Genesys software components in your enterprise. It translates and keeps track of events and requests that come from, and are sent to, the CTI (computer-telephony integration) link in the telephony device. T-Server is a TCP/IP-based server

that can also act as a messaging interface between T-Server clients. It is the critical point in allowing your Genesys solution to facilitate and track the contacts that flow through your enterprise.

Intended Audience

This document is primarily intended for This guide is intended primarily for system administrators, both those who are new to T-Server and those who are familiar with it.

- If you are new to T-Server, read the *Framework 8 Deployment Guide* and the Release Note mentioned earlier, and then read all of the sections of this document that apply to your software and its accompanying components. Refer back to the *Framework 8 Deployment Guide* as needed.
- If you are an experienced T-Server user—someone with computer expertise, who is used to installing, configuring, testing, or maintaining Genesys software—you may find it more time efficient to go to the Index to see what is new or different in T-Server release 8.0. If you take that approach, please also read Release Notes and refer to other related resources, such as the *Genesys 7 Events and Models Reference Manual* and the *Voice Platform SDK 8 .NET (or Java) API Reference* for complete information on the T-Server events, call models, and requests.

In general, this document assumes that you have a basic understanding of, and familiarity with:

- Computer-telephony integration concepts, processes, terminology, and applications.
- Network design and operation.
- Your own network configurations.
- Your telephony hardware and software.
- Genesys Framework architecture and functions.
- Configuration Manager interface and object-managing operations.

Based on your specific contact center environment and your responsibilities in it, you may need to be familiar with a much wider range of issues as you deploy T-Server.

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Part

1

Common Functions and Procedures

Part One of this *T-Server Deployment Guide* familiarizes the reader with T-Server in general. It addresses architectural, functional, and procedural information common to all T-Servers.

The information in Part One is divided into the following chapters:

- Chapter 1, “T-Server Fundamentals,” on [page 17](#), describes T-Server, its place in the Framework 8 architecture, T-Server redundancy, and multi-site issues. It stops short of providing configuration and installation information.
- Chapter 2, “T-Server General Deployment,” on [page 31](#), presents configuration and installation procedures for all T-Servers.
- Chapter 3, “High-Availability Deployment,” on [page 49](#), addresses high availability (HA).
- Chapter 4, “Multi-Site Support,” on [page 61](#), details the variations available for T-Server implementations across geographical locations.
- Chapter 5, “Start and Stop T-Server Components,” on [page 119](#), describes how, and in what order, to start up T-Server among other Framework components. It also provides possible stopping commands.

New for All T-Servers in 8.0

Before looking at T-Server’s place in Genesys solutions and in the architecture of the Genesys Framework, note the following general changes that have been implemented in the 8.0 release of T-Server:

- **Enhanced Event Propagation support for switch partitioning.** T-Server now supports the Event Propagation feature in deployments that use switch partitioning or intelligent trunks. See “Switch Partitioning” on [page 100](#).

- **Enhanced ISCC Transaction Monitoring support.** T-Server now supports new key-value pairs in `AttributeExtensions` with ISCC transaction data requested using `TGetAccessNumber` in the following requests: `TMakeCall`, `TRouteCall`, `TSingleStepTransfer`, `TInitiateTransfer`, `TInitiateConference`, and `TMuteTransfer`. The ISCC Transaction Monitoring allows T-Server clients to monitor ISCC transactions of the call data transfer between T-Servers in a multi-site environment. See “ISCC Transaction Monitoring Feature” on [page 104](#) and the *Genesys 7 Events and Models Reference Manual* for details about key-value pairs in `AttributeExtensions`.
- **Enhanced Agent Reservation support.** T-Server now supports Agent Reservation failure optimization, to ensure that only agent reservation requests of the highest priority are collected. This functionality can now be controlled with the `collect-lower-priority-requests` configuration option. See “Agent Reservation” on [page 28](#) for details.
- **Notification of failed routing attempts support.** T-Server now supports new log events to notify about failed routing attempts and link bandwidth utilization:
 - 20009|STANDARD|MSG_TS_COMMON_LINK_ALARM_HIGH
 - 20010|STANDARD|MSG_TS_COMMON_LINK_ALARM_LOW
 - 20011|STANDARD|MSG_TS_COMMON_ALARM_ROUTE_FAILURE_HIGH_WATER_MARK
 - 20012|STANDARD|MSG_TS_COMMON_ALARM_ROUTE_FAILURE_LOW_WATER_MARK

Also, T-Server now supports a new log event to notify about failed ISCC transactions:

 - 21019|STANDARD|ISCC_LOGMSG_TRANSACTION_FAILED

Refer to *Framework 8.0 Combined Log Events Help* for information about the log events.
- **Real-time SDN licenses query support.** T-Server can now report how many SDN licenses are currently available and in use, using the following key-value pairs in `AttributeExtensions` in `EventServerInfo` messages: `sdn-licenses-in-use` and `sdn-licenses-available`. See Part Two of this document for details on the use of `AttributeExtensions` in a particular T-Server.

Notes: Configuration option changes common to all T-Servers are described in “Changes from Release 7.6 to 8.0” on [page 252](#).

For information about the new features that are available in your T-Server in the initial 8.0 release, see Part Two of this document.



Chapter

1

T-Server Fundamentals

This chapter provides general information about T-Server features and functionality and about its configuration and installation. For reference information about your specific T-Server and about options for all T-Servers, see “Part Two: Reference Information.”

This chapter has various levels of information, some of it intended for people who have configured, installed, and used previous releases of T-Server, and some of it aimed at those less familiar with such T-Server operations. That means some sections will not necessarily be relevant for you.

- If you are an experienced user of T-Server, start with “New for All T-Servers in 8.0” on [page 15](#), and then move to the chapters comprising Part Two of this document, where specific information about your T-Server is available.
- If you are new to T-Server, begin with “[Learning About T-Server.](#)” Once you have read through that and subsequent sections, you are ready for the other chapters in Part One that go into detail about T-Server configuration and installation.

Generally, this chapter presents overview information that applies to all T-Servers (and Network T-Servers) and their deployment. This chapter is divided into the following sections:

- [Learning About T-Server, page 18](#)
- [Advanced Disconnect Detection Protocol, page 23](#)
- [Redundant T-Servers, page 24](#)
- [Multi-Site Support, page 28](#)
- [Agent Reservation, page 28](#)
- [Client Connections, page 29](#)
- [Next Steps, page 29](#)

Learning About T-Server

The *Framework 8.0 Deployment Guide* provides you with a high-level introduction to the role that T-Server plays in the Genesys Framework. If you have already looked through that guide, you may recall that T-Server is the most important component of the Framework Media Layer (the other two components are Load Distribution Server (LDS) and HA Proxy). The Media Layer enables Genesys solutions to communicate with various media, including traditional telephony systems, voice over IP (VoIP), e-mail, and the Web. This layer also provides the mechanism for distributing interaction-related business data, also referred to as *attached data*, within and across solutions.

Framework and Media Layer Architecture

Figure 1 illustrates the position Framework holds in a Genesys solution.

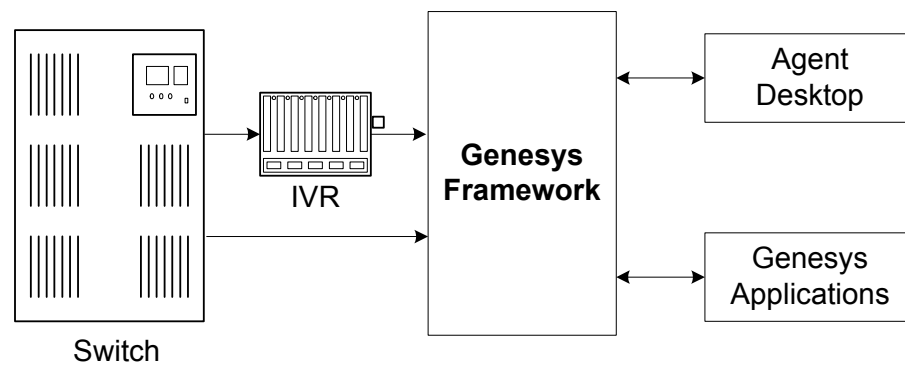


Figure 1: Framework in a Genesys Solution

Moving a bit deeper, Figure 2 presents the various layers of the Framework architecture.

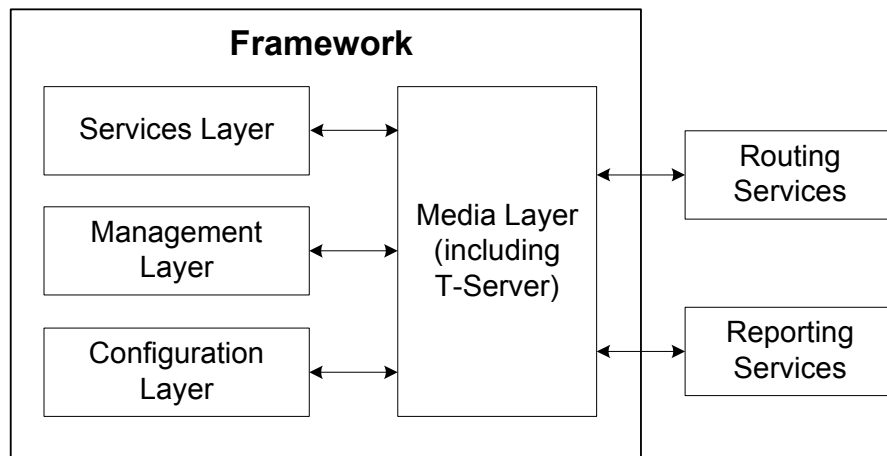


Figure 2: The Media Layer in the Framework Architecture

T-Server is the heart of the Media Layer—translating the information of the media-device realm into information that Genesys solutions can use. It enables your contact center to handle the computer-based form of the interactions that arrive and it translates the information surrounding a customer contact into reportable and actionable data.

[Figure 3](#) presents the generalized architecture of the Media Layer.

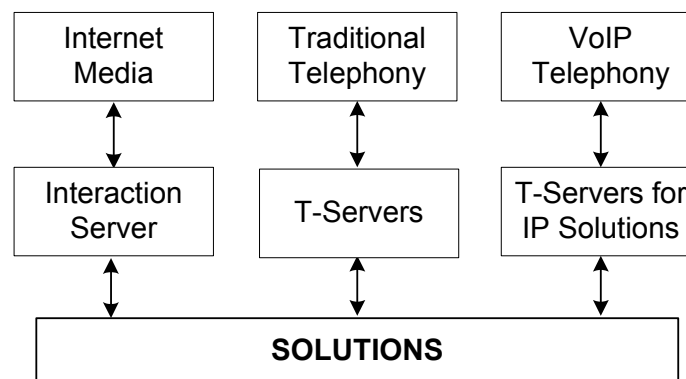


Figure 3: Media Layer Architecture

In addition to being the most important component of the Media Layer, T-Server plays the most significant role in making information about telephony traffic and its data available to Framework as a whole.

One or more components in practically every solution are T-Server clients. Solutions comprise a number of different Genesys software packages, from collections of components for various types of routing to those that allow for

outbound dialing to still others. Framework in general, and T-Server in particular, enable these solutions to function in your enterprise.

T-Server has several typical clients: Stat Server, Call Concentrator, Universal Routing Server, and agent desktop applications. T-Server gets the information it needs about the enterprise from Configuration Server. Additionally, if you use the Management Layer, T-Server provides its ongoing status and various other log messages to server components of the Management Layer (for instance, allowing you to set alarms).

T-Server Requests and Events

This section outlines the roles that T-Server plays in a contact center. While it is possible to describe roles for all T-Servers, at a detailed level, T-Server's functionality depends on the hardware to which it is connected. (For example, when connected to a traditional switch, it performs CTI functions, but when connected to a VOIP-based telephony device, it controls IP traffic.) The CTI connection is only for the switch.

Details of T-Server Functionality

T-Server is a TCP/IP server that enables intelligent communication between media-specific protocols (such as the various CTI protocols, including CSTA and ASAI) and TCP/IP-based clients of T-Server. Applications that are clients to T-Server use the T-Library format to transmit requests to T-Server through a TCP/IP socket. T-Server can then either translate those requests to CTI protocol for switch use or relay them directly to other TCP/IP clients.

T-Server performs three general functions in the contact center: Bridging, Messaging, and Interaction Tracking.

Bridging

T-Server acts as a platform-independent interface between media devices and business applications. In the case of a telephony device, for instance, it receives messages from and sends commands to the telephony equipment using either CTI links provided by the switch manufacturer or interface protocols provided by telephony network vendors.

On the client-application end, T-Server offers three models (call model, agent model, and device model) unified for all switches. The core functionality (such as processing an inbound call, an agent login, or a call-forwarding request) translates into a unified application programming interface (API) called T-Library, so that applications do not need to know what specific switch model they are dealing with. On the other hand, T-Library accommodates many functions that are unique to a specific switch, so that client applications are able to derive the maximum functionality offered by a particular switch.

Refer to the *Genesys 7 Events and Models Reference Manual* for complete information on all T-Server events and call models and to the

TServer.Requests portion of the *Voice Platform SDK 8.0 .NET (or Java) API Reference* for technical details of T-Library functions.

Messaging

In addition to translating requests and events for the client application involved in an interaction, T-Server:

- Provides a subscription mechanism that applications can use to receive notifications about interaction-related and non-interaction-related events within the contact center.
- Broadcasts messages of major importance (such as a notification that the link is down) to all clients.
- Broadcasts messages originated by a T-Server client to other T-Server clients.

The subscription mechanism consists of two parts, the DN subscription and event-type masking. Applications must register for a DN or a set of DNs to receive notifications about all events that occur in association with each registered DN. For example, when two softphone applications are registered for the same DN, and the first application initiates a call from the DN, T-Server notifies both applications that the call is initiated from the DN.

Client applications can also specify one or more types of events, and T-Server will filter out events of the non-specified types and only send events of the requested types. For example, if agent supervisors are interested in receiving agent-related events, such as AgentLogin and AgentLogout, they have to mask EventAgentLogin and EventAgentLogout, provided that a particular T-Server supports these events.

The combination of each client's subscription for DNs and masking of event types defines what messages T-Server distributes to what client.

Interaction Tracking

T-Server maintains call information for the life of the call (or other T-Server-supported media type) and enables client applications to attach user data to the call. Call information includes:

- A unique identifier, connection ID, that T-Server assigns when creating the call.
- Automatic Number Identification (ANI) and Dialed Number Identification Service (DNIS), if reported by the CTI link.
- User data that a client application (such as an Interactive Voice Response unit or Genesys Universal Routing Server) provides.

Difference and Likeness Across T-Servers

Although Figure 3 on [page 19](#) (and other figures) depicts T-Server that works with telephony systems as a single product, this is a simplification. Because

almost every traditional telephony device has its own characteristics and communication protocols, Genesys makes different T-Servers for different telephony systems. (That means your T-Server will not work with another switch.) Thus, all T-Servers play a common role in the architecture, but their specific features differ from implementation to implementation, based on the media device in use.

Despite their switch-based differences, T-Servers for telephony systems are similar to one another in at least one important respect: they are all built with a certain amount of shared software code. This shared code is rolled into a single unit and is called T-Server Common Part (TSCP). TSCP is the central, common component for all T-Servers and has its own Release Note, which is accessible via a hyperlink from your T-Server's Release Note.

Note: This document separates common-code features based on TSCP into separate sections and chapters, such as the “T-Server Common Configuration Options” chapter. These are the options for all T-Servers that TSCP makes available for configuration.

T-Server Functional Steps During a Sample Call

The following example, [Figure 4](#), outlines some basic steps that T-Server might take when a call arrives from outside the contact center. In this scenario, T-Server starts tracking the call even before it is delivered to the agent. T-Server then informs the selected agent that a call has arrived. When the switch delivers the call to the agent's extension, T-Server presents account information, collected at an Interactive Voice Response (IVR) unit, to the agent at the agent desktop application.

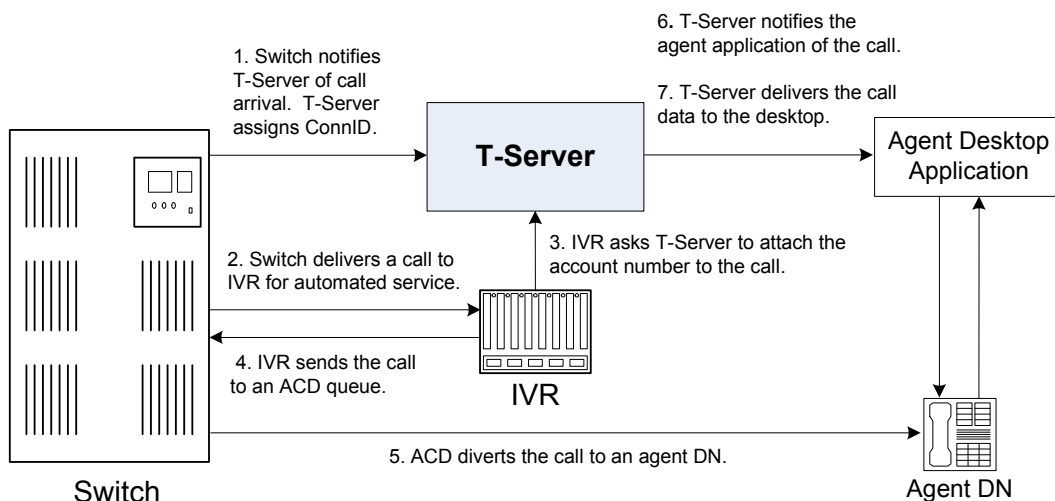


Figure 4: Functional T-Server Steps

Step 1

When the call arrives at the switch, T-Server creates a call in its internal structure. T-Server assigns the call a unique identifier, connection ID.

Step 2

The switch delivers the call to an Interactive Voice Response (IVR) unit, which begins automated interactions with the caller.

Step 3

IVR acquires user information from the caller through prompts and requests T-Server to attach that information to the call. T-Server updates the call with the user information.

Step 4

IVR sends the call to an ACD (Automated Call Distribution) queue.

Step 5

The ACD unit distributes the call to an available agent logged in to a particular DN (directory number).

Step 6

T-Server notifies the agent desktop application that the call is ringing on the agent DN. The notification event contains call data including ANI, DNIS, and account information that the IVR has collected.

Step 7

The agent desktop application presents the account information, including the name of the person whose account this is, on the agent's screen, so that the agent answering the call has all the relevant information.

These seven steps illustrate just a small part of T-Server's bridging, messaging, and interaction-processing capabilities.

Advanced Disconnect Detection Protocol

Since the 6.0 release of T-Server, the Advanced Disconnect Detection Protocol (ADDP) has replaced the Keep-Alive Protocol (KPL) as the method to detect

failures for certain T-Server connections, including connections between two T-Servers and between a T-Server and its clients.

Notes: Starting with release 7.5, the KPL backward-compatibility feature is no longer supported.

ADDP applies only to connections between Genesys software components.

With ADDP, protocol activation and initialization is made on the client's side and you can change these parameters. No additional messages are sent when there is existing activity over the connection. T-Server client applications and the remote T-Server (if any) must be listening to the socket and respond promptly to the polling signal for the connection to be preserved.

If you are going to enable ADDP, you must do it using the [protocol](#), [addp-timeout](#), [addp-remote-timeout](#), and [addp-trace](#) configuration options. When configuring a timeout, consider the following issues:

- The configured timeout must be at least twice as long as the maximum network latency.
- There may be an interval when T-Server does not check for network activity.
- If the link connection fails but the client is not notified (for example, because the host is turned off, or because a network cable is unplugged), the maximum reaction time to a link-connection failure is equal to double the configured timeout plus the established network latency.

Also keep in mind that the T-Server receiving the polling signal may not respond immediately, and that a delay occurs after the polling signal, while the response travels from one T-Server to another. If you do not account for these contingencies when configuring a timeout, the connection that ADDP is monitoring will be dropped periodically.

Redundant T-Servers

T-Servers can operate in a high-availability (HA) configuration, providing you with redundant systems. The basics of each T-Server's redundant capabilities differ from T-Server to T-Server. One basic principle of redundant T-Servers is the standby redundancy type, which dictates how quickly a backup T-Server steps in when the primary T-Server goes down.

The Framework Management Layer currently supports two types of redundant configurations: warm standby and hot standby. All T-Servers offer the warm standby redundancy type and, starting with release 7.1, the hot standby redundancy type is implemented in T-Servers for most types of switches. (See [Table 1](#).)

Instructions for configuring T-Server redundancy are available in Chapter 3, “High-Availability Configuration and Installation.” Specifics on your T-Server’s HA capabilities are outlined in Part Two of this document.

Notes: IVR Server and some Network T-Servers can be configured for load sharing or warm or hot standby; however, they do not support any combination of these redundancy types. Details of your component’s HA capabilities are discussed in Part Two of this document.

Support for Hot Standby Redundancy in Various T-Servers

Use [Table 1](#) to determine whether your T-Server supports the hot standby redundancy type. The table also indicates whether HA Proxy components are required for this support, and, if so, how many are required per pair of redundant T-Servers (or per link if so noted).

[Table 1](#) only summarizes hot standby redundancy support in various T-Servers. For detailed, up-to-date information on the subject, see the *Genesys Supported Media Interfaces* white paper located on the Technical Support website at

<http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309AF4DEB8127C5640A3C32445A7&view=item>.

Table 1: T-Server Support of the Hot Standby Redundancy Type

| T-Server Type | Hot Standby Supported | HA Proxy Required | Number of HA Proxy Components |
|--------------------------------------|-----------------------|-------------------|-------------------------------|
| Alcatel A4200/OXO | Yes | No | — |
| Alcatel A4400/OXE | Yes | No | — |
| Aspect ACD | Yes | No | — |
| Avaya Communication Manager | Yes | No ^a | — |
| Avaya INDeX | Yes | No | — |
| Avaya TSAPI | Yes | No | — |
| Cisco Unified Communications Manager | Yes | No | — |
| DataVoice Dharma | Yes | No | — |
| Digitro AXS/20 | Yes | No | — |
| EADS Intecom M6880 | Yes | No | — |
| EADS Telecom M6500 | Yes | No | — |

Table 1: T-Server Support of the Hot Standby Redundancy Type (Continued)

| T-Server Type | Hot Standby Supported | HA Proxy Required | Number of HA Proxy Components |
|--|------------------------------|------------------------------------|--------------------------------------|
| eOn eQueue | Yes | No | — |
| Ericsson MD110 | Yes | No | — |
| Fujitsu F9600 | Yes | No | — |
| Huawei C&C08 | Yes | No | — |
| Huawei NGN | Yes | No | — |
| Mitel SX-2000/MN-3300 | Yes | No | — |
| NEC NEAX/APEX | Yes | No | — |
| Nortel Communication Server 2000/2100 | Yes | Yes ^b , No ^c | 1 per link |
| Nortel Communication Server 1000 with SCCS/MLS | Yes | No | — |
| Philips Sopho iS3000 | Yes | No ^d | 1 |
| Radvision iContact | No | — | — |
| Rockwell Spectrum | Yes | No | — |
| Samsung IP-PCX IAP | Yes | No | — |
| Siemens Hicom 300/HiPath 4000 CSTA I | Yes | No | — |
| Siemens HiPath 3000 | Yes | No | — |
| Siemens HiPath 4000 CSTA III | Yes | No | — |
| Siemens HiPath DX | Yes | No | — |
| SIP Server | Yes | No | — |
| Tadiran Coral | Yes | No | — |
| Teltronics 20-20 | Yes | Yes | 1 |
| Tenovis Integral 33/55 | Yes | No | — |
| Network T-Servers^e | | | |
| AT&T | No | — | — |
| Concert | No | — | — |

Table 1: T-Server Support of the Hot Standby Redundancy Type (Continued)

| T-Server Type | Hot Standby Supported | HA Proxy Required | Number of HA Proxy Components |
|---|------------------------------|--------------------------|--------------------------------------|
| CRSP | No | — | — |
| DTAG | No | — | — |
| GenSpec | No | — | — |
| ISCP | No | — | — |
| IVR Server, using network configuration | Yes | — | — |
| KPN | No | — | — |
| MCI | No | — | — |
| NGSN | No | — | — |
| Network SIP Server | No | — | — |
| Sprint | No | — | — |
| SR3511 | No | — | — |
| Stentor | No | — | — |

- a. With release 7.1, T-Server for Avaya Communication Manager no longer uses HA Proxy for its support of hot standby. Earlier releases of this T-Server require two HA Proxies (for which there is a Configuration Wizard) to support hot standby.
- b. For T-Server for Nortel Communication Server 2000/2100 in high-availability (hot standby) configuration, Genesys recommends that you use link version SCAI14 or above with call-progress and noncontroller-released messages enabled. See the switch-specific information in Part 2 of this *Deployment Guide* for additional information on HA configurations.
- c. Starting with release 7.5, T-Server for Nortel Communication Server 2000/2100 supports HA without HA Proxy when operating in Dual CTI Links mode. See the switch-specific information in Part 2 of this *Deployment Guide* for additional information on HA configurations.
- d. Starting with release 6.5.3, T-Server for Philips Sopho iS3000 supports HA both with and without HA Proxy.
- e. Although they do not support high availability per se, Network T-Servers do support a load-sharing schema.

Multi-Site Support

Multi-site configuration implies the existence of two or more switches that belong to the same enterprise or service provider, and that share the Genesys Configuration Database. (In some cases this may include isolated partitions on a given switch served by different T-Servers.) The main goal of T-Server support for multi-site operations is to maintain critical information about a call as it travels from one switch to another.

For instructions on installing and configuring a multi-site environment, including information on the Inter Server Call Control (ISCC) features, please see Chapter 4, “Multi-Site Support,” on [page 61](#).

Agent Reservation

T-Server provides support for clients to invoke the agent reservation function, `TReserveAgent()`. This function allows a server application that is a client of T-Server to reserve a DN along with an agent, a `Place`, or both, so that no other T-Server client can route calls to it during a specified reservation interval. Alternatively, when clients use the ISCC feature (see “ISCC Call Data Transfer Service” on [page 63](#)), they can use an agent reservation embedded in an ISCC request. (To do so, clients have to specify a certain `Extensions` attribute in an ISCC request when initiating an ISCC transaction. See [page 70](#) for the list of ISCC requests.)

The reservation does not currently prevent the reserved objects from receiving direct calls or calls distributed from ACD Queues; agent reservation is intended as a way of synchronizing the operation of several clients. See `RequestReserveAgent` in the *Voice Platform SDK 8.0 .NET (or Java) API Reference* for more details on this function from the client’s point of view.

In addition to invoking the `TReserveAgent` function, you can customize the Agent Reservation feature by configuring options in the `T-Server Application` object. See “Agent-Reservation Section” on [page 236](#) in the “T-Server Common Configuration Options” chapter in Part Two for more details.

Starting with version 8.0, T-Server supports Agent Reservation failure optimization, to ensure that only agent reservation requests of the highest priority are collected. T-Server responds immediately with the `EventError` message to existing or new reservation requests of a lower priority while collecting the agent reservation requests of the highest priority only. This functionality is controlled with the `collect-lower-priority-requests` configuration option (see [page 236](#)).

Client Connections

The number of connections T-Server can accept from its clients depend on the operating system that T-Server runs. [Table 2](#) illustrates the number of client connections that T-Server support.

Table 2: Number of T-Server's Client Connections

| Operating System | Number of Connections |
|--|-----------------------|
| AIX 32-bit mode (versions 5.1, 5.2, 5.3) | 32767 |
| AIX 64-bit mode (versions 5.1, 5.2, 5.3, 6.1) | 32767 |
| HP-UX 32-bit mode (versions 11.11, 11i v2) | 2048 |
| HP-UX 64-bit mode (versions 11.11, 11i v2, 11i v3) | 2048 |
| Linux 32-bit mode (versions RHEL 3.0, RHEL 4.0, RHEL 5.0) | 32768 |
| Solaris 32-bit mode (versions 8, 9) | 4096 |
| Solaris 64-bit mode (versions 8, 9, 10) | 65536 |
| Tru64 UNIX (versions 4.0F, 5.1, 5.1B) | 4096 |
| Windows Server 2003, 2008 | 4096 |

Next Steps

Now that you have gained a general understanding of the roles and features available with T-Servers, you are ready to learn how T-Servers are installed and configured. That information is presented in the next few chapters of this *Deployment Guide*. So unless you are already familiar with T-Server deployment and operation procedures, continue with Chapter 2, “T-Server General Deployment,” on [page 31](#). Otherwise, you may want to jump to Part Two of this *Deployment Guide*, where you will find information about your specific T-Server.



Chapter

2

T-Server General Deployment

This chapter contains general information for the deployment, configuration, and installation of your T-Server. You may have to complete additional configuration and installation steps specific to your T-Server and switch. You will find these steps in Part Two of this document.

This chapter contains these sections:

- [Prerequisites, page 31](#)
- [Deployment Sequence, page 36](#)
- [Wizard Deployment of T-Server, page 36](#)
- [Manual Deployment of T-Server, page 39](#)
- [Next Steps, page 46](#)

Note: You *must* read the *Framework 8.0 Deployment Guide* before proceeding with this T-Server guide. That book contains information about the Genesys software you must deploy before deploying T-Server.

Prerequisites

T-Server has a number of prerequisites for deployment. Read through this section before deploying your T-Server.

Software Requirements

Framework Components

You can only configure T-Server after you have deployed the Configuration Layer of Genesys Framework. This layer contains DB Server, Configuration Server, Configuration Manager, and, at your option, Deployment Wizards. If you intend to monitor or control T-Server through the Management Layer, you must also install and configure components of this Framework layer, such as Local Control Agent (LCA), Message Server, Solution Control Server (SCS), and Solution Control Interface (SCI), before deploying T-Server.

Refer to the *Framework 8.0 Deployment Guide* for information about, and deployment instructions for, these Framework components.

Media Layer and LCA

To monitor the status of components in the Media Layer through the Management Layer, you must load an instance of LCA on every host running Media Layer components. Without LCA, Management Layer cannot monitor the status of any of these components. If you do not use the Management Layer, LCA is not required.

Supported Platforms

Refer to the *Genesys Supported Operating Environment Reference Manual* for the list of operating systems and database systems supported in Genesys releases 6.x, 7.x, and 8.x. You can find this document on the Genesys Technical Support website at

<http://genesyslab.com/support/dl/retrieve/default.asp?item=B6C52FB62DB42BB229B02755A3D92054&view=item>.

For UNIX-based (UNIX) operating systems, also review the list of patches Genesys uses for software product builds, and upgrade your patch configuration if necessary. A description of patch configuration is linked to installation `read_me.html` files for the Genesys applications that operate on UNIX, and is available within the installation packages.

Security

Starting with release 7.5, T-Server supports the Genesys Transport Layer Security (TLS) and can be configured for secure data exchange with the other Genesys components that support this functionality.

The Genesys TLS is not supported on all operating systems that T-Server itself supports. For information about the supported operating systems, see the *Genesys 8.0 Security Deployment Guide*.

Hardware and Network Environment Requirements

Hosting

Genesys recommends that you or your IT specialist assign host computers to Genesys software before you start Genesys installation. Remember the following restrictions:

- Do not install all the Genesys server applications on the same host computer.
- When installing a few server applications on the same host computer, prevent them (except for Configuration Server) from using the swap area.

Installation Privileges

During deployment, be sure to log in with an account that will permit you to perform administrative functions—that is, one that has root privileges.

Server Locations

Refer to the “Network Locations for Framework Components” chapter of the *Framework 8.0 Deployment Guide* for recommendations on server locations.

Supported Platforms

Refer to the *Genesys Supported Media Interfaces* white paper for the list of supported switch and PABX versions. You can find this document on the Genesys Technical Support website at <http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309AF4DEB8127C5640A3C32445A7&view=item>.

Licensing Requirements

All Genesys software is licensed—that is, it is not shareware. Genesys products are protected through legal license conditions as part of your purchase contract. However, the level of technical license-control enforcement varies across different solutions and components.

Before you begin to install T-Server, remember that, although you may not have had to use technical licenses for your software when you deployed the Configuration and Management Layers in their basic configurations, this is not the case with the Media Layer.

T-Server requires seat-related DN technical licenses to operate even in its most basic configuration. Without appropriate licenses, you cannot install and start T-Server. If you have not already done so, Genesys recommends that you install License Manager and configure a license file at this point. For complete

information on which products require what types of licenses, and on the installation procedure for License Manager, refer to the *Genesys Licensing Guide* available on the Genesys Documentation Library DVD.

The sections that follow briefly describe the T-Server license types.

Note: Starting with release 7.2, the licensing requirements for T-Server have changed from previous releases. Please read this section carefully and refer to the *Genesys Licensing Guide* for complete licensing information.

Licensing Basic Implementations

A stand-alone T-Server serving a single site requires licenses to register all DNs it monitors. DNs that agents use in day-to-day contact center operations, such as Extensions and ACD Positions, have to be registered using licenses that control agent seats.

Note: Configure all seat DNs that agents use (Extensions and ACD Positions) in the Configuration Layer. This enables detailed call monitoring through Genesys reporting, and generally allows you to control access to individual DNs.

Licensing HA Implementations

T-Servers operating with the hot standby redundancy type require a special CTI HA technical license, which allows for high-availability implementations, in addition to regular T-Server licenses. Neither T-Server in a redundant pair configured for hot standby starts if this license is unavailable. Moreover, the primary and backup T-Servers must use the same licenses to control the same pool of DNs. If your T-Servers are configured with the hot standby redundancy type, order licenses for CTI HA support.

Licensing Multi-Site Implementations

T-Servers performing multi-site operations require licenses that allow for such operations, in addition to regular T-Server licenses. If some of your T-Servers are configured for multi-site routing while others are not, either order licenses for multi-site support for all T-Servers or install an additional License Manager to handle the T-Servers involved in multi-site routing.

Note: You do not need licenses for multi-site support if some T-Server clients include the local location as the `location` attribute value in their requests for routing within the same site.

Configuring License Files

You need a license to configure and install Media Layer components. Genesys recommends that, if you have not already done so, at this point you:

1. Install License Manager.
2. Configure license files.

Note: If you use the `<port>@<server>` format when entering the name of the license server during installation, remember that some operating systems use `@` as a special character. In this case, the installation routine is unable to write license information for T-Server to the Configuration Layer or the `run.sh` file. Therefore, when you use the `<port>@<server>` format, you must manually modify the command-line license parameter after installing T-Server.

For information about which products require what types of licenses and for the installation procedure for License Manager, refer to the *Genesys Licensing Guide* available on the Genesys Documentation Library DVD.

About Configuration Options

Configuring T-Server is not a onetime operation. It is something you do at the time of installation and then in an ongoing way to ensure the continued optimal performance of your software. You must enter values for T-Server configuration options in the relevant Wizard screens or on the `Options` tab of your T-Server `Application` object in Configuration Manager. The instructions for configuring and installing T-Server that you see here are only the most rudimentary parts of the process. You must refer extensively to the configuration options chapters located in Part Two of this book. Pay particular attention to the configuration options specific to your own T-Server.

Configuration options common to all T-Servers, independent of switch type, are described in Chapter 9, “T-Server Common Configuration Options,” on [page 227](#). *Switch-specific* configuration options are described in a separate chapter. T-Server also supports unified Genesys log options, as described in the “Common Configuration Options” chapter.

Options that configure values for the TSCP software in your T-Server are common to all T-Servers. Options based on the custom features of your switch apply to your T-Server only. Familiarize yourself with both types of options. You will want to adjust them to accommodate your production environment and the business rules that you want implemented there.

Deployment Sequence

Genesys recommends deploying T-Server by using the Media Configuration Wizard. However, if for some reason you must manually deploy T-Server, you will also find instructions for doing that in this chapter.

This is the recommended sequence to follow when deploying T-Server.

Task Summary: T-Server Deployment Sequence

| Objective | Related Procedures and Actions |
|--|--|
| 1. Deploy Configuration Layer objects and ensure Configuration Manager is running. | See the <i>Framework 8.0 Deployment Guide</i> for details. |
| 2. Deploy Network objects (such as Host objects). | See the <i>Framework 8.0 Deployment Guide</i> for details. |
| 3. Deploy the Management Layer. | See the <i>Framework 8.0 Deployment Guide</i> for details. |
| 4. Deploy T-Server using the Wizard (recommended), or manually. | See “Wizard Deployment of T-Server” on page 36 . If you are deploying T-Server manually, see “Manual Deployment of T-Server” on page 39 . |
| 5. Test your configuration and installation. | See Chapter 5, “Start and Stop T-Server Components,” on page 119 . |

Note: If, during the installation procedure for any of the Genesys applications, the script warns you that Configuration Server is unavailable and that the configuration cannot be updated, continue with the installation. Following the installation, you must complete the information on the Start Info tab to ensure that T-Server will run.

Wizard Deployment of T-Server

Configuration Wizards facilitate component deployment. T-Server configuration and installation involves many steps, and Genesys strongly recommends that you set up T-Server using the Wizard rather than manually. T-Server Wizard guides you through a series of steps and options to customize your deployment of T-Server.

Wizard Configuration of T-Server

The first step to take for a Wizard-based configuration is to install and launch Genesys Wizard Manager. (Refer to the *Framework 8.0 Deployment Guide* for instructions.) When you first launch Genesys Wizard Manager, it suggests that you set up the Management Layer and then the Framework. The Framework setup begins with configuring and creating the objects related to T-Server, starting with the Switch and Switching Office objects, and the T-Server's Application object itself.

Note: With the Wizard, you create your T-Server Application object in the course of creating your Switch object.

During creation of the Switch object, you also have an opportunity to run the Log Wizard to set up T-Server logging. Then, you can specify values for the most important T-Server options. Finally, you can create contact center objects related to T-Server, such as DNS, Agent Logins, and some others.

Note: During configuration of a Switch object, the Wizard prompts you to copy a T-Server installation package to an assigned computer. After that package is copied to the destination directory on the T-Server host, complete the last steps of the T-Server configuration. Then, install T-Server on its host.

After you complete the Framework configuration, the Genesys Wizard Manager screen no longer prompts you to set up the Framework. Instead, it suggests that you set up your solutions or add various contact center objects to the Framework configuration, including the Switch, DNS and Places, Agent Logins, Agent Groups, Place Groups, and, in a multi-tenant environment, a Tenant. In each case, click the link for the object you wish to create. Again, you create a new T-Server Application object in the course of creating a new Switch object.

Wizard Installation of T-Server

After creating and configuring your T-Server and its related components with the Wizard, proceed to T-Server installation. That installation process is similar to that of previously installed components.

Note: Certain Wizard-related procedures are not described in this document. Refer to the *Framework 8.0 Deployment Guide* for general instructions.

Warning! Genesys does not recommend installation of its components using a Microsoft Remote Desktop connection. The installation should be performed locally

Procedure: Installing T-Server on UNIX using Wizard

Start of procedure

1. In the directory to which the T-Server installation package was copied during Wizard configuration, locate a shell script called `install.sh`.
2. Run this script from the command prompt by typing `sh` and the file name. For example: `sh install.sh`.
3. When prompted, confirm the host name of the computer on which you are installing T-Server.
4. When prompted, confirm the application name of the T-Server that you are installing.
5. Specify the destination directory into which you are installing T-Server, with the full path to it.
6. If the target installation directory has files in it, do one of the following:
 - Type 1 to back up all the files in the directory (recommended).
 - Type 2 to overwrite only the files in this installation package. Use this option only if the installation being upgraded operates properly.
 - Type 3 to erase all files in this directory before continuing with the installation.

The list of file names will appear on the screen as the files are copied to the destination directory.

7. If asked which version of the product to install, the 32-bit or the 64-bit, choose the one appropriate to your environment.
8. If asked, specify the license information that T-Server is to use.
9. As soon as the installation process is finished, a message appears announcing that installation was successful. The process places T-Server in the directory with the name specified during the installation.

End of procedure

Next Steps

- To test your configuration and installation, go to Chapter 5, “Start and Stop T-Server Components,” on [page 119](#), and try it out.
- To configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on [page 49](#).

- To install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on [page 61](#).

Procedure: Installing T-Server on Windows using Wizard

Start of procedure

1. Open the directory to which the T-Server installation package was copied during Wizard configuration.
2. Locate and double-click `Setup.exe` to start the installation. The `Welcome` screen launches.
3. When prompted, specify the connection parameters to the Configuration Server associated with this T-Server.
4. Identify the T-Server Application object in the Configuration Layer to be used by this T-Server.
5. Specify the license information that T-Server is to use.
6. Specify the destination directory into which you are installing T-Server.
7. Click `Install` to begin the installation.
8. Click `Finish` to complete the installation.

By default, T-Server is installed as a Genesys service (Windows Services) with `Automatic` startup type.

End of procedure

Next Steps

- To test your configuration and installation, go to Chapter 5, “Start and Stop T-Server Components,” on [page 119](#), and try it out.
- To configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on [page 49](#).
- To install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on [page 61](#).

Manual Deployment of T-Server

Deploying T-Server manually requires that you configure a number of different objects in the Configuration Layer prior to setting up your T-Server

objects and then install T-Server. This section describes the manual deployment process.

Manual Configuration of Telephony Objects

This section describes how to manually configure T-Server Telephony objects if you are using Configuration Manager.

Recommendations

Genesys recommends registering (configuring) only those entities you plan to use in the current configuration. The more data there is in the Configuration Database, the longer it takes for the CTI setup to start, and the longer it will take to process configuration data. Remember that adding configuration objects to the Genesys Configuration Database does not cause any interruption in contact center operation.

Depending on how much work is required to manually configure all applications and objects, consider registering more `Person` objects first, with a set of privileges that lets them perform configuration tasks.

Switching Offices

Your telephony network may contain many switching offices, but you should only configure those that are involved with customer interactions.

Using Configuration Manager, be sure to register a `Switching Office` object that accommodates your `Switch` object under `Environment`. Until you have done this, you cannot register a `Switch` object under `Resources` (single-tenant environment) or a `Tenant` (multi-tenant environment).

Note: The value for the switching office name must not have spaces in it.

Switches

1. Configure a `Switch` object for each switch on your telephony network. Assign each `Switch` object to the appropriate `T-Server` object.
2. If implementing the multi-site configuration, specify access codes for all switches on the network so that the call-processing applications can route and transfer calls between switches.

Two types of access codes exist in a Genesys configuration:

- Default access codes that specify how to reach this switch from any other switch in the Genesys environment.

- Switch-to-switch access codes that specify how to reach a particular switch from any other switch. Use this type when either a nondefault dial number or routing type is required between any two locations. When a switch-to-switch access code is configured, its value has a higher priority than that of a default access code.

See Chapter 4, “Multi-Site Support,” on [page 61](#), for step-by-step instructions.

Note: When the numbering plan uses unique directory number (DN) assignment across sites and multi-site routing is not used, you do not have to configure access codes.

DNs and Agent Logins

Note: Starting with release 7.2, the requirements for configuring DNs in the Configuration Layer have changed. Refer to Part Two of this guide for information about the requirements on configuring specific DN types for your T-Server.

For each T-Server for which you are configuring DNs, you must configure all DNs that agents and their supervisors use in day-to-day contact center operation—so-called *seat-related DNs*—such as Extensions and ACD Positions. Otherwise, T-Server does not register such DNs.

1. To configure Telephony objects within each switch, consult the switch documentation. Information specific to your T-Server in Part Two of this document contains tables that indicate how to set DN types in the Genesys Configuration Database depending on the switch DN types and configuration.
2. Check the numbering plan for different types of DNs, to see if you can save time by registering Ranges of DNs. Usually, DNs of the same type have consecutive numbers, which will make an otherwise tedious configuration task easy. Agent Login objects almost always have consecutive numbers, which means you can register them through the Range of Agent Logins feature as well.
3. If you plan to use Virtual Queues and Virtual Routing Points in the contact center operation, Genesys recommends registering them after you have outlined the call-processing algorithms and identified your reporting needs.

Note: Remember that CTI applications, not the switch, generate telephony events for DNs of these types.

Warning! When setting the `Register` flag for a DN, make sure you select the value according to your needs. The `Register` flag values are as follows:

- `False`—T-Server processes this DN locally, and never registers it on the switch.
 - `True`—T-Server always registers this DN on the switch during T-Server startup or CTI link reconnect.
 - `On Demand`—T-Server registers this DN on the switch only if a T-Server client requests that it be registered.
-

Multi-Site Operations

See the section, “Configuring Multi-Site Support” on [page 104](#), for information on setting up DNs for multi-site operations.

Manual Configuration of T-Server

Use the *Framework 8.0 Deployment Guide* to prepare accurate configuration information. You may also want to consult *Configuration Manager Help*, which contains detailed information about configuring objects.

Recommendations

Genesys recommends using an Application Template when you are configuring your T-Server application. The Application Template for your particular T-Server contains the most important configuration options set to the values recommended for the majority of environments. When modifying configuration options for your T-Server application later in the process, you can change the values inherited from the template rather than create all the options by yourself.

Procedure: Configuring T-Server manually

Start of procedure

1. Follow the standard procedure for configuring all `Application` objects to begin configuring your T-Server `Application` object. Refer to the *Framework 8.0 Deployment Guide* for instructions.
2. In a `Multi-Tenant` environment, specify the `Tenant` to which this T-Server belongs on the `General` tab of the `Properties` dialog box.

3. On the **Connections** tab:
 - Add all Genesys applications to which T-Server must connect.

Note: For multi-site deployments you should also specify T-Server connections on the **Connections** tab for any T-Servers that may transfer calls directly to each other.

4. On the **Options** tab, specify values for configuration options as appropriate for your environment.

Note: For T-Server option descriptions, see Part Two of this document.

5. In a multi-site environment, you must complete additional T-Server configuration steps to support multi-site operations; see Chapter 4, “Multi-Site Support,” on [page 61](#).

End of procedure

Next Steps

- See “Manual Installation of T-Server” on [page 44](#).

Procedure: Configuring multiple ports

Purpose: To configure multiple ports in T-Server for its client connections.

Start of procedure

1. Open the T-Server Application Properties dialog box.
2. Click the **Server Info** tab.
3. In the **Ports** section, click **Add Port**.
4. In the **Port Properties** dialog box, on the **Port Info** tab:
 - a. In the **Port ID** text box, enter the port ID.
 - b. In the **Communication Port** text box, enter the number of the new port.
 - c. In the **Connection Protocol** box, select the connection protocol, if necessary.
 - d. Select the **Listening Mode** option.

Note: For more information on configuring secure connections between Framework components, see *Genesys 8.0 Security Deployment Guide*.

- e. Click OK.
5. Click OK to save the new configuration.

End of procedure

Manual Installation of T-Server

The following directories on the Genesys 8.0 Media product DVD contain T-Server installation packages:

- `media_layer/<switch>/<platform>` for UNIX installations, where `<switch>` is your switch name and `<platform>` is your operating system.
- `media_layer\<switch>\windows` for Windows installations, where `<switch>` is your switch name.

Procedure: Installing T-Server on UNIX manually

Note: During installation on UNIX, all files are copied into the directory you specify. No additional directories are created within this directory. Therefore, do not install different products into the same directory.

Start of procedure

1. In the directory to which the T-Server installation package was copied, locate a shell script called `install.sh`.
2. Run this script from the command prompt by typing `sh` and the file name. For example: `sh install.sh`.
3. When prompted, confirm the host name of the computer on which T-Server is to be installed.
4. When prompted, specify the host and port of Configuration Server.
5. When prompted, enter the user name and password to access Configuration Server.
6. When prompted, select the T-Server application you configured in “Configuring T-Server manually” on [page 42](#) from the list of applications.
7. Specify the destination directory into which T-Server is to be installed, with the full path to it.
8. If the target installation directory has files in it, do one of the following:
 - Type 1 to back up all the files in the directory (recommended).
 - Type 2 to overwrite only the files in this installation package. Use this option only if the installation being upgraded operates properly.

- Type 3 to erase all files in this directory before continuing with the installation.

The list of file names will appear on the screen as the files are copied to the destination directory.

9. If asked which version of the product to install, the 32-bit or the 64-bit, choose the one appropriate to your environment.
10. If asked about the license information that T-Server is to use: specify either the full path to, and the name of, the license file, or the license server parameters.
11. As soon as the installation process is finished, a message appears announcing that installation was successful. The process places T-Server in the directory with the name specified during the installation.

End of procedure

Next Steps

- To verify manual installation, go to “Verifying the manual installation of T-Server” on [page 46](#).
- To test your configuration and installation, go to Chapter 5, “Start and Stop T-Server Components,” on [page 119](#), and try it out.
- To configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on [page 49](#).
- To install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on [page 61](#).

Procedure: Installing T-Server on Windows manually

Start of procedure

1. In the directory to which the T-Server installation package was copied, locate and double-click `Setup.exe` to start the installation.
2. When prompted, specify the connection parameters to the Configuration Server associated with this T-Server.
3. When prompted, select the T-Server Application you configured in “Configuring T-Server manually” on [page 42](#) from the list of applications.
4. Specify the license information that T-Server is to use: either the full path to, and the name of, the license file, or the license server parameters.
5. Specify the destination directory into which T-Server is to be installed.
6. Click `Install` to begin the installation.
7. Click `Finish` to complete the installation.

By default, T-Server is installed as a Genesys service (Windows Services) with Automatic startup type.

End of procedure

Next Steps

- To verify manual installation, go to “Verifying the manual installation of T-Server” on [page 46](#).
- To test your configuration and installation, go to Chapter 5, “Start and Stop T-Server Components,” on [page 119](#), and try it out.
- To configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on [page 49](#).
- To install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on [page 61](#).

Procedure:

Verifying the manual installation of T-Server

Purpose: To verify the completeness of the manual installation of T-Server to ensure that T-Server will run.

Prerequisites

- [Procedure: Installing T-Server on UNIX manually](#), on [page 44](#)
- [Procedure: Installing T-Server on Windows manually](#), on [page 45](#)

Start of procedure

1. Open the Properties dialog box for a corresponding Application object in Configuration Manager.
2. Verify that the State Enabled check box on the General tab is selected.
3. Verify that the Working Directory, command-Line, and Command-Line Arguments are specified correctly on the Start Info tab.
4. Click Apply and OK to save any configuration updates.

End of procedure

Next Steps

At this point, you have either used the Wizard to configure and install T-Server, or you have done it manually, using Configuration Manager. In either case, if you want to test your configuration and installation, go to Chapter 5,

“Start and Stop T-Server Components,” on [page 119](#), and try it out. Otherwise, if you want to configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on [page 49](#). If you want to install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on [page 61](#).



Chapter

3

High-Availability Deployment

This chapter describes the general steps for setting up a high-availability (HA) environment for your T-Server. The high-availability architecture implies the existence of redundant applications, a primary and a backup. These are monitored by a management application so that, if one application fails, the other can take over its operations without any significant loss of contact center data.

Every switch/T-Server combination offers different high-availability options. The Framework Management Layer currently supports two types of redundant configurations: warm standby and hot standby. All T-Servers offer the warm standby redundancy type and, starting with release 7.1, the hot standby redundancy type is implemented in T-Servers for most types of switches. Some T-Servers support a switch's ability to provide two CTI links to two T-Servers or even one CTI link to two T-Servers. Other T-Servers require Genesys's HA Proxy in order to support the hot standby redundancy type. See Table 1 on [page 25](#) and the T-Server-specific information later in this document for details on your T-Server.

This chapter describes the redundant architecture and how to configure T-Server so that it operates with either type. Information in this chapter is divided into the following sections:

- [Warm Standby Redundancy Type, page 50](#)
- [Hot Standby Redundancy Type, page 51](#)
- [Prerequisites, page 53](#)
- [Warm Standby Deployment, page 54](#)
- [Hot Standby Deployment, page 56](#)
- [Next Steps, page 60](#)

Warm Standby Redundancy Type

Genesys uses the expression *warm standby* to describe the redundancy type in which a backup server application remains initialized and ready to take over the operations of the primary server. The warm standby redundancy type reduces to a minimum the inability to process interactions that may have originated during the time it took to detect the failure. It also eliminates the need to bring a standby server online, thereby increasing solution availability.

Warm Standby Redundancy Architecture

Figure 5 illustrates the warm standby architecture. The standby server recognizes its role as a backup and does not process client requests until the Management Layer changes its role to primary. When a connection is broken between the primary server and the Local Control Agent (LCA, not shown in the diagram) running on the same host, a failure of the primary process is reported, and the switchover occurs; or, if the host on which the T-Server is running fails, the switchover also occurs. (See the *Framework 8.0 Deployment Guide* for information on LCA.) As a result:

1. The Management Layer instructs the standby process to change its role from backup to primary.
2. A client application reconnects to the new primary.
3. The new primary (former backup) starts processing all new requests for service.

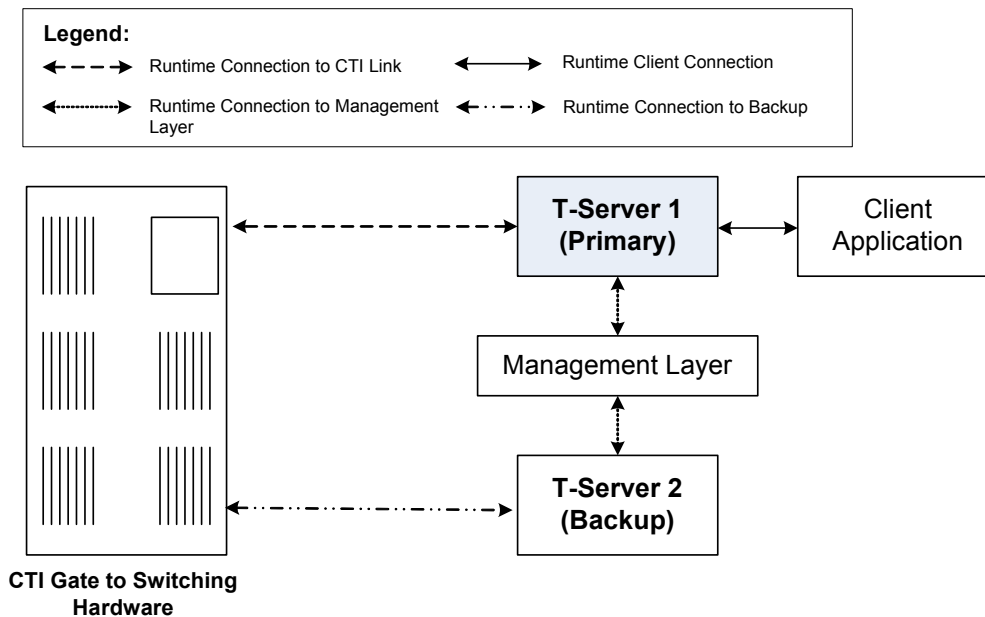


Figure 5: Warm Standby Redundancy Architecture

Although normal operations are restored as soon as the backup process takes over, the fault management effort continues. That effort consists of repeated attempts to restart the process that failed. Once successfully restarted, the process is assigned the backup role.

Note: You can find full details on the role of the Management Layer in redundant configurations in the *Framework 8.0 Deployment Guide*.

Hot Standby Redundancy Type

Genesys uses the expression *hot standby* to describe the redundancy type in which a backup server application remains initialized, clients connect to both the primary and backup servers at startup, and the backup server data is synchronized from the primary server. Data synchronization and existing client connections to the backup guarantee higher availability of a component. (See Figure 6 on [page 52](#).)

Starting with release 7.1, the hot standby redundancy type is implemented in T-Servers for most types of switches. However, for some switches, you must compensate for the lack of link redundancy by using an additional Genesys component called *HA Proxy*.

Hot Standby Redundancy Architecture

[Figure 6](#) illustrates the switch-independent side of a hot standby implementation. Here, T-Servers start simultaneously and connect to the switch. At T-Server startup, the Management Layer assigns the role of the primary server to T-Server 1, and the role of backup to T-Server 2. T-Server clients register with both T-Servers, but only the primary T-Server handles client requests other than the registration requests. The internal T-Server information, such as a DN status, ConnID, UserData, and Call Type, is synchronized between the primary and backup T-Servers. Therefore, the backup T-Server has the same information as the primary T-Server.

If T-Server 1 fails, the Management Layer makes T-Server 2 the new primary server, and it starts processing client requests. The Management Layer attempts to restart T-Server 1, and if it is successful, it makes T-Server 1 the new backup server.

The details of hot standby redundancy implementation between T-Servers and their switches vary depending on switch support for multiple CTI links. If your T-Server supports hot standby (see Table 1 on [page 25](#)), refer to Part Two for detailed information on the available hot standby schema.

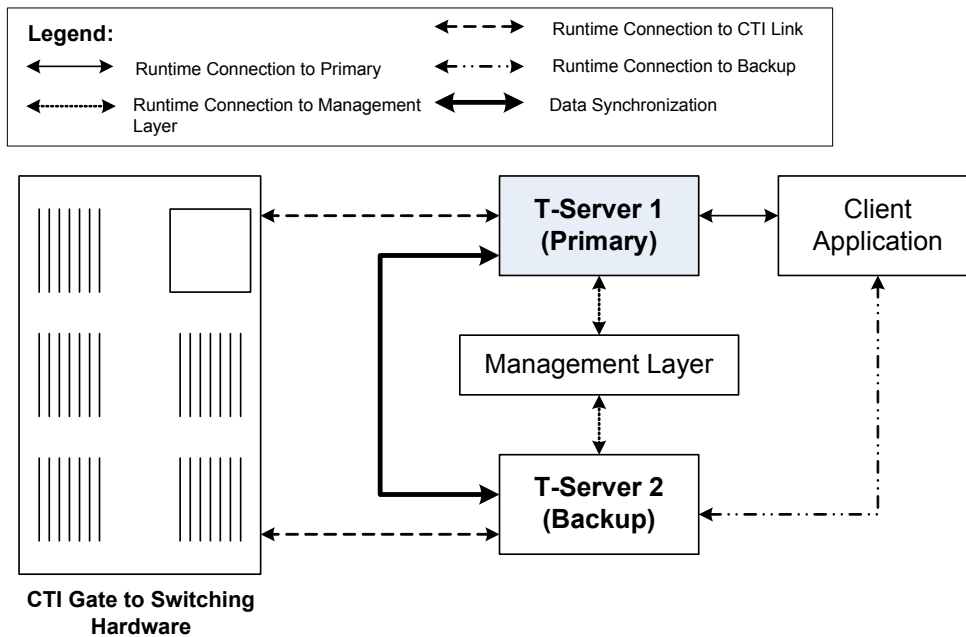


Figure 6: Hot Standby Redundancy Architecture

Benefits of Hot Standby Redundancy

The hot standby redundancy type provides the following benefits over the warm standby type:

- Using hot standby ensures the processing of interactions in progress if a failure occurs. After the primary T-Server (T-Server 1) fails, T-Server 2 handles all new interactions and takes over the processing of interactions that are currently in progress.
- T-Servers perform one-way (from primary to backup) synchronization of call-associated data, including, but not limited to:
 - Connection IDs.
 - Attached user data.
 - Inter Server Call Control (ISCC; formerly called External Routing) call references to another site in a multi-site environment (to support the ISCC/COF feature).

Note: Refer to “ISCC Call Data Transfer Service” on [page 63](#) for ISCC feature descriptions.

- Allocation of ISCC-controlled resources.

- When mirrored links are not available, HA Proxy helps T-Server synchronize the current states of agents, calls, parties, and devices between the primary and backup T-Servers.

However, keep the following hot standby limitations in mind:

- Client requests sent during the failure and switchover may be lost.
- Routing requests sent by the switch during the failure and switchover may be lost.
- T-Server does not synchronize interactions that begin before it starts.
- Some T-Library events might be duplicated or lost.
- Reference IDs from client requests can be lost in events.

Prerequisites

This section presents basic requirements and recommendations for configuring and using redundant T-Servers.

Requirements

You must install the Management Layer if you are installing redundant T-Server applications. In particular, install Local Control Agent (LCA) on each computer that runs T-Server.

Warning! Genesys strongly recommends that you install the backup and primary T-Servers on different host computers.

Synchronization Between Redundant T-Servers

When T-Servers operate in a high-availability environment, the backup T-Server must be ready to take on the primary role when required. For this purpose, both T-Servers must be running and must have the same information. When you configure redundant T-Servers to operate with the hot standby type, the primary T-Server uses the connection to the backup to deliver synchronization updates. Genesys recommends that you enable the Advanced Disconnect Detection Protocol (ADDP), described in Chapter 1, for this connection. Do so using the configuration options in the “Backup-Synchronization Section” section. Refer to the “T-Server Common Configuration Options” chapter for option descriptions.

Configuration Warnings

When configuring T-Servers to support either the warm standby or hot standby redundancy type, remember:

1. When at least one of the two T-Servers that operate in a redundant mode is running, do not change a redundancy type, host, or port in either T-Server configuration.
2. When both the primary and backup T-Servers are running, do not remove the backup T-Server `Application` object from the configuration.

You are responsible for the option synchronization in the configuration of the primary and backup T-Servers; Configuration Server does not synchronize either options or their values in different T-Server `Application` objects. That is, you must configure both T-Servers to have the same options with the same values. If you change a value in one T-Server configuration, you must change it in the other T-Server configuration manually. The log options in the primary T-Server can differ from those in the backup T-Server configuration. The link configuration options in the primary T-Server can also differ from those in the backup T-Server configuration.

Warm Standby Deployment

This section describes how to configure redundant T-Servers to work with the warm standby redundancy type, including details on their connections and settings.

General Order of Deployment

The general guidelines for T-Server warm standby configuration are:

- | | |
|------------------------------|---|
| Wizard Deployment | <ul style="list-style-type: none"> • If you used wizards to configure T-Servers and selected the warm standby redundancy type, no additional configuration is required for your T-Servers. |
| Manual Deployment | <ul style="list-style-type: none"> • If you did not use wizards to configure T-Servers: <ol style="list-style-type: none"> a. Manually configure two T-Server <code>Application</code> objects as described in “Manual Configuration of T-Server” on page 42. b. Make sure the <code>Switch</code> object is configured for the switch these T-Servers should serve, as described in “Manual Configuration of T-Server” on page 42. c. Modify the configuration of the primary and backup T-Servers as instructed in the following sections. |

After completing the configuration steps, ensure that both T-Servers are installed (see [page 56](#)).

Manual Modification of T-Servers for Warm Standby

Modify the configuration of both the primary and backup T-Server Application objects as described in the following sections.

Note: Starting with release 7.5, you can configure multiple ports for any application of type server. When multiple ports are configured for a server in a warm standby redundancy pair, the number of ports, their Port IDs, and the Listening Mode settings of the primary and backup servers must match respectively.

Procedure: Modifying the primary T-Server configuration for warm standby

Start of procedure

1. Stop both the primary and backup T-Servers if they are already running.
2. Open the Configuration Manager main window.
3. Open the Properties dialog box of the Application object for the T-Server that you want to configure as a primary server.
4. Click the Switches tab.
5. Ensure that it specifies the Switch that this T-Server Application should serve. If necessary, select the correct Switch using the Browse button.
6. Click Apply to save the configuration changes.
7. Click the Server Info tab.
8. Specify the T-Server Application you want to use as the backup server. Use the Browse button next to the Backup Server field to locate the backup T-Server Application object.
9. Select Warm Standby as the Redundancy Type.
10. Click Apply to save the configuration changes.
11. Click the Start Info tab.
12. Select Auto-Restart.
13. Click Apply and OK to save the configuration changes.

End of procedure

Next Steps

- [Procedure: Modifying the backup T-Server configuration for warm standby, on page 56](#)

Procedure: Modifying the backup T-Server configuration for warm standby

Start of procedure

1. Make sure the two T-Servers are *not* running.
2. Open the Configuration Manager main window.
3. Open the Properties dialog box of the Application object for the T-Server that you want to configure as a backup server.
4. Click the Switches tab.
5. Using the Browse button, select the same Switch object you associated with the primary T-Server Application object.
6. Click Apply to save the configuration changes.
7. Click the Start Info tab.
8. Select Auto-Restart.
9. Click Apply and OK to save the configuration changes.

End of procedure

Warm Standby Installation of Redundant T-Servers

The installation of a redundant T-Server is the same as that for the stand-alone T-Server. If you have not installed the primary and backup T-Servers yet, follow the instructions in “Manual Installation of T-Server” on [page 44](#) for both installations.

Hot Standby Deployment

This section describes how to configure redundant T-Servers to work with the hot standby redundancy type, including details on their connections and settings.

General Order of Deployment

The general guidelines for T-Server hot standby configuration are:

Wizard Deployment

- If you used wizards to configure T-Servers and selected the hot standby redundancy type, no additional configuration is required for your T-Servers.

**Manual
Deployment**

- If you did not use wizards to configure T-Servers:
 - a. Manually configure two T-Server Applications objects as described in “Configuring T-Server manually” on [page 42](#).
 - b. Make sure the Switch object is configured for the switch these T-Servers should serve, as described in “Manual Configuration of Telephony Objects” on [page 40](#).
 - c. Modify the configuration of the primary and backup T-Servers as instructed in the following sections.

After completing the configuration steps, ensure that both T-Servers are installed (see [page 60](#)).

Table 1 on [page 25](#) summarizes hot standby redundancy support in various T-Servers. For detailed, up-to-date information on the subject, see the *Genesys Supported Media Interfaces* white paper located on the Technical Support website at

<http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309AF4DEB8127C5640A3C32445A7&view=item>.

Manual Modification of T-Servers for Hot Standby

Modify the configuration of both the primary and backup T-Server Application objects for hot standby redundancy as described in the following sections.

Note: Starting with release 7.5, you can configure multiple ports for any application of type server. When multiple ports are configured for a server in a hot standby redundancy pair, the number of ports, their Port IDs, and the Listening Mode settings of the primary and backup servers must match respectively.

Procedure:

Modifying the primary T-Server configuration for hot standby

Start of procedure

1. Stop both primary and backup T-Servers if they are already running.
2. Open the Configuration Manager main window.
3. Open the Properties dialog box of the Application object for the T-Server that you want to configure as a primary server.
4. Click the Switches tab.
5. Ensure that it specifies the Switch that this T-Server Application should serve. If necessary, select the correct Switch using the Browse button.

6. Click Apply to save the configuration changes.
7. Click the Server Info tab.
8. In the Ports section, select the port to which the backup server will connect for HA data synchronization and click Edit Port.

Note: For information on adding multiple ports, see “Configuring multiple ports” on [page 43](#).

- a. In the Port Properties dialog box, on the Port Info tab, select the HA sync check box.
- b. Click OK.

Note: If the HA sync check box is not selected, the backup T-Server will connect to the *default* port of the primary T-Server.

9. Specify the T-Server Application you want to use as the backup server. Use the Browse button next to the Backup Server field to locate the backup T-Server Application object.
10. Select Hot Standby as the Redundancy Type.
11. Click Apply to save the configuration changes.
12. Click the Start Info tab.
13. Select Auto-Restart.
14. Click Apply to save the configuration changes.
15. To enable ADDP between the primary and backup T-Servers, click the Options tab. Open or create the backup-sync section and configure corresponding options.

Note: For a list of options and valid values, see the “Backup-Synchronization Section” section of “T-Server Common Configuration Options” chapter in Part Two of this document.

16. Click Apply and OK to save the configuration changes.

End of procedure

Next Steps

- [Procedure: Modifying the backup T-Server configuration for hot standby, on page 59](#)

Procedure: Modifying the backup T-Server configuration for hot standby

Start of procedure

1. Make sure the two T-Servers are *not* running.
2. Open the Configuration Manager main window.
3. Open the Properties dialog box of the Application object for the T-Server that you want to configure as a backup server.
4. Click the Switches tab.
5. Using the Browse button, select the same Switch object you associated with the primary T-Server Application.
6. Click the Server Info tab.
7. In the Ports section, select the port to which the primary server will connect for HA data synchronization and click Edit Port.

Note: For information on adding multiple ports, see “Configuring multiple ports” on [page 43](#).

- a. In the Port Properties dialog box, on the Port Info tab, select the HA sync check box.
- b. Click OK.

Note: If the HA sync check box is not selected, the primary T-Server will connect to the *default* port of the backup T-Server.

8. Click Apply to save the configuration changes.
9. Click the Start Info tab.
10. Select Auto-Restart.
11. Click the Options tab.
12. Modify the values for all necessary configuration options. Genesys recommends that you set all configuration options for the backup T-Server to the same values as for the primary T-Server; the only exceptions are the log options and the server-id option.
13. Click Apply and OK to save the configuration changes.

End of procedure

Hot Standby Installation of Redundant T-Servers

The installation of a redundant T-Server is the same as that for the stand-alone T-Server. If you have not installed the primary and backup T-Servers yet, follow instructions in “Manual Installation of T-Server” on [page 44](#) for both installations.

Next Steps

At this point, you have learned how to configure and install redundant T-Servers. Go to Chapter 5, “Start and Stop T-Server Components,” on [page 119](#), to test your configuration and installation, or continue with Chapter 4, “Multi-Site Support,” on [page 61](#), for more possibilities.



Chapter

4

Multi-Site Support

This chapter contains general information about multi-site environments, as well as information on deploying a multi-site environment for your T-Server.

This chapter is divided into the following sections:

- [Multi-Site Fundamentals, page 62](#)
- [ISCC Call Data Transfer Service, page 63](#)
- [ISCC/Call Overflow Feature, page 83](#)
- [Number Translation Feature, page 87](#)
- [Network Attended Transfer/Conference Feature, page 95](#)
- [Event Propagation Feature, page 97](#)
- [ISCC Transaction Monitoring Feature, page 104](#)
- [Configuring Multi-Site Support, page 104](#)
- [Next Steps, page 118](#)

Note: Each switch/T-Server combination offers different multi-site options. For details describing your specific switch/T-Server environment, refer to Chapter 9, “T-Server Common Configuration Options,” on [page 227](#).

The following instructions apply to both local and remote switches and T-Servers. Because different vendor switches can be installed at the local and remote locations, this chapter covers several, but not all, possible configurations. To help determine which sections of this chapter apply to your situation, refer to Table 3 on [page 79](#) and Table 4 on [page 84](#).

For more information on your specific switch/T-Server environment, refer to the multi-site topics in Part Two of this guide.

Multi-Site Fundamentals

A multi-site configuration has two or more switches that belong to the same enterprise or service provider and that share the Genesys Configuration Database. (In some cases, this may include isolated partitions on a given switch served by different T-Servers.) The main goal of T-Server support for multi-site operations is to maintain critical information about a call as it travels from one switch to another.

T-Server supports multi-site operations using its *Inter Server Call Control* (ISCC; formerly called External Routing), which supports the following functions:

- **Call matching**—To link instances of a call distributed across multiple sites and to re-attach essential data associated with the call (ConnID, UserData, CallType, and CallHistory). The following T-Server features support this capability:
 - ISCC Call Data Transfer Service (active external routing)—when requested by a T-Server client by specifying the desired destination in the location parameter, and also with various ISCC strategies performed by direct dial or by using the Transfer Connect Service. See “ISCC Transaction Types” on [page 70](#) and “Transfer Connect Service Feature” on [page 82](#).
 - Inter Server Call Control/Call Overflow (ISCC/COF) feature (passive external routing)—applicable when calls are overflowed to another site either directly or manually (see [page 83](#)).
 - Number Translation feature (see [page 87](#)).
 - Network Attended Transfer/Conference (NAT/C) feature (see [page 95](#)).

Note: When ISCC detects call instance reappearance on a given site, the call is assigned a unique ConnID and the user data is synchronized with the previous call instances. This ensures that ConnIDs assigned to different instances of the same call on a given site are unique.

- **Call data synchronization between associated call instances (ISCC Event Propagation)**—To provide the most current data to call instances residing on remote T-Servers. The following T-Server features support this capability:
 - User Data propagation (see [page 98](#))
 - Party Events propagation (see [page 99](#))

Note: ISCC automatically detects topology loops and prevents continuous updates.

Note: In distributed networks, Genesys recommends using call flows that prevent call topology loops and multiple reappearances of the same call instance. This approach ensures that all T-Servers involved with the call report the same ConnID, and also optimizes telephony trunk allocation by preventing trunk tromboning.

The T-Server configuration contains information about other T-Servers with which it will communicate. T-Server uses this information to connect with the other T-Servers. During this “handshake” process, T-Servers exchange information about the following parameters:

- Protocol type
- Switch type
- Server name
- Location name (switch name)
- T-Server role (primary or backup)

To complete the handshake process, T-Servers exchange messages about the current condition of the links to their switches. After the handshake process is complete, T-Server is ready to support a multi-site operation.

ISCC Call Data Transfer Service

Because ISCC supports active external routing, T-Servers that serve different switches (usually on different sites) can exchange call data when a call is passed from one switch to another. With this functionality, T-Server provides its clients with the following additional information about each call received from another switch:

- The connection identifier of the call (attribute ConnID).
- Updates to user data attached to the call at the previous site (attribute UserData).
- The call type of the call (attribute CallType)—In multi-site environments the CallType of the call may be different for each of its different legs. For example, one T-Server may report a call as an Outbound or Consult call, but on the receiving end this call may be reported as Inbound.
- The call history (attribute CallHistory)—Information about transferring/routing of the call through a multi-site contact center network.

Note: Load-sharing IVR Servers and Network T-Servers cannot be designated as the destination location for ISCC, except when cast-type is set to dnis-pool. Consult the *Universal Routing Deployment Guide* for specific configuration details.

Figure 7 shows the steps that occur during a typical external routing (ISCC) transaction. Note that the location where a call is initially processed is called the *origination location*, and the location to which the call is passed is called the *destination location*.

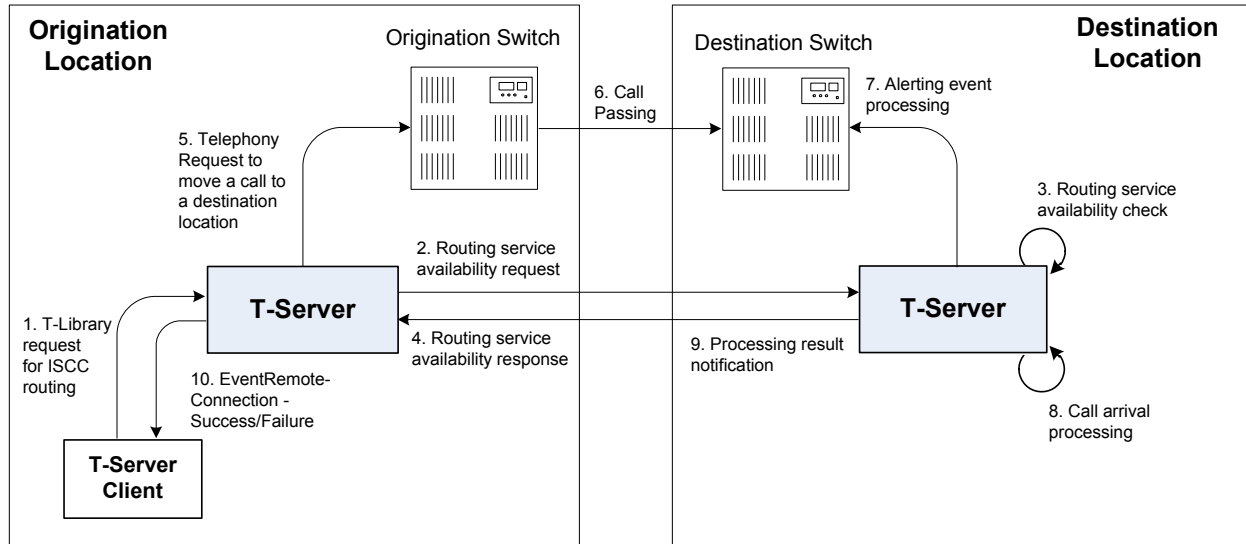


Figure 7: Steps in the ISCC Process

ISCC Call Flows

The following section identifies the steps (shown in Figure 7) that occur during an ISCC transfer of a call.

Step 1

A client connected to the T-Server at the origination location requests this T-Server to pass a call with call data to another location. For this purpose, the client must specify the `location` parameter (Attribute `Location`) when calling a corresponding T-Library function. ISCC processes the following T-Library requests:

- `TInitiateConference`
- `TInitiateTransfer`
- `TMakeCall`
- `TMuteTransfer`
- `TRouteCall`
- `TSingleStepTransfer`

Step 2

Upon receiving a client's request, the origination T-Server checks that the:

1. Connection to the destination T-Server is configured in the origination T-Server Properties dialog box.
2. The connection to the destination T-Server is active.
3. The destination T-Server is connected to its link.
4. The origination T-Server is connected to its link.

If these four conditions are met, the origination T-Server determines the transaction type that will be used for passing call data to another location in this transaction. The following possibilities exist:

- The client can request what *ISCC transaction type* (or simply *transaction type*) to use by specifying an appropriate key-value pair in the Extensions attribute of the request. The key-value pair must have a key equal to `iscc-xaction-type` and either an integer value as specified in the `TXRouteType` enumeration (see the *Voice Platform SDK 8.0 .NET (or Java) API Reference*) or a string value equal to one of the following: `default`, `route`, `direct` (or `direct-callid`), `direct-network-callid`, `direct-notoken`, `direct-ani`, `direct-uu`, `direct-digits`, `reroute`, `dnis-pool`, `pullback`, or `route-uu`.
- If the client does not specify the transaction type in the request or specifies the `default` transaction type, T-Server checks the Switch configuration for the transaction type configured in the Access Code (or Default Access Code) properties:
 - If the Route Type property of the Access Code is set to any value other than `default`, T-Server uses the specified value as the transaction type.
 - If the Route Type property of the Access Code is set to the `default` value, T-Server uses the first value from the list specified in the `cast-type` configuration option configured for the destination T-Server. If no value has been specified for the `cast-type` option, the default value of `route` is used as the transaction type.

Note: For more information on Access Codes and Default Access Code, see “Switches and Access Codes” on [page 106](#).

After the origination T-Server determines the requested transaction type, it determines if the destination T-Server supports this transaction type.

You must list the transaction types T-Server supports in the `cast-type` configuration option.

The origination T-Server issues a request for routing service availability and sends it to the destination T-Server. The T-Server request contains data that should be passed along with the call to the destination location. This data includes the transaction type, ConnID, UserData, CallType, and CallHistory.

The timer specified by the `request-tout` configuration option is set when the origination T-Server sends the request. If either the specified timeout expires or the call is abandoned before the origination T-Server receives a response from the destination T-Server, the operation is considered failed. In this scenario, the origination T-Server:

1. Generates a request to the destination T-Server to cancel the request for routing service.
2. Sends `EventError` to the client that requested the service.
3. Deletes information about the request.

Step 3

The destination T-Server receives the request for routing service availability and checks the requested type of routing. Depending on the ISCC transaction type, it stores the request information and, when appropriate, allocates access resources for the coming call. For example, an External Routing Point is allocated when the transaction type is `route`, and an Access Resource of type `dnis` is allocated when the transaction type is `dnis-pool`.

Note: The `resource-allocation-mode` and `resource-load-maximum` configuration options determine how resources are allocated. For option descriptions, refer to Chapter 9, “T-Server Common Configuration Options,” on [page 227](#) for option descriptions.

If resources are unavailable, the request is queued at the destination location until a resource is free or the origination T-Server cancels the request. If the request is canceled, the destination T-Server deletes all information about the request.

If resources are unavailable because of incorrect configuration, the destination T-Server returns an error event to the origination T-Server.

Step 4

If resources are available, the destination T-Server generates a positive response and the timer is started for the interval specified by the `timeout` configuration option of the destination T-Server.

Step 5

If the origination T-Server receives a negative response, it sends an `EventError` message to the client and clears all data about the request.

If the origination T-Server receives the confirmation about routing service availability, it processes the client’s request and sends a corresponding message to the switch. The timer on the origination T-Server is also started for the interval specified by the `timeout` configuration option of the destination T-Server.

Step 6

The origination switch processes the T-Server request and passes the call to the destination switch.

Step 7

If the call arrives at the destination switch, the switch generates an alerting event.

The destination T-Server waits for the call no longer than the interval specified by the timeout configured on the destination T-Server. If the call is not received at the destination location within this interval, the destination T-Server issues a failure notification to the origination T-Server, deletes all data about the request, and, when appropriate, frees the resources previously allocated for the request.

If either the specified timeout expires or the call is abandoned before the origination T-Server receives a response from the destination T-Server, the operation is considered failed. In this case, the origination T-Server:

1. Generates a request to the destination T-Server to cancel the request for routing service.
2. Responds to the client that requested the service in one of the following ways:
 - If the origination T-Server has already sent a response to the request the client sent in Step 1, the origination T-Server supplements its response with `EventRemoteConnectionFailed`.
 - If the origination T-Server has not yet sent a response to the client, the origination T-Server sends `EventError`.
3. Deletes information about the request.

Step 8

If the destination T-Server matches the arrived call, it updates the `ConnID`, `UserData`, `CallType`, and `CallHistory` attributes with the data received in the request for routing service availability. The connection ID is updated as follows:

The arrived call is assigned the `ConnID` that is specified in the request for routing service availability, but only if this `ConnID` does not coincide with the `ConnID` of a call that has existed at the destination site. If two such `ConnIDs` are identical, the arrived call is assigned a new unique `ConnID`.

For `direct-*` transaction types (where the asterisk stands for a `callid`, `uui`, `ani`, or `digits` extension), the call reaches the destination DN directly.

For the transaction types `route` and `route-uui`, the call first arrives at an External Routing Point from which it is routed to the destination DN. The call info is updated when the call reaches the External Routing Point. An External

Routing Point is considered free when the first alerting event (`EventQueued` or `EventRouteRequest`) is distributed.

Please keep the following issues in mind when using the ISCC feature:

- If routing from a dedicated External Routing Point to the destination DN fails, T-Server considers the transaction failed. However, the `ConnID`, `UserData`, `CallType`, and `CallHistory` attributes are updated. Then, T-Server attempts to route the call to one of the Default DNs configured for this External Routing Point.
- If the destination T-Server did not receive a request for routing service availability, but a call arrives at an External Routing Point, T-Server considers the call to be unexpected and routes the call to the DN specified by the `dn-for-unexpected-calls` configuration option. When no alternative targets are defined, the call remains at the External Routing Point until diverted by the switch or abandoned by the caller.

For `reroute` and `pullback` transaction types, the call returns to the network location. For the `dnis-pool` transaction type, the call reaches the destination DN directly.

Step 9

If, in Step 8, the call does not arrive within the configured timeout, or the transaction fails, the destination T-Server sends a notification of failure to the origination T-Server.

Otherwise, the destination T-Server notifies the origination T-Server that the routing service was successful and deletes all information about the request.

Step 10

The origination T-Server notifies the client that the routing service was successful (or failed) and deletes all information about the request.

Client-Controlled ISCC Call Flow

The following section identifies the steps that occur during a client-controlled ISCC transfer of a call.

Step 1

A client, such as Universal Routing Server (URS), that is connected to the T-Server at the origination location detects a call to be delivered to another destination location.

Step 2

The client chooses a destination location and the target DN for the call. Then, it sends the `TGetAccessNumber` request to the destination T-Server for routing service availability, indicating the target DN and other call context (`ConnID`, `UserData`, and `CallHistory` attributes).

Step 3

The destination T-Server receives the request for routing service availability. Depending on the ISCC transaction type, it stores the request information, including the call context. When appropriate, it allocates access resources for the coming call, such as External Routing Point.

If resources are unavailable, the request is queued at the destination T-Server until an appropriate ISCC resource is free or the client cancels the request. If the request is canceled, the destination T-Server deletes all information about the request.

If resources are unavailable because of incorrect configuration, the destination T-Server returns an `EventError` message to the client.

Step 4

The destination T-Server replies to the client with the `EventAnswerAccessNumber` message, which contains the allocated ISCC resource.

Step 5

The client requests that the origination T-Server delivers the call to the destination location using the allocated access resource.

Step 6

The origination T-Server receives and processes the client's request, and then sends a corresponding message to the switch.

Step 7

The call arrives at the destination switch and is reported to the destination T-Server via CTI. The call is matched by means of ISCC, based on the specified `cast-type` setting and allocated resource, and then the call is assigned a requested call context (such as `ConnID` or call data). Upon successful transaction completion, the destination T-Server notifies the client by sending `EventRemoteConnectionSuccess`.

The destination T-Server waits for the call no longer than the interval specified by the timeout that is configured on the destination T-Server. If the call is not received at the destination location within this interval, the destination T-Server issues a failure notification to the client by sending

`EventRemoteConnectionFailed`, deletes all data about the request, and, when appropriate, frees the resources previously allocated for the request.

The destination T-Server notifies the client whether the routing service succeeded or failed by sending either the `EventRemoteConnectionSuccess` or `EventRemoteConnectionFailure`, respectively.

ISCC Transaction Types

As switches of different types provide calls with different sets of information parameters, a single mechanism for passing call data between the switches is not feasible in some cases. Therefore, the ISCC feature supports a number of mechanisms for passing call data along with calls between locations. This section describes ISCC transaction type principles, identifies which transaction types are supported for each T-Server, and defines each transaction type (beginning with “direct-ani” on [page 71](#)).

It is important to distinguish the two roles that T-Servers play in an external routing (ISCC) transaction—namely *origination T-Server* and *destination T-Server*:

- The origination T-Server initiates an ISCC transaction. It prepares to send the call to another T-Server and coordinates the process.
- The destination T-Server receives call data from an origination T-Server and matches this data to a call that will arrive at some time in the future.

The distinction between these roles is important because the range of telephony-hardware functionality often requires T-Servers to support two entirely different sets of ISCC transactions based on which of the two roles they play. For instance, it is very common for a particular T-Server to support many types of ISCC transactions when it takes on the origination role, but fewer when it takes on the role of a destination T-Server.

The ISCC transaction type `reroute` is a good example. Most T-Servers support `Reroute` as origination T-Servers, but very few support `Reroute` as destination T-Servers.

Determining and Configuring Transaction Type Support

You can find descriptions of these transaction types starting on [page 71](#). Use Table 3 on [page 79](#) to identify the transaction types your destination T-Server supports. A blank table cell indicates that T-Server does not support a certain transaction type.

You can configure the transaction types specific to your T-Server as values of the `cast-type` configuration option specified in the ISCC configuration section `extrouter`. Refer to Chapter 9, “T-Server Common Configuration Options,” on [page 227](#) for the option description.

ISCC Transaction Type General Principles

Generally, since most of the ISCC implementation is done at the T-Server Common Part (TSCP) code level, all T-Servers support certain ISCC transaction types. Any T-Server can act as the origination T-Server for the following transaction types:

- `direct-ani`, [page 71](#)
- `direct-notoken`, [page 73](#)
- `dnis-pool`, [page 74](#)
- `pullback`, [page 75](#)
- `reroute`, [page 76](#)
- `route` (aliased as `route-notoken`), the default transaction type, [page 77](#)

The following transaction types are unevenly supported for both the origination and destination T-Server roles:

- `direct-callid` (aliased as `direct`), [page 72](#)
- `direct-digits` (reserved for Genesys Engineering)
- `direct-network-callid`, [page 72](#)
- `direct-uui`, [page 73](#)
- `route-uui`, [page 78](#)

The `reroute` and `pullback` transaction types are supported only for selected T-Servers in the *destination* role. However, if you implement this support, other transaction types require additional configuration and testing—even those that would normally be supported by default.

direct-ani

With the transaction type `direct-ani`, the ANI call attribute is taken as the parameter for call matching. Properly configured switches and trunks can keep the ANI attribute when a call is transferred over the network. T-Server can use this network feature for call matching.

Warning! Depending on the switch platform, it may be possible to inherit the ANI attribute after routing a call to a remote destination, and after performing a single-step transfer and other telephone actions. However, ISCC only works properly in scenarios where the ANI attribute on the destination T-Server is represented by exactly the same digit string as on the origination T-Server.

Typically, the ANI attribute represents the original call identifier (customer phone number), which guarantees that the attribute remains unique. However, you can use the `non-unique-ani` resource type to block ISCC from matching calls based on an ANI that is known to be non-unique. (See “Configuring access resources for non-unique ANI” on [page 115](#) for details.)

direct-callid

With the transaction type `direct-callid`, the call reaches the destination DN directly from another location, and the `CallID` of the call is taken as the attribute for call matching. When a call arrives at the final destination, the destination T-Server identifies its `CallID`, and updates the call info if the `CallID` matches.

Use this transaction type when the destination switch has the capability to assign to an incoming call the same network-wide unique `CallID` that the origination switch has already assigned to that call.

Notes: The `direct-callid` transaction type is used only in conjunction with the `TRouteCall` and `TSingleStepTransfer` function calls. It is applied only to the call that is in progress, and does not apply to functions that involve in the creation of a new call, such as `TMakeCall`.

For T-Server for Nortel Communication Server 2000/2100, the `direct-callid` transaction type is also applied to the `TMuteTransfer` function.

direct-network-callid

With the transaction type `direct-network-callid`, the call reaches the destination DN directly from another location, and the `NetworkCallID` of the call is taken as the attribute for call matching. When a call arrives at the final destination, the destination T-Server identifies its `NetworkCallID`, and updates the call info if the `NetworkCallID` matches.

Use this transaction type when the destination switch has the capability to assign to an incoming call the same network-wide unique `NetworkCallID` that the origination switch has already assigned to that call.

Note: To support this transaction type, you must configure `Target Type` and `ISCC Protocol Parameters` fields of the corresponding `Switch Access Code` in the Configuration Layer. For information about settings that are specific for your T-Server type, refer to Part Two of this document.

direct-uui

With the transaction type `direct-uui`, so-called user-to-user information (UUI) is taken as the attribute for call matching. Some switches make it possible to send a small data packet along with a call. T-Server can use this data to recognize a call passed from one switch to another. The destination T-Server generates a local unique value for UUI, and then notifies the origination T-Server. The origination T-Server uses a provided value to mark the call coming from the origination location. The destination T-Server receives a call and checks whether it is marked with an exact UUI value. If so, the call is considered to be matched.

On the Avaya Communication Manager and the Aspect ACD, UUI is referred to as “user-to-user information.” On the Siemens Hicom 300 switch with CallBridge, UUI is referred to as “Private User Data.” On the Alcatel A4400/OXE switch, UUI is referred to as “correlator data.”

Note: To support this transaction type, you must configure your switches to pass the UUI provided by your T-Server. You must also ensure that the trunks involved do not drop this data.

direct-notoken

With the transaction type `direct-notoken`, T-Server expects a call to arrive from another location to the destination DN specified in the request for routing service availability. When a call reaches the specified DN, T-Server processes the call as the expected externally-routed call.

Notes: This matching criterion is weak because any call that reaches the specified DN is considered to be the expected call. Genesys recommends that you use this transaction type only in a contact center subdivision that can only be reached from within the contact center (such as the second line of support, which customers cannot contact directly).

When using direct transaction types, Network T-Servers and load-sharing IVR Servers are not meant to act as destination T-Servers for call routing. Using Network T-Server with these transaction types requires special architecture.

dnis-pool

With the `dnis-pool` transaction type, T-Server reserves one of its DNIS access resources and waits for the call that has the same DNIS attribute as the name of the reserved DNIS access resource.

If the arrived call is matched successfully, the destination T-Server may update the value of the DNIS attribute of the call (along with `ConnID`, `UserData`, `CallType`, and `CallHistory`) with the value of the DNIS attribute of the original call. This occurs when the value of the DNIS attribute of the original call is specified as a value of the key-value pair `_ISCC_TRACKING_NUMBER_` in the `Extensions` attribute of the original client request.

The DNIS matching can be based on any number of digits out of all the digits that comprise the DNIS attribute. The number of digits that T-Server should use for DNIS matching is specified for the destination switch as the `ISCC Protocol Parameters` property of the Switch Access Code. The value syntax should be as follows:

`dnis-tail=<number-of-digits>`

For example, if this property is set to the `dnis-tail=7` value, ISCC matches only the last seven digits of a DNIS.

You must configure DNIS access resources in the switch; otherwise, ISCC fails to use this transaction type and sends `EventError` in response to the client application request.

Note: The `dnis-pool` transaction type is typically used for networks that employ a “behind the SCP” architecture, such as network IVR. Network T-Server for GenSpec and IServer are two examples of this, but other Network T-Servers might also be used in this architecture.

In Load-Balancing Mode

When T-Server uses load balancing for call routing with the `dnis-pool` transaction type, the following processes occur:

1. A client of the origination T-Server sends a request to pass a call to the location with a DNIS access resource specified in the key-value pair `iscc-selected-dnis`.
2. The origination T-Server distributes the request for a routing service to all destination T-Servers.
3. The destination T-Servers receive the request and check that the specified DNIS is not being used by another routing service request.
4. The origination T-Server expects to receive a positive response from each destination T-Server. If the origination T-Server receives a negative response from at least one T-Server, it sends an `EventError` to the client and clears all data about the request. If the origination T-Server receives the confirmation about routing service availability from all destination T-Servers, it processes the client's request and sends a corresponding message to the switch.
5. The origination switch processes the T-Server request and passes the call to the destination switch.
6. The call arrives at the destination switch, which generates an alerting event to one of the corresponding load-balanced destination T-Servers.
7. That destination T-Server processes the call and notifies the origination T-Server that the routing service was successful and deletes all information about the request.
8. The origination T-Server sends a routing service request cancellation to all other destination T-Servers.
9. The origination T-Server notifies the client that the routing service has been successful and deletes all information about the request.

pullback

`PULLBACK` is used in the following scenario, for those T-Servers that support it:

1. A call arrives at Site A served by a Network T-Server.
2. At Site A, a Network T-Server client requests to pass the call by means of ISCC routing to Site B served by a premise T-Server. Any transaction type except `reroute` or `pullback` can be specified in this request.
3. The call arrives at Site B and is either answered by an agent or delivered to a routing point.
4. A client of the premise T-Server at Site B sends a `TRouteCall` or `TSingleStepTransfer` request to transfer the call to the network.

5. The Site B premise T-Server notifies the Network T-Server about this request.
6. The network T-Server receives the notification and issues an `EventRouteRequest` to obtain a new destination.
7. After receiving the new destination information, the Network T-Server disconnects the call from its current premise location at Site B and attempts to route the call to the new destination.
8. The Site B premise T-Server stops tracking the call, which has disconnected from the premise's agent DN or routing point and is delivered to the network.
9. The network T-Server completes routing the call to its new destination.

Note: The transaction type `pullback` can only be used to return a call from a premise T-Server to the Network T-Server that serves the site from which the call was previously transferred.

reroute

`Reroute` is used in the following scenario, for those T-Servers that support it:

1. A call arrives at Site A served by a Network T-Server.
2. At Site A, a Network T-Server client requests to pass the call by means of ISCC to Site B served by a premise T-Server. Any transaction type except `reroute` or `pullback` can be specified in this request.
3. An agent at Site B answers the call.
4. A client of the premise T-Server at Site B sends a `TSingleStepTransfer` or `TRouteCall` request to transfer the call elsewhere (to a PSTN, to an agent, or to a routing point).
5. The Site B premise T-Server notifies the Network T-Server about this request and releases the call leg that resides at the agent's phone (using `TReleaseCall`) or at the Routing Point (using `TRouteCall` with the parameter `RouteTypeCallDisconnect`).
6. The Network T-Server receives the notification and reroutes the call to the requested destination by sending `EventRouteRequest` and attaching the call's user data.

Notes: The transaction type `reroute` can only be used to return a call from a premise T-Server to the Network T-Server that serves the site from which the call was previously transferred.

To perform multi-site operations that are initiated with `TRouteCall` and for which the `reroute` transaction type is requested, the origination T-Server must support the `RouteTypeCallDisconnect` subtype of `TRouteCall`.

route

With the transaction type `route` (aliased as `route-notoken`), a call from the origination location reaches a dedicated External Routing Point, and from there, it is routed to a destination DN.

To control configured External Routing Points, T-Server must register these DNs with the switch. Failure to register implies that the External Routing Point is not available for ISCC purposes. Client applications can register External Routing Points via T-Server for monitoring purposes only.

Point-to-Point (One-to-One)

In the Point-to-Point access mode, only one trunk line is used to access an External Routing Point (for example, VDN, CDN) at the destination site. See [Figure 8](#).

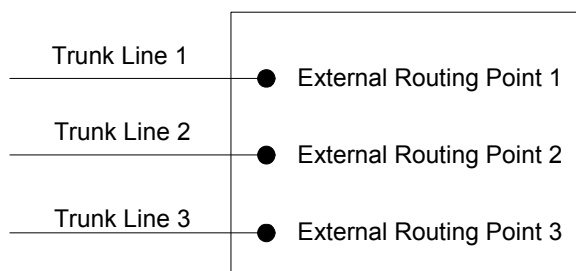


Figure 8: Point-to-Point Trunk Configuration

Note: Dedicated DNs of the External Routing Point type must be configured in a switch. See “Configuring Multi-Site Support” on [page 104](#).

Multiple-to-Point (Multiple-to-One)

In the Multiple-to-Point access mode, trunk lines are assigned to the destination switch’s trunk group, from which calls are routed to the final destination. See [Figure 9](#).

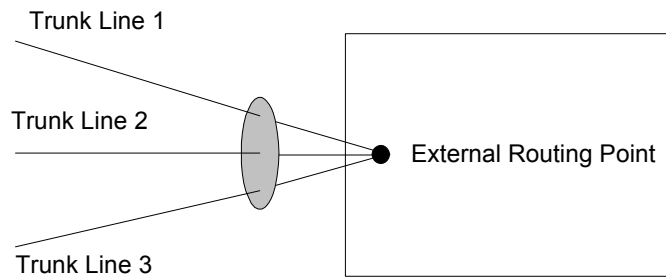


Figure 9: Multiple-to-Point Trunk Configuration

With this configuration, all calls reach the same External Routing Point. The DNIS attribute of a specific call differs from that of other calls and uniquely identifies the trunk from which the call arrived.

Note: To switch to this operating mode, you must configure the `route-dn` configuration option for T-Server.

route-uui

The `route-uui` transaction type employs the dedicated External Routing Point feature of the `route` transaction type (page 77) and the UUI matching feature of the `direct-uui` transaction type (page 73). This transaction type accommodates those switches that require a designated External Routing Point even though they use UUI for tracking.

Note: To support this transaction type, you must configure your switches to pass the UUI provided by your T-Server. You must also ensure that the trunks involved do not drop this data.

T-Server Transaction Type Support

Table 3 shows which transaction types are supported by a specific T-Server. Use this table to determine the transaction types that are available for use with your T-Server. This applies both to the `cast-type` you specify in the configuration options for your T-Server, and to any client-designated route-type requests specified for transfers of calls. A blank table cell indicates that T-Server does not support a certain transaction type.

Table 3: T-Server Support of Transaction Types

| T-Server Type | Transaction Type | | | | | | | | | | |
|--------------------------------------|------------------|-----------------|----------|----------------------|--------------------------|------------------|------------------|---------------|-----------------------|-----------|-----------|
| | route | | re-route | direct-callid | direct-uuui / route-uuui | direct-no-token | direct-ani | direct-digits | direct-network-callid | dnis-pool | pull-back |
| | one-to-one | multiple-to-one | | | | | | | | | |
| Alcatel A4200/OXO | Yes | | | Yes | | Yes | Yes | | | | |
| Alcatel A4400/OXE | Yes | | | Yes ^{a,b,c} | Yes ^d | Yes | Yes ^a | | Yes ^e | | |
| Aspect ACD | Yes | Yes | | Yes | | Yes ^f | Yes ^f | | | | |
| Avaya Communication Manager | Yes | | | | Yes | Yes | Yes | | | | |
| Avaya INDeX | Yes | | | | | Yes | Yes | | | | |
| Avaya TSAPI | Yes | | | | Yes | Yes | Yes | | | | |
| Cisco Unified Communications Manager | Yes | | | Yes | | Yes | Yes | | | | |
| DataVoice Dharma | Yes | | | Yes | | Yes | Yes | | | | |
| Digitro AXS/20 | Yes | | | Yes | | Yes | | | | | |
| EADS Intecom M6880 | Yes | | | Yes | | Yes | Yes | | | | |
| EADS Telecom M6500 | Yes | | | Yes | | Yes | Yes | | | | |
| eOn eQueue | Yes | | | Yes | | Yes | | | | | |
| Ericsson MD110 | Yes | | | Yes ^a | | Yes | Yes ^a | | | | |
| Fujitsu F9600 | Yes | | | | | Yes | | | | | |
| Huawei C&C08 | Yes | | | Yes | | | | | | | |

Table 3: T-Server Support of Transaction Types (Continued)

| T-Server Type | Transaction Type | | | | | | | | | | |
|--|------------------|---------------------|----------|------------------|-----------------------------------|-------------------------|------------------|-------------------|-------------------------------|---------------|---------------|
| | route | | re-route | direct-callid | direct- uui / route- uui | direct- no- token | direct- ani | direct- digits | direct- network- callid | dnis- pool | pull- back |
| | one-to- one | multiple- to-one | | | | | | | | | |
| Huawei NGN | Yes | | | | | Yes | Yes | | | | |
| Mitel SX-2000/MN3 300 | Yes | | | Yes | | Yes | Yes | | | | |
| NEC NEAX/APEX | Yes | | | Yes | | Yes | Yes | | | | |
| Nortel Communication Server 2000/2100 | Yes | | | Yes ^f | | Yes ^f | Yes ^f | | | | |
| Nortel Communication Server 1000 with SCCS/MLS | Yes | | | Yes | | Yes | Yes | | Yes | | |
| Philips Sopho iS3000 | Yes | | | Yes | | Yes | Yes | | | | |
| Radvision iContact | Yes | | Yes | | | | | | | | Yes |
| Rockwell Spectrum | Yes | Yes | | Yes | | Yes ^f | Yes ^f | | | | |
| Samsung IP-PCX IAP | Yes | | | Yes | | Yes | | | | | |
| Siemens Hicom 300/HiPath 4000 CSTA I | Yes | | | Yes | Yes ^d | Yes | Yes | | | | |
| Siemens HiPath 3000 | Yes | | | Yes | | Yes | | | | | |
| Siemens HiPath 4000 CSTA III | Yes | | | | Yes ^d | Yes | Yes | | | | |

Table 3: T-Server Support of Transaction Types (Continued)

| T-Server Type | Transaction Type | | | | | | | | | | |
|---|------------------|-----------------|----------|---------------|--------------------------|-----------------|------------|---------------|-----------------------|-----------|-----------|
| | route | | re-route | direct-callid | direct-uuui / route-uuui | direct-no-token | direct-ani | direct-digits | direct-network-callid | dnis-pool | pull-back |
| | one-to-one | multiple-to-one | | | | | | | | | |
| Siemens HiPath DX | Yes | | | Yes | Yes | Yes | Yes | | | | |
| SIP Server | Yes | | Yes | | Yes ^g | Yes | | | | | Yes |
| Tadiran Coral | Yes | | | Yes | | Yes | Yes | | | | |
| Teltronics 20-20 | Yes | | | Yes | | Yes | Yes | | | | |
| Tenovis Integral 33/55 | Yes | | | Yes | | Yes | Yes | | | | |
| Network T-Servers | | | | | | | | | | | |
| AT&T | | | | | | | | | | | |
| Concert | | | | | | | | | | | |
| CRSP | | | | | | | | | | | Yes |
| DTAG | | | Yes | | | | | | | | |
| GenSpec | Yes | Yes | Yes | | | | | | | Yes | |
| IVR Server, using network configuration | Yes | Yes | Yes | | | | | | | Yes | Yes |
| KPN | | | Yes | | | | | | | | |
| ISCP | | | | | | | | | | | |
| MCI | | | | | | | | | | | |
| NGSN | Yes | | | | | | | | | | Yes |
| Network SIP Server | Yes | | | | | Yes | Yes | | | Yes | |
| Sprint | Yes | | | | | | | | | | |
| SR-3511 | | | | | | | | | | | |
| Stentor | | | | | | | | | | | |

- a. Not supported in the case of function `TRequestRouteCall` on a virtual routing point: a routing point can be simulated using a hunt group with calls being deflected or transferred from the hunt-group member when routing. When a two-step (typically mute) transfer is used on such a hunt-group member, `CallID` and `ANI` usually change; thus, the `direct-callid` and `direct-ani` types do not work.
- b. Not supported in the case of function `TSingleStepTransfer` when the T-Server service is simulated using a two-step transfer to the switch. In this case, `CallID` and `ANI` change; thus, the `direct-callid` and `direct-ani` types do not work.
- c. Not supported if two T-Servers are connected to different nodes.
- d. There are some switch-specific limitations when assigning CSTA correlator data `UUI` to a call.
- e. Supported only on ABCF trunks (Alcatel internal network).
- f. To use this transaction type, you must select the `Use Override` check box on the `Advanced` tab of the `DN Properties` dialog box.
- g. SIP Server supports the `direct-uui` type.

Transfer Connect Service Feature

The Transfer Connect Service (TCS) feature supports transfer connect services available on some telephony networks. When this feature is enabled, ISCC passes user data to remote locations to which calls are transferred or conferenced using transfer connect services.

Procedure: Activating Transfer Connect Service

Start of procedure

1. Open the T-Server Application's Properties dialog box.
2. Click the Options tab.
3. Set the `tcs-use` configuration option to `always`.
4. Set the `tcs-queue` configuration option to the number of a DN on the origination switch.

ISCC uses this DN as an intermediate step when sending calls to the remote location. The DN that is configured as `tcs-queue` receives attached data indicating the Feature Access Code (FAC) needed to reach the remote site. After a call is directed to the DN with data, a monitoring application takes the data and generates the required DTMF (dual-tone multifrequency) tones to redirect the call through the network to the remote location.

5. When you are finished, click `Apply`.

6. Click OK to save your changes and exit the Properties dialog box.

End of procedure

Note: With T-Server for Avaya Communication Manager, you can use `RequestRouteCall` with `RouteTypeOverwriteDNIS` to initiate the playing of DTMF tones. This is done through the use of another intermediate DN (typically, an announcement port configured to give the silent treatment), to which the call is routed. When the call is established on this DN, T-Server requests that the digits sent in the DNIS field of the `TRequestRouteCall` be played by using the `ASAI-send-DTMF-single` procedure.

ISCC/Call Overflow Feature

The Inter Server Call Control/Call Overflow (ISCC/COF) feature of T-Server, that supports *passive external routing*, is specifically designed to handle calls delivered between sites by means other than ISCC. Such scenarios include contact center overflows and manual call transfers.

An *overflow situation* occurs when a call comes into a contact center where all agents are currently busy. In this situation, the switch can transfer (overflow) the incoming call to another site where there is an available agent.

T-Server uses two methods to handle call overflow and manual transfer scenarios. The first method is based on `NetworkCallID` matching and the second method is based on `ANI/OtherDN` matching.

When connected to each other via switch-specific networks, switches of some types can pass additional information along with transferred calls. This information may contain the `NetworkCallID` of a call, which is a networkwide unique identifier of the call.

When connected via a regular PSTN, switches of all types can send the `ANI` and/or `OtherDN` attributes to the destination switch during any call transfer operation.

While all T-Servers support the ISCC/COF feature using the `ANI` and/or `OtherDN` attributes, only a few support this feature using the `NetworkCallID`

attribute. [Table 4](#) shows the T-Server types that provide the NetworkCallID of a call.

Table 4: T-Server Support of NetworkCallID for ISCC/COF Feature

| T-Server Type | Supported NetworkCallID Attribute |
|--|-----------------------------------|
| Alcatel A4400/OXE | Yes |
| Aspect ACD | Yes |
| Avaya Communication Manager | Yes |
| Avaya TSAPI | Yes |
| Nortel Communication Server 2000/2100 | Yes |
| Nortel Communication Server 1000 with SCCS/MLS | Yes |
| Rockwell Spectrum | Yes |
| SIP Server | Yes |

The ISCC/COF feature can use any of the three attributes (NetworkCallID, ANI, or OtherDN) as criteria for matching the arriving call with an existing call at another location. Consequently, the attribute that is used determines what ConnID, UserData, CallType, and CallHistory are received for the matched call from the call's previous location.

Warning! Depending on the switch platform, it may be possible to inherit the ANI attribute after routing a call to a remote destination, and after performing a single-step transfer and other telephone actions. However, ISCC/COF works properly only in scenarios where the ANI attribute on the destination T-Server is represented by exactly the same unique digit string as on the origination T-Server. Typically, the ANI attribute represents the original call identifier (customer phone number), which guarantees that the attribute remains unique.

Note: When the ISCC/COF feature is in use, the Number Translation feature becomes active. For more information on feature configuration, see “Number Translation Feature” on [page 87](#).

ISCC/COF Call Flow

Figure 10 shows the sequence of steps that occur in an ISCC/COF scenario when a call is made or transferred by an agent at Site A to a DN at Site B, or when a call is overflowed from Site A to Site B.

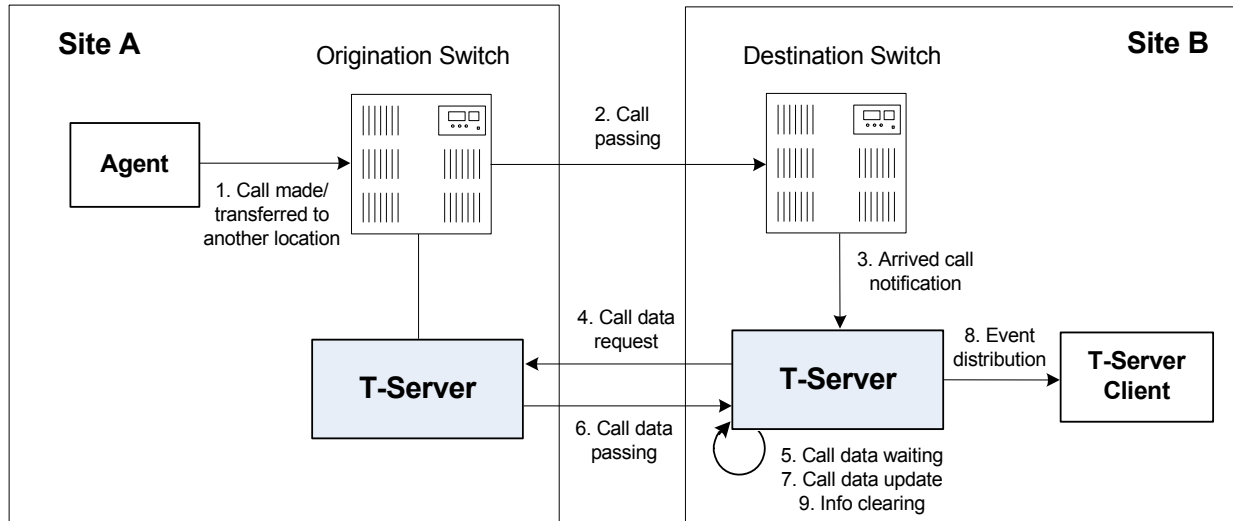


Figure 10: Steps in the ISCC/COF Process

Step 1

An agent makes or transfers a call manually to another location or a call is overflowed from Site A (origination location) to Site B (destination location).

Step 2

Switch A (the origination switch) passes the call to Switch B (the destination switch).

Step 3

The call reaches the destination switch, which notifies the destination T-Server about the arrived call.

Step 4

The destination T-Server verifies with remote locations whether the call was overflowed from any of them.

To determine which calls to check as possibly overflowed, T-Server relies on the Switch object configuration:

- If no COF DNs (that is, DNs of the Access Resources type with the Resource Type set to `cof-in` or `cof-not-in`) are configured for the destination switch, the ISCC/COF feature of the destination T-Server checks all arriving calls.

- If a number of COF DN's are configured for the destination switch, one of three scenarios occurs:
 - If the COF DN's with the `cof-in` setting for the Resource Type property are configured, the ISCC/COF checks for overflow only those calls that arrive to those `cof-in` DN's that are Enabled.
 - If no DN's with the `cof-in` setting for the Resource Type property are configured, but some DN's have the `cof-not-in` setting for the Resource Type property, the ISCC/COF checks for overflow only those calls that arrive to those `cof-not-in` DN's that are Disabled.
 - If no DN's with the `cof-in` setting for the Resource Type property are configured, some DN's have the `cof-not-in` setting for the Resource Type property, and some other DN's do not have any setting for the Resource Type property, the ISCC/COF checks for overflow only those calls that arrive to the DN's without any setting for the Resource Type property.
- In all other cases, no calls are checked for overflow.

To determine which location the call arrived from, T-Server checks the call type and checks whether the call has the `NetworkCallID`, `ANI`, or `OtherDN` attribute:

- If the call is not an inbound call, the request for call data is sent to all remote locations *except* those whose Switch Access Code has the ISCC Call Overflow Parameters property set to `inbound-only=true`.
- If the call of any type has the `NetworkCallID` attribute, the destination T-Server sends a request for call data to the remote locations of the same switch type as the destination location if their Switch Access Codes have the ISCC Call Overflow Parameters property set to `match-callid`.
- If the call of any type has the `ANI` or `OtherDN` attribute, the request for call data is sent to remote locations whose Switch Access Code has the ISCC Call Overflow Parameters property set to `match-ani`.

Step 5

The destination T-Server waits (suspending events related to that call) for the call data from the remote T-Server for the time interval specified in the `cof-ci-req-tout` configuration option. Within this interval, T-Server holds any events related to the call. In addition, the `cof-ci-defer-delete` option on the origination T-Server establishes the time interval only after which that T-Server deletes the call information. And the `cof-ci-wait-all`, if set to `true`, forces the origination T-Server to wait for responses related to possible call overflow situations before updating call data.

Step 6

The T-Server at the location from which the call was transferred or overflowed sends call data to the requesting T-Server.

Step 7

If a positive response to the call-data request is received, T-Server updates ConnID, UserData, CallType, and CallHistory, distributes all suspended events related to that call, and deletes all information regarding the transaction (Step 9).

Step 8

If the timeout set by `cof-ci-req-tout` expires, T-Server distributes all suspended events, and starts the timeout specified by the `cof-rci-tout` option. If a positive response is received within the timeout set by `cof-rci-tout`, T-Server updates the ConnID, UserData, CallType, and CallHistory, and notifies client applications by distributing EventPartyChanged.

Step 9

T-Server deletes all information regarding the transaction when one of these results occurs:

- The first positive response to the call-data request is received.
- Negative responses from all queried locations are received.
- The timeout specified by the `cof-rci-tout` option expires.

Number Translation Feature

The Number Translation feature of T-Server extends the ISCC/COF and `direct-ani` transaction type functions to provide more flexibility for handling calls distributed across multiple sites. T-Server translates the input string (ANI string) into a number defined by the translation rules. This processing is called number translation. T-Servers participating in handling calls at multiple sites exchange the translated numbers in order to match the call instances.

The translation process involves two algorithms, one for rule selection and the other for the actual translation. Through the first algorithm, T-Server selects a rule that will be used for number translation. Through the second algorithm, T-Server translates the number according to the selected rule definition. See “Number Translation Rules” on [page 88](#) for more information on configuring rules for your environment.

Number translation occurs as follows:

1. The switch reports a number, typically via `AttributeANI`.
2. T-Server evaluates all configured inbound rules to determine which one is the best fit for the received number. The best fit is determined by comparing the length of, and the specific digits in, the input number with the inbound pattern of each configured rule. See “Rule Examples” on [page 93](#) for specific examples.

3. T-Server translates the number according to the selected rule.

To enable T-Server to translate numbers, you must perform specific configuration tasks that are associated with translation. See “Configuring Number Translation” on [page 95](#).

Number Translation Rules

T-Server uses the number translation rules that you define in the T-Server configuration object in two ways:

- Rule selection—To determine which rule should be used for number translation
- Number translation—To transform the number according to the selected rule

Using ABNF for Rules

The number translation rules must conform to the following syntax, represented using Augmented Backus-Naur Form (ABNF) notation. For more information about ABNF, see RFC 2234, “Augmented BNF for Syntax Specifications: ABNF.”

Note: The following notation explanations begin with the highest level notation. Each explanation includes the name of a component notation and a basic definition of each component that it contains. Some components require more detailed definitions, which are included later in this section.

Common Syntax Notations

Syntax notations common to many of these rules include:

- *—Indicates that 0 to an infinite number of the item following this symbol are acceptable.
- 1*—Indicates that one repetition is required. For T-Server, only one instance is acceptable.
- /—Indicates that any of the items mentioned, or a combination of those items, is acceptable.

Component Notations

Component notations include:

- dialing-plan = *dialing-plan-rule
where:

- `dialing-plan-rule` represents the name of the rule. Each rule must have a unique name. There are no other naming restrictions, and you do not need to model your names according to the examples in this chapter.

The rules are represented as separate options in the configuration. Also, fields from a rule are represented as parameters in a single option string.

- `rule = [name] in-pattern [out-pattern]`

where:

- `[name]` is the name for the rule option, for example, `rule-01`. In ABNF notation, the brackets `[]` indicate that 0 or 1 instance of the component is required. However, for T-Server, a name is required.
- `in-pattern` is the part of the rule to which T-Server looks when attempting to match the input number.
- `[out-pattern]` is the part of the rule that instructs T-Server on how to translate the input number into the required format. The brackets indicate that either 0 or 1 instance is required. You must create an `out-pattern` for number translation rules.

- `name = *(ALPHA / DIGIT / "-")`

where:

- `ALPHA` indicates that letters can be used in the name for the rule option.
- `DIGIT` indicates that numbers can be used in the name for the rule option.
- `"-"` indicates that a dash (-) can also be used in the option name, for example, `rule-01`.

- `in-pattern = 1*(digit-part / abstract-group)`

where:

- `digit-part` represents numbers. T-Server uses this when selecting the most appropriate rule from the entire dialing plan.
- `abstract-group` represents one or more letters with each letter representing one or more numbers. T-Server uses this when transforming a dial string.

For example, `[1-9]` is the `digit-part` (representing a range of numbers) and `ABBB` is the `abstract-group` for `in-pattern=[1-9]ABBB`.

- `out-pattern = 1*(symbol-part / group-identifier) *param-part`

where:

- `symbol-part` represents digits, symbols, or a combination. Symbols are rarely used. They are not used in the United States.
- `group-identifier` are letters that represent groups of numbers. A letter in the `out-pattern` represents one or more digits, based on the number of times the letter is used in the `in-pattern`.

- `*param-part` represents an additional parameter, such as `phone-context`. Reminder: an asterisk means that 0 to an infinite number of these are acceptable.

For example, in rule-04; `in-pattern=1AAABBBCCC`; `out-pattern=91ABC`, 91 is the `symbol-part`; A, B, and C are `group-identifiers` in the `out-pattern`, each representing three digits, since there are three instances of each in the `in-pattern`.

Note: Prefix an `out-pattern` value with a plus sign (+) for the inbound rule when the output must be in a global form (E.164 format).

- `digit-part = digits / range / sequence`

where:

- `digits` are numbers 0 through 9.
- `range` is a series of digits, for example, 1-3.
- `sequence` is a set of digits.

- `symbol-part = digits / symbols`

where:

- `digits` are numbers 0 through 9.
- `symbols` include such characters as +, -, and so on.

- `range = "[" digits "-" digits "]" group-identifier`

where:

- `"[" digits "-" digits "]"` represents the numeric range, for example, [1-2].
- `group-identifier` represents the group to which the number range is applied.

For example, [1-2] applies to group identifier A for `in-pattern=[1-2]ABBB`. When T-Server evaluates the rule to determine if it matches the number, it examines whether the first digit of the number, identified as `group-identifier A`, is 1 or 2.

- `sequence = "[" 1*(digits [" , "]) "]" group-identifier`

where:

- `"[" 1*(digits [" , "]) "]"` represents a sequence of digits, separated by commas, and bracketed. T-Server requires that each digit set have the same number of digits. For example, in [415, 650] the sets have three digits.
- `group-identifier` represents the group to which the number sequence is applied.

For example, in `in-pattern=1[415, 650]A*B`, [415, 650] applies to `group-identifier A`. When T-Server evaluates the rule to determine if it matches the number, it examines whether the three digits (`group-identifier A`) following the 1 in the number are 415 or 650.

- `abstract-group = fixed-length-group / flexible-length-group / entity`
where:

- `fixed-length-group` specifies a group composed of a specific number of digits and determined by how many times the group identifier is included in the `in-pattern`. For example, for `in-pattern=1AAABBBCCCC`, there are three digits in group A and B but four in group C.

When you create an `out-pattern`, you include the group identifier only once because the `in-pattern` tells T-Server how many digits belong in that group. For example, `rule-04` (see [page 93](#)) is
`in-pattern=1AAABBBCCCC; out-pattern=91ABC.`

- `flexible-length-group` specifies a group composed of 0 or more digits in the group represented by the `group-identifier`. For example, in `in-pattern=1[415,650]A*B`, `*B` represents the flexible length group containing the remaining digits in the number.
- `entity` represents digits defined for a specific purpose, for example, country code.

The component `abstract-group` is used only for the `in-pattern`.

- `fixed-length-group = 1*group-identifier`
See the earlier explanation under `abstract-group`.
- `flexible-length-group = "*" group-identifier`
See the earlier explanation under `abstract-group`.
- `entity = "#" entity-identifier group-identifier`

where:

- `"#"` indicates the start of a Country Code `entity-identifier`.
- `entity-identifier` must be the letter C which represents Country Code when preceded by a pound symbol (#). Any other letter following the # causes an error.
- `group-identifier` represents the Country Code group when preceded by #C.

The `entity` component is a special group that assumes some kind of predefined processing, such as the Country Code detection.

- `param-part = ";" param-name "=" param-value`

where:

- `";"` is a required separator element.
- `param-name` is the name of the parameter.
- `"="` is the next required element.
- `param-value` represents the value for `param-name`.
- `param-name = "ext" / "phone-context" / "dn"`

where:

- `"ext"` refers to extension.

- "phone-context" represents the value of the phone-context option configured on the switch.
- "dn" represents the directory number.
- param-value = 1*ANYSYMBOL
 - where:
 - ANYSYMBOL represents any number, letter, or symbol with no restrictions.
- group-identifier = ALPHA
- entity-identifier = ALPHA
- digits = 1*DIGIT
- symbols = 1*("-" / "+" / ")" / "(" / "." / ",")

Recommendations for Rule Configuration

The configuration of rules for inbound numbers usually depends on the settings in the corresponding PBX. These settings often define the form in which the PBX notifies its client applications about the number from which an inbound call is coming.

As a general guideline, configure rules that define how to process calls from:

- Internal numbers.
- External numbers within the same local dialing area.
- External numbers within the same country.
- International numbers.

Rules for inbound numbers, typically for North American locations, might look like this:

1. Two rules to transform internal numbers (extensions):


```
name=rule-01; in-pattern=[1-9]ABBB; out-pattern=AB
name=rule-02; in-pattern=[1-9]ABBBB; out-pattern=AB
```
2. A rule to transform local area code numbers (in 333-1234 format in this example):


```
name=rule-03; in-pattern=[1-9]ABBBBBB; out-pattern=+1222AB
```
3. A rule to transform U.S. numbers (in +1(222)333-4444 format):


```
name=rule-04; in-pattern=1AAAAAAAAA; out-pattern=+1A
```
4. A rule to transform U.S. numbers without the +1 prefix (in (222)333-4444 format):


```
name=rule-05; in-pattern=[2-9]ABBBBBBBB; out-pattern=+1AB
```
5. A rule to transform U.S. numbers with an outside prefix (in 9+1(222)333-4444 format):


```
name=rule-06; in-pattern=91AAAAAAAAA; out-pattern=+1A
```

6. A rule to transform international numbers with an IDD (international dialing digits) prefix (in 011 +44 (111) 222-3333 format):
name=rule-07; in-pattern=011*A; out-pattern=+A
7. A rule to transform international numbers without an IDD prefix (in +44 (111) 222-3333 format):
name=rule-08; in-pattern=[2-9]A*B; out-pattern=+AB

Rule Examples

This section provides examples of six rules that are configured as options in the Genesys Configuration Database. It also provides examples of how T-Server applies rules to various input numbers.

Rules

- rule-01** in-pattern=[1-8]ABBB; out-pattern=AB
- rule-02** in-pattern=AAAA; out-pattern=A
- rule-03** in-pattern=1[415, 650]A*B; out-pattern=B
- rule-04** in-pattern=1AAABBBCCCC; out-pattern=91ABC
- rule-05** in-pattern=*A913BBBB; out-pattern=80407913B
- rule-06** in-pattern=011#CA*B; out-pattern=9011AB

Examples

Here are examples of how T-Server applies configured above rules to various input numbers.

Example 1 T-Server receives input number 2326.

As a result of the rule selection process, T-Server determines that the matching rule is rule-01:

```
name=rule-01; in-pattern=[1-8]ABBB; out-pattern=AB
```

The matching count for this rule is 1, because Group A matches the digit 2.

As a result of the parsing process, T-Server detects two groups: Group A = 2 and Group B = 326.

T-Server formats the output string as 2326.

Example 2 T-Server receives input number 9122.

As a result of the rule selection process, T-Server determines that the matching rule is rule-02:

```
name=rule-02; in-pattern=AAAA; out-pattern=A
```

The matching count for this rule is 0; however, the overall length of the input number matches that of the in-pattern configuration.

As a result of the parsing process, T-Server detects one group: Group A = 9122.

T-Server formats the output string as 9122.

Example 3 T-Server receives input number 1650322332.

As a result of the rule selection process, T-Server determines that the matching rule is rule-03:

```
name=rule-03; in-pattern=1[415, 650]A*B; out-pattern=B
```

The matching count for this rule is 4, because the first digit matches and all three digits in Group A match.

As a result of the parsing process, T-Server detects two groups: Group A = 650 and Group B = 322332.

T-Server formats the output string as 322332.

Example 4 T-Server receives input number 19253227676.

As a result of the rule selection process, T-Server determines that the matching rule is rule-04:

```
name=rule-04; in-pattern=1AAABBBCCCC; out-pattern=91ABC
```

The matching count for this rule is 1, because the first digit matches.

As a result of parsing process, T-Server detects three groups: Group A = 925, Group B = 322, and Group C = 7676.

T-Server formats the output string as 919253227676.

Example 5 T-Server receives input number 4089137676.

As a result of rule selection process, T-Server determines that the matching rule is rule-05:

```
name=rule-05; in-pattern=*A913BBBB; out-pattern=80407913B
```

The matching count for this rule is 3, because three digits match.

As a result of the parsing process, T-Server detects two groups: Group A = 408 and Group B = 7676.

T-Server formats the output string as 804079137676.

Example 6 T-Server receives input number 01144112223333.

As a result of the rule selection process, T-Server determines that the matching rule is rule-06:

```
name=rule-06; in-pattern=011#CA*B; out-pattern=9011AB
```

The matching count for this rule is 3, because three digits match.

As a result of the parsing process, T-Server detects two groups: Group A = 44 and Group B = 112223333.

T-Server formats the output string as 901144112223333.

Procedure: Configuring Number Translation

Purpose: To configure the Number Translation feature in T-Server to provide more flexibility for handling calls distributed across multiple sites.

Overview

- The Number Translation feature becomes active when the ISCC/COF feature and/or the `direct-ani` transaction type are used.
- This configuration procedure must be completed within the T-Server Application object corresponding to your T-Server.

Start of procedure

1. Open the T-Server Application's Properties dialog box.
2. Click the Options tab.
3. Create a new section called `extrouter` or open an existing section with this name.
4. Create a new option called `inbound-translator-<n>`. This option points to another section that describes the translation rules for inbound numbers.
5. In this section, create one configuration option for each rule. Specify the rule name as the option name. The values of these options are the rules for the number translation.

For the option description and its valid values, see Chapter 9, “T-Server Common Configuration Options,” on [page 227](#).

6. When you are finished, click Apply.
7. Click OK to save your changes and exit the Properties dialog box.

End of procedure

Network Attended Transfer/Conference Feature

The Network Attended Transfer/Conference (NAT/C) feature is designed to enable agents working in multi-site contact centers to consult with each other before making call transfers or conferences, regardless of whether both agents work at the same or different sites. It also enables the agent who requests a consultation to maintain his or her conversation with the customer while the system is looking for an available agent and setting up the consultation call.

The NAT/C feature does not rely on the call transfer capabilities of the local switch.

There are two modes in which the network attended transfer/conference can be performed: *direct* and *URS-controlled*. Figure 11 shows the sequence of steps that occur in *URS-controlled* mode, when Agent A, who is handling a customer call, requests a consultation with another agent, and URS (Universal Routing Server) selects Agent B, who is working at another site. The *direct* mode is similar to the *URS-controlled* mode, with the difference that URS is not involved in the process (Step 2 and Step 3 are omitted).

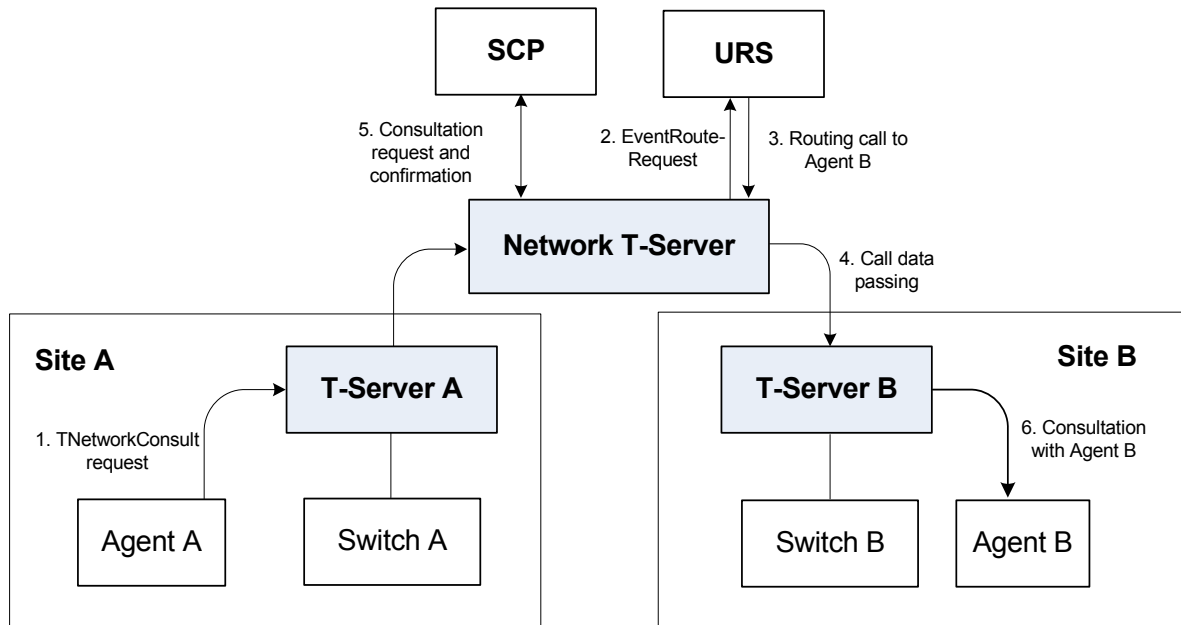


Figure 11: Steps in the NAT/C Process in URS-Controlled Mode

Step 1

Agent A makes a request for a consultation with another agent. A `TNetworkConsult` request is relayed to the Network T-Server. Depending on the parameter settings of the `TNetworkConsult` request, the NAT/C feature will operate in either *direct* or *URS-controlled* mode. For more information, see the *Voice Platform SDK 8.0 .NET (or Java) API Reference*.

Step 2

(*URS-controlled* mode only.) The Network T-Server sends `EventRouteRequest` to URS.

Step 3

(*URS-controlled* mode only.) URS locates an available agent at Site B and instructs the Network T-Server to route the call to Agent B. The Network

T-Server confirms the initiation of the network transfer by sending `EventNetworkCallStatus` to T-Server A, which then relays it to Agent A.

Step 4

The Network T-Server proceeds to obtain the access number from T-Server B, and passes the call data to T-Server B. (See “ISCC Call Data Transfer Service” on [page 63](#) for details.)

Step 5

The Network T-Server instructs the Service Control Point (SCP) to initiate a new voice path with Agent B. Once the connection is confirmed, the Network T-Server distributes `EventNetworkCallStatus` to both T-Server A and T-Server B, which then relay it to Agent A and Agent B respectively, to indicate that the consultation call is being established.

The Network T-Server also distributes `EventRouteUsed` to URS to confirm successful routing of the call to the selected agent.

Step 6

At this point, the customer is on hold, and Agent A is consulting with Agent B. Agent A can do one of the following:

- End the consultation and retrieve the original customer call
- Alternate between Agent B and the customer
- Set up a conference call with Agent B and the customer
- Transfer the customer call to Agent B

Note: All T-Servers support NAT/C requests with `AttributeHomeLocation` provided that this attribute identifies a network location that is capable of processing such requests. Refer to the *Network T-Server Deployment Guides* to determine whether a specific Network T-Server can process these requests.

Event Propagation Feature

The Event Propagation feature complements the ISCC and ISCC/COF features by distributing updated user data and party-related events to remote T-Servers. This feature is used when a call is being made, transferred, or conferenced to another location, and when, as a result, one or more instances of the call reside at one location while other call instances reside at another location. In this scenario, when a client at one location makes changes to user data, updated user data is passed (*propagated*) to T-Servers at other locations.

The Event Propagation feature consists of User Data update propagation and Party Events propagation.

User Data Propagation

User data propagation takes place when a client at one location makes changes to user data associated with a call that was made, transferred, conferenced, or routed to other locations. The remote clients involved with the call are notified about the changes with `EventAttachedDataChanged`.

When T-Server receives a local update to user data (that is, when a client of this T-Server has changed the call's user data), T-Server determines if parties at remote locations are involved with the call and, if so, sends (propagates) the updated user data to the T-Servers at remote locations.

When T-Server receives a remote update to user data (that is, when a client of a remote T-Server has changed the call's user data and the remote T-Server has used the Event Propagation feature to send the updated user data), T-Server:

1. Updates the user data of the corresponding local call.
2. Determines if parties at other remote locations are involved with the call and, if so, propagates the updated user data to T-Servers at other remote locations.

The locations to which user data is propagated are selected based on a call distribution topology. That is, the updated user data is passed directly to the location to which a call was sent and to the location from which the call was received, excluding the location from which the update was received.

For example, consider a call made from location A to location B, and then conferenced from location B to location C. The three instances of the call reside at different locations: the first instance is at location A, the second instance is at location B, and the third instance is at location C. The Event Propagation feature is employed in the following scenarios:

- When T-Server at location A receives a local update to user data, it notifies T-Server at location B (to which it sent the call) about changes to the call's user data. Thus, T-Server at location B receives a remote update to user data and, in turn, notifies T-Server at location C (to which it sent the call) about these changes.

Although T-Server at location C receives a remote update to user data, it does not pass the notification to any other T-Servers, because it did not send the call to any other locations. As mentioned earlier, T-Servers at locations B and C update the user data of the corresponding local calls and notify their clients about the changes with `EventAttachedDataChanged`.

- When T-Server at location B receives a local update to user data, it notifies T-Server at location C (to which it sent the call) and T-Server at location A (from which it received the call) about changes to the call's user data. Thus, T-Servers at locations C and A receive a remote update to user data.

Because T-Server at location C did not send the call to any other locations, and T-Server at location A originated the call, neither of these T-Servers passes the notification to any other T-Servers. T-Servers at locations C and A update the user data of the corresponding local calls and notify their clients about the changes with `EventAttachedDataChanged`.

- When T-Server at location C receives a local update to user data, it notifies T-Server at location B (from which it received the call) about changes to the call's user data. Thus, T-Server at location B receives a remote update to user data and, in turn, notifies T-Server at location A (from which it received the call) about these changes.

Although T-Server at location A receives a remote update to user data, it does not pass the notification to any other T-Servers, because it originated the call. T-Servers at locations B and A update the user data of the corresponding local calls and notify their clients about the changes with `EventAttachedDataChanged`.

When a call is distributed between location A and location C using location B, and is then deleted on location B, propagation between locations A and C still occurs through the transit node at location B.

Party Events Propagation

Party events propagation takes place when a transfer or a conference is completed for a call that was made to or from one or more remote locations, or when a conference party is removed from the conference.

In these cases, the Event Propagation feature distributes party events, such as `EventPartyChanged`, `EventPartyAdded`, and `EventPartyDeleted`, to remote locations involved with the call, according to appropriate call model scenarios.

For example, consider a call made from DN 1 to DN 2 on location A. A `TInitiateConference` request is then issued for DN 2 to transfer the call to external DN 3 on location B. That transfer is made by means of ISCC routing. When this conference is completed on location A, the Event Propagation feature sends `EventPartyChanged` to location B and distributes this event to involved client applications that are connected to location B and registered for DN 3. After that, if a party of the conference is removed from the conference (for example, a party on DN 2), the Event Propagation feature sends `EventPartyDeleted` to location B and distributes this event to client applications registered for DN 3.

If a call involved in the propagation has no local parties but has two or more remote parties, the party events propagation is processed in the same manner as the propagation of user data updates.

For a complete event flow in such scenarios, refer to the *Genesys 7 Events and Models Reference Manual*.

Switch Partitioning

A multi-site environment with switch partitioning or intelligent trunks can be defined as a configuration of multiple virtual switches (or Switch objects) that are defined in Configuration Manager under a single Switching Office object representing a physical switch. Each Switch object has its own instance of a T-Server application. All T-Server applications connect to the switch via the same or different CTI link or a gateway. (See [Figure 12](#).)

When the Event Propagation feature is active, updated user data and party-related events—`EventPartyChanged`, `EventPartyDeleted`, and `EventPartyAdded`—are propagated to T-Servers that are involved in call transactions, such as transfer or conference. However, with switch partitioning, the call instances may reside at one partition or at different partitions.

Site A

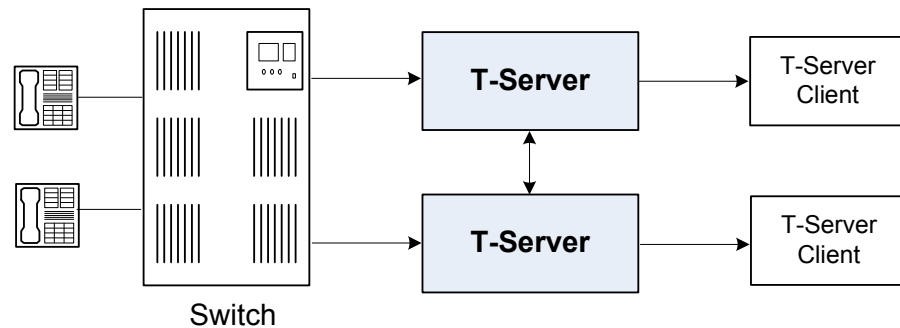


Figure 12: Switch Partitioning Architecture

Starting with version 8.0, in addition to `ConnIDs` and `UserData`, T-Server can now synchronize the `CallType` attribute. Each T-Server is required to register all DNs it monitors. In a multi-partitioned environment, when configured, calls between partitions are reported as internal (`CallTypeInternal`). In a non-partitioned environment, such calls are reported as inbound (`CallTypeInbound`) and/or outbound (`CallTypeOutbound`), depending on the direction of a call. In order for T-Servers to report calls between specified partitions as internal, registered DNs of these partitions must be assigned to a Switch (T-Server), Switching Office, or Tenant, using the [dn-scope](#) configuration option. If DNs that are involved in calls are not in the T-Server scope, those DNs will be reported as inbound or outbound.

In addition, T-Server supports `LocalCallType` and `PropagatedCallType` attributes, which depend on the [propagated-call-type](#) configuration option setting for reporting. See the option description on [page 232](#).

To control race conditions that may occur in the switch-partitioned environment, use the `epp-tout` configuration option (see [page 246](#)).

Notes: Because of possible delays in TCP/IP connections, a sequence of events sent for the same call by two or more T-Servers to clients may appear in an unexpected order. For example, in a simple call scenario with two partitions, `EventRinging` and `EventEstablished` messages may both arrive before `EventDialing`.

Genesys switch partitioning does not apply to hardware partitioning functionality that is supported on some switches.

[Table 5](#) shows the T-Server types that support switch partitioning.

Table 5: T-Server Support for Switch Partitioning

| T-Server Type | Supported |
|--------------------------------------|-----------|
| Alcatel A4400/OXE | Yes |
| Cisco Unified Communications Manager | Yes |

Event Propagation Configuration

The basic Event Propagation feature configuration includes a setting of specific configuration options at a T-Server Application level. The advanced feature configuration allows you to customize the feature at a Switch level.

When determining whether to notify other T-Servers of changes to user data, or to distribute party events, T-Server checks:

1. Call topology (what location a call came from and to what location the call was then transferred or conferenced).
2. Outbound parameters of the Switch this T-Server relates to (whether propagation parameters are configured for the access codes this switch uses to reach the switch at the location a call came from and the switch at the location to which the call was then transferred or conferenced).

Warning! The direction of user-data or party-events propagation does not necessarily match the direction of call distribution. Therefore, the access code used to deliver the call can differ from the access code used for the purpose of Event Propagation.

If one of the T-Servers along the call distribution path has the Event Propagation feature disabled, that T-Server does not distribute events to remote locations.

Procedure:

Activating Event Propagation: basic configuration

Purpose: To activate the Event Propagation feature for User Data updates and call-party-associated events (Party Events) distribution.

Start of procedure

1. Open the T-Server Application's Properties dialog box.
2. Click the Options tab.
3. Open the extrouter section.
4. Set the [event-propagation](#) option to the list value.
This setting enables User Data propagation. If you need to enable Party Events propagation, perform Step 5.
5. Set the [use-data-from](#) option to the current value.
This setting enables Party Events propagation.
For the option description and its valid values, see Chapter 9, “T-Server Common Configuration Options,” on [page 227](#).
6. When you are finished, click Apply.
7. Click OK to save your changes and exit the Properties dialog box.

End of procedure

Next Steps

- For advanced feature configuration, do the following procedure:
[Procedure: Modifying Event Propagation: advanced configuration](#), on [page 102](#)

Procedure:

Modifying Event Propagation: advanced configuration

Purpose: To modify access codes for advanced Event Propagation configuration.

Prerequisites

- [Procedure: Activating Event Propagation: basic configuration](#), on [page 102](#)

Overview

You can set Event Propagation parameters using:

- The Default Access Code properties of the Switch that receives an ISCC-routed call (the destination switch).
- The Access Code properties of the Switch that passes an ISCC-routed call (the origination switch).

If you do not set up Event Propagation parameters for a given Access Code, T-Server uses corresponding settings configured for the Default Access Code of the destination switch.

The procedures for modifying Default Access Codes and Access Codes are very similar to each other.

Start of procedure

1. Among configured Switches, select the Switch that the configured T-Server relates to.
2. Open the Switch's Properties dialog box and click either the Default Access Codes tab or the Access Codes tab.
3. Select a configured Default Access Code or configured Access Code and click Edit.

Note: If no Default Access Code is configured, see [page 107](#) for instructions. If no Access Codes are configured, see [page 108](#) for instructions.

4. In the Switch Access Code Properties dialog box that opens, specify a value for the ISCC Protocol Parameters field as follows:
 - To enable distribution of both user data associated with the call and call-party-associated events¹, type:
propagate=yes
which is the default value.
 - To enable distribution of user data associated with the call and disable distribution of call-party-associated events, type:
propagate=udata
 - To disable distribution of user data associated with the call and enable distribution of call-party-associated events, type:
propagate=party
 - To disable distribution of both user data associated with the call and call-party-associated events, type:

-
1. The following are call-party-associated events: EventPartyChanged, EventPartyDeleted, and EventPartyAdded.

propagate=no

5. Click OK to save configuration updates and close the Switch Access Code Properties dialog box.
6. Click Apply and OK to save configuration updates and close the Switch Properties dialog box.

End of procedure

ISCC Transaction Monitoring Feature

This feature allows T-Server clients to monitor ISCC transactions that occur during the call data transfer between T-Servers in a multi-site environment.

In order to be able to monitor ISCC messaging, a T-Server client must subscribe to the ISCC Transaction Monitoring. Once a subscription request is confirmed, a client will receive updates about all multi-site operations of this T-Server.

The `TTransactionMonitoring` request is used to instruct T-Server to start, stop, or modify a client's subscription to Transaction Monitoring feature notifications by setting the `TSubscriptionOperationType` parameter to `SubscriptionStart`, `SubscriptionStop`, or `SubscriptionModify` respectively. The transaction status is reported in `EventTransactionStatus` messages to the subscribed clients.

To determine whether the Transaction Monitoring feature is supported by a specific T-Server, a T-Server client may query T-Server's capabilities. For more information about support of this feature, see *Genesys 7 Events and Models Reference Manual* and *Voice Platform SDK 8.0 .NET (or Java) API Reference*.

Configuring Multi-Site Support

Prior to configuring T-Server to support multi-site operation, you must read the "Licensing Requirements" on [page 33](#), as well as previous sections of this chapter on multi-site deployment. In particular, Table 3 on [page 79](#) shows which transaction types are supported by a specific T-Server, while Table 4 on [page 84](#) shows whether your T-Server supports the `NetworkCallID` attribute for

the ISCC/COF feature. Use this information as you follow the instructions in this chapter.

Note: Before attempting to configure a multi-site environment, Genesys recommends that you plan the changes you want to make to your existing contact centers. You should then gather the configuration information you will need (such as the name of each T-Server application, port assignments, and switch names), and use Configuration Manager to create and partially configure each T-Server object. Review multi-site option values in the “Multi-Site Support Section” on [page 237](#) and determine what these values need to be, based on your network topology.

For T-Server to support multi-site operation, you must create and configure three types of objects in the Configuration Layer:

1. Applications
2. Switches, including Access Codes
3. DNs

You must configure these objects for origination and destination locations. Multi-site support features activate automatically at T-Server startup. See “DNs” on [page 112](#) for details.

Applications

Ensure that T-Server Application objects, and their corresponding Host objects, exist and are configured for origination and destination locations.

Once you’ve done that, use Configuration Manager to add this configuration to a T-Server Application.

Procedure: Configuring T-Server Applications

Purpose: To configure T-Server Application objects for multi-site operation support.

Start of procedure

1. Open the T-Server Application's Properties dialog box.
2. Click the Connections tab and click Add to add a connection to the appropriate T-Server. The Connection Info Properties dialog box displays.
3. Use the Browse button to search for the T-Server you want to connect to, and fill in the following values:
 - Port ID

- Connection Protocol
 - Local Timeout
 - Remote Timeout
 - Trace Mode
4. Click the Options tab. Create a new section called extrouter or open an existing section with this name.

Note: If you do not create the extrouter section, T-Server uses the default values of the corresponding configuration options.

5. Open the extrouter section. Configure the options used for multi-site support.

Note: For a list of options and valid values, see “Multi-Site Support Section” on [page 237](#), in the “T-Server Common Configuration Options” chapter in Part Two of this document.

6. When you are finished, click Apply.
7. Repeat this procedure for all T-Servers for origination and destination locations that are used for multi-site operations.

End of procedure

Next Steps

- See “[Switches and Access Codes.](#)”

Switches and Access Codes

Ensure that Switching Office and Switch objects are configured for both origination and destination locations.

You configure Access Codes to a destination switch in the origination Switch's Properties dialog box. The only exception is the Default Access Code, which is configured at the destination Switch's Properties dialog box.

You can configure two types of switch Access Codes in the Switch's Properties dialog box:

- A Default Access Code (for inbound calls)—Specifies the access code that other switches can use to access this switch when they originate a multi-site transaction.
- An Access Code (for outbound calls)—Specifies the access code that this switch can use when it originates a multi-site transaction to access another switch.

When the origination T-Server processes a multi-site transaction, it looks for an access code to the destination switch. First, T-Server checks the Access Code of the origination Switch:

- If an access code to the destination switch is configured with the target type Target ISCC and with any transaction type except Forbidden, T-Server uses this access code to dial the destination switch.
- If the access code to the destination switch is not configured on the Access Code tab of the origination switch, the origination T-Server checks the Default Access Code tab of the destination switch. If an access code is configured there with the target type Target ISCC and with any transaction type except Forbidden, T-Server uses this access code to dial the destination switch.
- If no access code with the required properties is found, T-Server rejects the transaction.

Note: When migrating from previous releases of T-Servers to 8.0, or when using T-Servers of different releases (including 8.0) in the same environment, see “Compatibility Notes” on [page 111](#).

Procedure: Configuring Default Access Codes

Purpose: To configure the Default Access Codes (one per Switch object) to be used by other switches to access this switch when they originate a multi-site transaction.

Prerequisites

- Ensure that Switching Office and Switch objects are configured for both origination and destination locations.

Start of procedure

1. Among configured Switches, select the Switch that the configured T-Server relates to.
2. Open the Switch Properties dialog box and click the Default Access Codes tab.
3. Click Add to open the Access Code Properties dialog box.

4. In the `Code` field, specify the access code used by remote switches to reach a DN at this switch. An access code is used as a prefix to the remote switch numbers.

Note: If no prefix is needed to dial to the configured switch, you can leave the `Code` field blank.

5. In the `Target Type` field, select `Target ISCC`.
6. In the `Route Type` field, select a value corresponding to the transaction type you want to use (given that it is supported for your switch type).
7. When you are finished, click `Apply`.

End of procedure

Next Steps

- See [“Configuring Access Codes.”](#)

Procedure: Configuring Access Codes

Purpose: To configure the Access Codes (one or more per Switch object) that this switch can use when it originates a multi-site transaction to access another switch.

Prerequisites

- Ensure that `Switching Office` and `Switch` objects are configured for both origination and destination locations.

Start of procedure

1. Among configured Switches, select the Switch that the configured T-Server relates to.
2. Open the `Switch Properties` dialog box and click the `Access Codes` tab.
3. Click `Add` to open the `Access Code Properties` dialog box.
4. In the `Switch` field, specify the switch that this switch can reach using this access code. Use the `Browse` button to locate the remote switch.

5. In the Code field, specify the access code used to reach a DN at the remote switch from this switch. An access code is used as a prefix to the remote switch numbers.

Note: If no prefix is needed to dial from one switch to another, you can leave the Code field blank.

6. In the Target Type field, select Target ISCC.

When you select Target ISCC as your target type, the Properties dialog box changes its lower pane to the Sources pane. It is here that you enter the extended parameters for your access codes, by specifying the ISCC Protocol and ISCC Call Overflow Parameters.

To set these parameters, locate the two drop-down boxes that appear below the Target Type field in the Sources pane of that Properties dialog box.

- a. In the ISCC Protocol Parameters drop-down box, enter the appropriate ISCC Protocol parameter, as a comma-separated list of one or more of the following items shown in [Table 6](#):

Table 6: Target Type: ISCC Protocol Parameters

| ISCC Protocol Parameters | Description |
|-----------------------------------|---|
| dnis-tail=<number-of-digits> | Where number-of-digits is the number of significant DNIS digits (last digits) used for call matching. 0 (zero) matches all digits. |
| propagate=<yes, udata, party, no> | Default is yes. For more information, see “Modifying Event Propagation: advanced configuration” on page 102 . |
| direct-network-callid=<> | For configuration information, see Part Two of this document. (Use Table 4 on page 84 to determine if your T-Server supports the direct-network-callid transaction type.) |

- b. In the ISCC Call Overflow Parameters drop-down box, enter call overflow parameters, as a comma-separated list of one or more of the following items shown in [Table 7](#):

Table 7: Target Type: ISCC Call Overflow Parameters

| ISCC Call Overflow Parameters | Description |
|-------------------------------|--|
| match-callid | Matches calls using network CallID. |
| match-ani | Matches calls using ANI. Note: When using match-ani, the match-flexible parameter must be set to false. |
| match-flexible | Supports flexible call matching based on the following values: Default Value: true Valid Values: true, false, and [matching-context-type], where [matching-context-type] is the switch-specific value, which must be the same as the value of the default-network-call-id-matching configuration option of the corresponding T-Server. |
| inbound-only=<boolean> | Default is true. Setting inbound-only to true disables COF on consultation and outbound calls. |

7. In the Route Type field, select a value corresponding to the transaction type you want to use (given that it is supported for your switch type). [Table 8](#) contains cross-reference information on transaction types that the Configuration Layer and T-Server use.

Table 8: Route Type and ISCC Transaction Type Cross-Reference

| Route Type Field Value | ISCC Transaction Type |
|------------------------|--|
| Default | The first value from the list of values specified in the cast-type option for the T-Server at the destination site |
| Direct | direct-callid |
| Direct ANI | direct-ani |
| Direct Digits | direct-digits |
| Direct DNIS and ANI | Reserved |

Table 8: Route Type and ISCC Transaction Type Cross-Reference (Continued)

| Route Type Field Value | ISCC Transaction Type |
|------------------------|---|
| Direct Network Call ID | direct-network-callid |
| Direct No Token | direct-notoken |
| Direct UII | direct-uuI |
| DNIS Pooling | dnis-pooling |
| Forbidden | External routing to this destination is not allowed |
| ISCC defined protocol | Reserved |
| PullBack | pullback |
| Re-Route | reroute |
| Route | route |

8. When you are finished, click Apply.

End of procedure

Next Steps

- After configuring a switch for multi-site support, proceed with the configuration of DNs assigned to this switch.

Compatibility Notes

When migrating from previous releases of T-Servers to 8.0, or when using T-Servers of different releases (including 8.0) in the same environment, keep in mind the following compatibility issues:

- The Target External Routing Point value of the Target Type field is obsolete and provided only for backward compatibility with T-Servers of releases 5.1 and 6.0. When two access codes for the same switch are configured, one with the Target ISCC target type and the other with the Target External Routing Point target type, T-Servers of releases 8.x, 7.x, 6.5, and 6.1:
 - Use the Target ISCC access code for transactions with T-Servers of releases 8.x, 7.x, 6.5, and 6.1.
 - Use the Target External Routing Point access code for transactions with T-Servers of releases 5.1 and 6.0.

When the only access code configured for a switch has the Target External Routing Point target type, T-Server uses this access code for all transactions.

- When the Target External Routing Point value of the Target Type field is configured, you must set the Route Type field to one of the following:
 - Default to enable the route transaction type
 - Label to enable the direct-ani transaction type
 - Direct to enable the direct transaction type

Note: The direct transaction type in releases 5.1 and 6.0 corresponds to the direct-callid transaction type in releases 6.1 and later.

- UseExtProtocol to enable the direct-uuu transaction type
- PostFeature to enable the reroute transaction type

These values are fully compatible with the transaction types supported in T-Server release 5.1.

- For successful multi-site operations between any two locations served by release 5.1 T-Servers, identical Route Type values must be set in the Switch's Access Code Properties dialog boxes for both the origination and destination switches.

DNs

Use the procedures from this section to configure access resources for various transaction types.

Procedure: Configuring access resources for the route transaction type

Purpose: To configure dedicated DNs required for the route transaction type.

Prerequisites

- Ensure that Switching Office and Switch objects are configured for both origination and destination locations.

Start of procedure

1. Under a configured Switch, select the DNs folder. From the main menu, select **File > New > DN** to create a new DN object.
2. On the **General** tab of the DN's **Properties** dialog box, specify the number of the configured DN as the value of the **Number** field. This value must correspond to the Routing Point number on the switch.
3. Select **External Routing Point** as the value of the **Type** field.
4. If a dialable number for that Routing Point is different from its DN name, specify the number in the **Association** field.
5. Click the **Access Numbers** tab. Click **Add** and specify these access number parameters:
 - Origination switch.
 - Access number that must be dialed to reach this DN from the origination switch.

In determining an access number for the Routing Point, T-Server composes it of the values of the following properties (in the order listed):

- a. Access number (if specified).
- b. Switch access code from the switch of the origination party to the switch to which the Routing Point belongs, concatenated with its **Association** (if the **Association** value is specified).
- c. Switch access code from the switch of the origination party to the switch to which the Routing Point belongs, concatenated with the number for the DN.
- d. Default access code of the switch to which the Routing Point belongs, concatenated with its **Association** (if the **Association** value is specified).
- e. Default access code of the switch to which the Routing Point belongs, concatenated with the number for the DN.

Note: If option `use-implicit-access-numbers` is set to true, the access number composed of switch access code and DN can be used for external transfers of calls originating at switches for which an access number is not specified.

6. When you are finished, click **Apply**.

End of procedure

Procedure: Configuring access resources for the dnis-pool transaction type

Purpose: To configure dedicated DN's required for the dnis-pool transaction type.

Start of procedure

1. Under a configured Switch, select the DN's folder. From the main menu, select **File > New > DN** to create a new DN object.
2. On the **General** tab of the DN's **Properties** dialog box, specify the number of the configured DN as the value of the **Number** field. This value must be a dialable number on the switch.
3. Select **Access Resource** as the **Type** field and type **dnis** as the value of the **Resource Type** field on the **Advanced** tab.
4. Click the **Access Numbers** tab. Click **Add** and specify these **Access Number** parameters:
 - Origination switch.
 - Access number that must be dialed to reach this DN from the origination switch.

An access number for the access resource is determined in the same manner as for the route access resource.

5. When you are finished, click **Apply**.

End of procedure

Procedure: Configuring access resources for direct-* transaction types

Overview

You can use any configured DN as an access resource for the **direct-*** transaction types. (The * symbol stands for any of the following: **callid**, **ui**, **notoken**, **ani**, or **digits**.)

You can select the **Use Override** check box on the **Advanced** tab to indicate whether the override value should be used instead of the number value to dial to the DN. You must specify this value if the DN has a different DN name and dialable number. In fact, this value is required for T-Servers for some switch types—such as Aspect ACD, Nortel Communication Server 2000/2100, and Spectrum.

Procedure: Configuring access resources for ISCC/COF

Purpose: To configure dedicated DNs required for the ISCC/COF feature.

Start of procedure

Note: Use Table 4 on [page 84](#) to determine if your T-Server supports the ISCC/COF feature.

1. Under a configured Switch, select the DNs folder. From the main menu, select File > New > DN to create a new DN object.

Note: The number of the access resource must match the name of a DN configured on the switch (usually, an ACD Queue) so that T-Server can determine whether the calls arriving to this DN are overflowed calls.

2. On the General tab of the DN Properties dialog box, specify the number of the configured DN as the value for the Number field.
3. Select Access Resource as the value for the Type field.
4. On the Advanced tab, type `cof-in` or `cof-not-in` as the value for the Resource Type field.

Note: Calls coming to DNs with the `cof-not-in` value for the Resource Type are never considered to be overflowed.

5. When you are finished, click Apply.

End of procedure

Procedure: Configuring access resources for non-unique ANI

Purpose: To configure dedicated DNs required for the non-unique-ani resource type.

The non-unique-ani resource type is used to block direct-ani and COF/ani from relaying on ANI when it matches configured/enabled resource digits. Using non-unique-ani, T-Server checks every ANI against a list of non-unique-ani resources.

Start of procedure

1. Under a configured Switch, select the DNs folder. From the main menu, select **File > New > DN** to create a new DN object.
2. On the **General** tab of the **DN Properties** dialog box, specify the ANI digits that need to be excluded from normal processing.
3. Select **Access Resource** as the value for the **Type** field.
4. On the **Advanced** tab, specify the **Resource Type** field as **non-unique-ani**.
5. When you are finished, click **Apply**.

End of procedure

Procedure:**Modifying DNs for isolated switch partitioning**

Purpose: To modify DNs that belong to a particular partition where switch partitioning is used.

This configuration instructs T-Server to select an External Routing Point that has the same partition as the requested destination DN.

Note: When a target DN is not configured or has no configured partition name, T-Server allocates a DN of the External Routing Point type that belongs to any partition.

Start of procedure

1. Under a Switch object, select the DNs folder.
2. Open the **Properties** dialog box of a particular DN.
3. Click the **Annex** tab.
4. Create a new section named **TServer**.
5. Within that section, create a new option named **epn**. Set the option value to the partition name to which the DN belongs.
6. Repeat Steps 1–5 for all DNs, including DNs of the **External Routing Point** type, that belong to the same switch partition.
7. When you are finished, click **Apply**.

End of procedure

Configuration Examples

This section provides two configuration examples and describes how the configuration settings affect T-Server's behavior.

Multiple Transaction Types

This example demonstrates the difference in how ISCC directs a call when you specify two different transaction types (`route` and `direct-ani`).

In this example, you configure an origination and a destination switch for as described in “Switches and Access Codes” on [page 106](#).

1. Among configured Switches, select the origination Switch.
2. Open the Switch Properties dialog box and click the Default Access Codes tab.
3. Click Add to open the Access Code Properties dialog box.
4. Set the Access Code field to 9.
5. When you are finished, click Apply.
6. Among configured Switches, select the destination Switch.
7. Under the destination Switch, configure a DN as described in “Configuring access resources for the route transaction type” on [page 112](#).
8. Set the DN Number field to 5001234567.
9. Click the Advanced tab of this DN's Properties dialog box.
10. Select the Use Override check box and enter 1234567 in the Use Override field.
11. When you are finished, click Apply or Save.
12. Use a T-Server client application to register for this new DN with the destination T-Server and, therefore, with the switch.
13. Request to route a call from any DN at the origination switch to the destination DN you have just configured:
 - If you are using the `route` ISCC transaction type, the client requests that T-Server deliver a call to a destination location using the DN number 5001234567. ISCC requests that the switch dial one of the external routing points at the destination location, using the value either of the Access Number field or of the Access Code field, which is 9, concatenated with the external routing point at the destination location. The call is routed to the DN number 5001234567.
 - If you are using the `direct-ani` ISCC transaction type, the client requests that T-Server deliver a call to a destination location using the DN number 1234567, which is the Use Override value. ISCC requests

that the switch dial 91234567, which is a combination of the Switch Access Code value and the Use Override value. The destination T-Server is waiting for the call to directly arrive at DN number 5001234567.

Call Overflow Methods

This section demonstrates how to indicate which overflow methods a switch supports.

In this example, for T-Server to use ANI/OtherDN matching in call overflow and manual transfer scenarios, set the ISCC Call Overflow Parameters to:

```
match-ani, inbound-only=true
```

when configuring Switch Access Codes as described on [page 108](#).

With this setting, the switch's location is queried for call data each time the destination T-Server receives an inbound call with the ANI or OtherDN attribute.

For T-Server to use NetworkCallID matching in call overflow and manual transfer scenarios, set the ISCC Call Overflow Parameters to (for example):

```
match-callid, inbound-only=false
```

when configuring Switch Access Codes as described on [page 108](#).

With this setting, the switch's location is queried for call data each time the destination T-Server receives a call of any type (including inbound) with the NetworkCallID attribute.

Next Steps

Continue with Chapter 5, “Start and Stop T-Server Components,” on [page 119](#) to test your configuration and installation.



Chapter

5

Start and Stop T-Server Components

This chapter describes methods for stopping and starting T-Server, focusing on manual startup for T-Server and HA Proxy for all switches. It includes these sections:

- [Command-Line Parameters, page 119](#)
- [Starting and Stopping with the Management Layer, page 121](#)
- [Starting with Startup Files, page 122](#)
- [Starting Manually, page 123](#)
- [Verifying Successful Startup, page 129](#)
- [Stopping Manually, page 129](#)
- [Starting and Stopping with Windows Services Manager, page 130](#)
- [Next Steps, page 130](#)

Command-Line Parameters

You can start and stop Framework components using the Management Layer, a startup file, a manual procedure, or the Windows Services Manager.

With all these methods, command-line parameters are usually required for a server application in addition to an executable file name.

Common command-line parameters are as follows:

| | |
|-------|--|
| -host | The name of the host on which Configuration Server is running. |
| -port | The communication port that client applications must use to connect to Configuration Server. |
| -app | The exact name of an Application object as configured in the Configuration Database. |

| | |
|-------------------------------------|---|
| -l | <p>The license address. Use for the server applications that check out technical licenses. Can be either of the following:</p> <ul style="list-style-type: none"> • The full path to, and the exact name of, the license file used by an application. For example, -l /opt/mlink/license/license.dat. • The host name and port of the license server, as specified in the SERVER line of the license file, in the port@host format. For example, -l 7260@ctiserver. <p>Note: Specifying the License Manager's host and port parameter eliminates the need to store a copy of a license file on all computers running licensed applications.</p> |
| -V | <p>The version of a Framework component. Note that specifying this parameter does not start an application, but returns its version number instead. You can use either uppercase or lowercase.</p> |
| -nco X/Y | <p>The Nonstop Operation feature is activated; X exceptions occurring within Y seconds do not cause an application to exit. If the specified number of exceptions is exceeded within the specified number of seconds, the application exits or, if so configured, the Management Layer restarts the application. If the -nco parameter is not specified, the default value of 6 exceptions handled in 10 seconds applies. To disable the Nonstop Operation feature, specify -nco 0 when starting the application.</p> |
| -lmspath | <p>The full path to log messages files (the common file named common.lms and the application-specific file with the extension *.lms) that an application uses to generate log events. This parameter is used when the common and application-specific log message files are located in a directory other than the application's working directory, such as when the application's working directory differs from the directory to which the application is originally installed.</p> <p>Note that if the full path to the executable file is specified in the startup command-line (for instance, c:\gcti\multiserver.exe), the path specified for the executable file is used for locating the *.lms files, and the value of the lmspath parameter is ignored.</p> |
| - transport-port <port number> | <p><port number> is the port number that a client will use for its TCP/IP connection to Configuration Server. See the Client-Side Port Definition section in the <i>Genesys 8.0 Security Deployment Guide</i> for more information.</p> |
| - transport-address <IP address> | <p><IP address> is the IP address that a client will use for its TCP/IP connection to Configuration Server. See the Client-Side Port Definition section in the <i>Genesys 8.0 Security Deployment Guide</i> for more information.</p> |

Note: In the command-line examples in this document, angle brackets indicate variables that must be replaced with appropriate values.

Starting and Stopping with the Management Layer

Procedure: Configuring T-Server to start with the Management Layer

Start of procedure

1. Open the T-Server Application's Properties dialog box.
2. Click the Start Info tab.
3. Specify the directory where the application is installed and/or is to run as the Working Directory.
4. Specify the name of the executable file as the command-line.
5. Specify command-line parameters as the Command-Line Arguments.
The command-line parameters common to Framework server components are described on [page 119](#).
6. When you are finished, click Apply.
7. Click OK to save your changes and exit the Properties dialog box.

End of procedure

Note: Before starting an application with the Management Layer, make sure the startup parameters of the application are correctly specified in the application's Properties dialog box in Configuration Manager.

After its command-line parameters are correctly specified in the Properties dialog box, you can start and stop T-Server from Solution Control Interface (SCI), which is the graphical interface component of the Management Layer. (The starting procedure for SCI is described in the *Framework 8.0 Deployment Guide*.) *Framework 8.0 Solution Control Interface Help* provides complete instructions on starting and stopping applications.

You can also use the Management Layer to start a T-Server that has failed. To enable T-Server's autorestart functionality, select the corresponding check box in the Application's Properties dialog box.

Note that when you start (or restart) an application via the Management Layer, the application inherits environment variables from Local Control Agent (LCA), which executes the startup command. Therefore, you must also set the environment variables required by the application for the account that runs LCA.

Warning! *Stopping* an application via the Management Layer is not considered an application failure. Therefore, the Management Layer does not restart applications that it has stopped unless an appropriate alarm condition and alarm reaction are configured for these applications.

Starting with Startup Files

Startup files are files with the extension `run.sh` (on UNIX) or `startServer.bat` (on Windows), which installation scripts create and place into the applications' directories during the installations. These files are created for all Framework server applications except:

- Configuration Server (primary or backup) running on Windows.
- Backup Configuration Server running on UNIX.
- DB Server running on Windows.
- LCA running on either Windows or UNIX.

When using a startup file, verify that the startup parameters the installation script inserted in the startup file are correct. Use the following instructions for UNIX and Windows to start those application for which startup files are created. See the appropriate sections in “Starting Manually” on [page 123](#) to identify which applications should be running for a particular application to start.

Procedure: Starting T-Server on UNIX with a startup file

Start of procedure

1. Go to the directory where an application is installed.
2. Type the following command line:

```
sh run.sh
```

End of procedure

Procedure: Starting T-Server on Windows with a startup file

Start of procedure

To start T-Server on Windows with a startup file, use either of these methods:

- Go to the directory where an application is installed and double-click the `startServer.bat` icon.

Or

- From the MS-DOS window, go to the directory where the application is installed and type the following command-line:
`startServer.bat`

End of procedure

Starting Manually

When starting an application manually, you must specify the startup parameters at the command prompt, whether you are starting on UNIX or Windows. At the command prompt, command-line parameters must follow the name of the executable file. On the **Shortcut** tab of the **Program Properties** dialog box, command-line parameters must also follow the name of the executable file.

The command-line parameters common to Framework server components are described on [page 119](#).

If an **Application** object name, as configured in the Configuration Database, contains spaces (for example, **T-Server Nortel**), the **Application** name must be surrounded by quotation marks in the command-line:

```
-app "T-Server Nortel"
```

You must specify the rest of the command-line parameters as for any other application.

The following sections provide general instructions for starting HA Proxy and T-Server manually. Along with these instructions, refer to [Table 9](#), which lists T-Servers and HA Proxy executable file names for supported switches for Windows and UNIX operating systems.

Table 9: T-Server and HA Proxy Executable Names

| Switch Type | T-Server Executable File Name | | HA Proxy Executable File Name | |
|---------------------------------------|-------------------------------|-----------------------|-------------------------------|------------------|
| | UNIX | Windows | UNIX | Windows |
| Alcatel A4200/OXO | a4200_server | a4200_server.exe | Not Applicable | |
| Alcatel A4400/OXE | a4400_server | a4400_server.exe | Not Applicable | |
| Aspect ACD | aspect_server | aspect_server.exe | Not Applicable | |
| Avaya Communication Manager | avayacm_server | avayacm_server.exe | Not Applicable ^a | |
| Avaya INDeX | Not Applicable | index_server.exe | Not Applicable | |
| Avaya TSAPI | avayatsapi_server | avayatsapi_server.exe | Not Applicable | |
| Cisco Unified Communications Manager | ciscocm_server | ciscocm_server.exe | Not Applicable | |
| DataVoice Dharma | Dharma_server | Dharma_server.exe | Not Applicable | |
| Digitro AXS/20 | digitro_server | digitro_server.exe | Not Applicable | |
| EADS Intecom M6880 | intecom_server | intecom_server.exe | Not Applicable | |
| EADS Telecom M6500 | m6500_server | m6500_server.exe | Not Applicable | |
| eOn eQueue | eon_server | eon_server.exe | Not Applicable | |
| Ericsson MD110 | md110_server | md110_server.exe | Not Applicable | |
| Fujitsu F9600 | Not Applicable | F9600_server.exe | Not Applicable | |
| Huawei C&C08 | cc08_server | cc08_server.exe | Not Applicable | |
| Huawei NGN | huaweingn_server | huaweingn_server.exe | Not Applicable | |
| Mitel SX-2000/ MN 3300 | SX2000_server | SX2000_server.exe | Not Applicable | |
| NEC NEAX/APEX | neax_server | neax_server.exe | Not Applicable | |
| Nortel Communication Server 2000/2100 | ncs2000_server | ncs2000_server.exe | ha_proxy_dms | ha_proxy_dms.exe |

Table 9: T-Server and HA Proxy Executable Names (Continued)

| Switch Type | T-Server Executable File Name | | HA Proxy Executable File Name | |
|--|-------------------------------|----------------------------|-------------------------------|-----------------------------|
| | UNIX | Windows | UNIX | Windows |
| Nortel Communication Server 1000 with SCSS/MLS | succession_server | succession_server.exe | Not Applicable | |
| Philips Sopho iS3000 | iS3000_server | iS3000_server.exe | ha_proxy_iS3000 | ha_proxy_iS3000.exe |
| Radvision iContact | nts_server | nts_server.exe | Not Applicable | |
| Rockwell Spectrum | spectrum_server | spectrum_server.exe | Not Applicable | |
| Samsung IP-PCX IAP | samsung_server | samsung_server.exe | Not Applicable | |
| Siemens Hicom 300/HiPath 400 CSTA I | rolmcb4_server | rolmcb4_server.exe | Not Applicable | |
| Siemens HiPath 3000 | HiPath3000_server | HiPath3000_server.exe | Not Applicable | |
| Siemens HiPath 4000 CSTA III | HiPath4000_server | HiPath4000_server.exe | Not Applicable | |
| Siemens HiPath DX iCCL | RealitisDX-iCCL_server | RealitisDX-iCCL_server.exe | Not Applicable | |
| SIP Server | sip_server | sip_server.exe | Not Applicable | |
| Tadiran Coral | Coral_server | Coral_server.exe | Not Applicable | |
| Teltronics 20-20 | Teltronics2020_server | Teltronics2020_server.exe | ha_proxy_teltronics2020 | ha_proxy_teltronics2020.exe |
| Tenovis Integral 33/55 | Tenovis_server | Tenovis_server.exe | Not Applicable | |
| Network T-Servers | | | | |
| AT&T | nts_server | nts_server.exe | Not Applicable | |
| Concert | nts_server | nts_server.exe | Not Applicable | |
| CRSP | nts_server | nts_server.exe | Not Applicable | |
| DTAG | dtag_server | dtag_server.exe | Not Applicable | |
| GenSpec | genspec_server | genspec_server.exe | Not Applicable | |

Table 9: T-Server and HA Proxy Executable Names (Continued)

| Switch Type | T-Server Executable File Name | | HA Proxy Executable File Name | |
|---|-------------------------------|--------------------|-------------------------------|---------|
| | UNIX | Windows | UNIX | Windows |
| ISCP | nts_server | nts_server.exe | Not Applicable | |
| IVR Server, using network configuration | nts_server | nts_server.exe | Not Applicable | |
| KPN | kpn_server | kpn_server.exe | Not Applicable | |
| MCI | mci800_server | mci800_server.exe | Not Applicable | |
| NGSN | nts_server | nts_server.exe | Not Applicable | |
| Network SIP Server | tsip_server | tsip_server.exe | Not Applicable | |
| Sprint | sprint_server | sprint_server.exe | Not Applicable | |
| SR3511 | sr3511_server | sr3511_server.exe | Not Applicable | |
| Stentor | stentor_server | stentor_server.exe | Not Applicable | |

- a. For releases prior to 7.1, this T-Server has an HA Proxy available: `ha_proxy_g3tcp` (UNIX) or `ha_proxy_g3tcp.exe` (Windows).

HA Proxy

If you do not use HA Proxy in your Genesys implementation, proceed to “T-Server” on [page 127](#).

If one or more HA Proxy components are required for the T-Server connection, start HA Proxy before starting T-Server.

Before starting HA Proxy, be sure that the following components are running:

- DB Server that provides access to the Configuration Database
- Configuration Server

The command-line parameters common to Framework server components are described on [page 119](#).

Procedure: Starting HA Proxy on UNIX manually

Start of procedure

1. Go to the directory where HA Proxy is installed and type the following command-line:
`ha_proxy_<switch> -host <Configuration Server host>
 -port <Configuration Server port> -app <HA Proxy Application>`
2. Replace `ha_proxy_<switch>` with the correct HA Proxy executable name, which depends on the type of the switch used.
 Table 9 on [page 124](#) lists HA Proxy executable names for supported switches.

End of procedure

Procedure: Starting HA Proxy on Windows manually

Start of procedure

1. Start HA Proxy from either the Start menu or the MS-DOS window. If using the MS-DOS window, go to the directory where HA Proxy is installed and type the following command-line:
`ha_proxy_<switch>.exe -host <Configuration Server host> -port
 <Configuration Server port> -app <HA Proxy Application>`
2. Replace `ha_proxy_<switch>.exe` with the correct HA Proxy executable name, which depends on the type of the switch used.
 Table 9 on [page 124](#) lists HA Proxy executable names for supported switches.

End of procedure

T-Server

Before starting T-Server, be sure that the following components are running:

- DB Server that provides access to the Configuration Database
- Configuration Server
- License Manager

Note: If an HA Proxy component is required for the T-Server connection, HA Proxy must be started before T-Server.

The command-line parameters common to Framework server components are described on [page 119](#).

Procedure: Starting T-Server on UNIX manually

Start of procedure

1. Go to the directory where T-Server is installed and type the following command-line:

```
<switch>_server -host <Configuration Server host>  
-port <Configuration Server port> -app <T-Server Application>  
-l <license address> -nco [X]/[Y]
```

2. Replace <switch>_server with the correct T-Server executable name, which depends on the type of the switch used.

Table 9 on [page 124](#) lists T-Server executable names for supported switches.

End of procedure

Procedure: Starting T-Server on Windows manually

Start of procedure

1. Start T-Server from either the Start menu or the MS-DOS window. If using the MS-DOS window, go to the directory where T-Server is installed and type the following command-line:

```
<switch>_server.exe -host <Configuration Server host>  
-port <Configuration Server port> -app <T-Server Application>  
-l <license address> -nco [X]/[Y]
```

2. Replace <switch>_server.exe with the correct T-Server executable name, which depends on the type of the switch used.

Table 9 on [page 124](#) lists T-Server executable names for supported switches.

End of procedure

Verifying Successful Startup

After executing the startup command, you might want to check whether it was successful.

If you used the Management Layer to start either T-Server or HA Proxy, check whether Solution Control Interface displays `Started` or `Service Unavailable` status for the corresponding application. Refer to the “Troubleshooting” section of the *Framework 8.0 Management Layer User’s Guide* if the startup command does not result in either `Started` or `Service Unavailable` status for some period of time.

If you start your T-Server or HA Proxy with startup files or manually, and if you have configured logging to console or a log file, check the log for messages similar to the following:

- T-Server log file: `Link connected`
- HA Proxy log file: `Link connected`

Stopping Manually

The following stopping procedures apply to Genesys server applications, such as DB Server, Configuration Server, Message Server, Local Control Agent, Solution Control Server, HA Proxy, T-Server, and Stat Server.

Procedure: Stopping T-Server on UNIX manually

Start of procedure

To stop a server application from its console window on UNIX, use either of these commands:

- `Ctrl+C`
- `kill <process number>`

End of procedure

Procedure: Stopping T-Server on Windows manually

Start of procedure

To stop a server application on Windows, use either of these commands:

- To stop a server application from its console window on Windows, use the `Ctrl+C` command.
- To stop a server application on Windows, use the End Task button on the Windows Task Manager.

End of procedure

Starting and Stopping with Windows Services Manager

When starting an application installed as a Windows Service, make sure the startup parameters of the application are correctly specified in the ImagePath in the Application folder in the Registry Editor. The ImagePath must have the following value data:

```
<full path>\<executable file name> -service <Application Name as  
Service> -host <Configuration Server host>  
-port <Configuration Server port> -app <Application Name>  
-l <license address>
```

where the command-line parameters common to Framework server components are described on [page 119](#) and

`-service` The name of the Application running as a Windows Service; typically, it matches the Application name specified in the `-app` command-line parameter.

Framework components installed as Windows Services with the autostart capability are automatically started each time a computer on which they are installed is rebooted.

You can start Framework components installed as Windows Services with the manual start capability with the Start button in Services Manager .

Note: Use the Windows Services window to change the startup mode from Automatic to Manual and vice versa.

Regardless of a component's start capability, you can stop Framework components installed as Windows Services with the Stop button in Services Manager.

Next Steps

This chapter concludes Part One of this document—the set of general instructions for deploying any T-Server. Refer to subsequent chapters in this guide for detailed reference information and any special procedural instructions that pertain to your particular T-Server.



Part

2

Reference Information

Part Two of this *T-Server Deployment Guide* contains reference information specific to your T-Server. However, it also contains information on *all* T-Server options, both those specific to your T-Server and those common to all T-Servers. The information is divided among these chapters:

- Chapter 6, “HiPath 4000 Switch-Specific Configuration,” on [page 133](#), describes compatibility and configuration information specific to this T-Server, including how to set the DN properties and recommendations for the switch configuration.
- Chapter 7, “Supported Functionality in T-Server for HiPath 4000,” on [page 147](#), describes which features this T-Server supports, including T-Library functionality, use of the Extensions attribute, and error messages.
- Chapter 8, “Common Configuration Options,” on [page 207](#), describes configuration options that are common to all T-Server types, including options for multi-site configuration.
- Chapter 9, “T-Server Common Configuration Options,” on [page 227](#), describes log configuration options common to all Genesys server applications.
- Chapter 10, “Configuration Options in T-Server for Siemens HiPath 4000,” on [page 255](#), describes configuration options specific to this T-Server, including the link-related options—those which address the interface between T-Server and the switch.

New in T-Server for Siemens HiPath 4000 CSTA III

The following new features are now available in the initial 8.0 release of T-Server for HiPath 4000 CSTA III:

- **Support for call type prediction:** In release 8.0, on occasions when the CTI information is either insufficient or arrives too late for T-Server to assign a definite call type, T-Server can now use a call type prediction procedure to assign a call type on a “best possible guess” basis. See “Call Type Prediction” on [page 174](#).
- **Support for call release tracking:** In release 8.0, T-Server can now provides information about which party initiated the release of a call. This can be valuable for different applications to provide historical and real-time call reporting. This can be configured using the new configuration option “[releasing-party-report](#)”. See “Call Release Tracking” on [page 174](#).
- **Support for failed route notification:** In release 8.0, T-Server supports alarm messages for unsuccessful routing scenarios. See “Failed Route Notification” on [page 176](#).
- **Support for link bandwidth monitoring:** In release 8.0, T-Server can provide bandwidth monitoring on a CTI link and can notify the Genesys Management Layer when Configuration Layer limits are exceeded. See “Link Bandwidth Monitoring” on [page 177](#).
- **Support for enhanced request handling:** In release 8.0, T-Server introduces two major new enhancements to queue handling: request conflict resolution and a new device queue. See “Request Handling Enhancements” on [page 180](#).
- **Enhancements to emulated agent functionality:** In release 8.0, the Emulated Agent feature has a number of enhancements, including:
 - Agent logout on client unregistering from a DN.
 - Changes to legal guard processing.
 - The addition of password functionality to `agent-strict-id`.
 - Synchronization of emulated after call work (ACW) for emulated agents.See “Support for Emulated Agents” on [page 151](#).
- **Enhancements to business call processing:** In release 8.0, a new configuration option, “`agent-only-private-calls`” on [page 150](#) enables you to specify whether calls distributed from a device are considered as private or business calls.
- **Improvements to T-Server logging performance** have been implemented.

Note: Configuration option changes that apply to your T-Server are described in “Changes from 7.6 to 8.0” on [page 287](#).



Chapter

6

HiPath 4000 Switch-Specific Configuration

This chapter presents switch-specific reference information for configuring T-Server for the Siemens HiPath 4000 CSTA III switch and includes these sections:

- [Known Limitations, page 133](#)
- [Support of Switch/CTI Environments, page 136](#)
- [Setting the DN Properties, page 137.](#)
- [Switch Terminology, page 142](#)
- [Configuration Requirements for CAP 3.0 and CAP 3.0 Inside, page 143](#)
- [Support for Emulated and Supervised Routing, page 144](#)

Known Limitations

The list below describes the more static limitations in the way T-Server and the relevant switch interact. Please refer to the Release Note for this product for the most up-to-date list of known limitations and detailed scenarios in which they apply. “Integration Notes” on [page 205](#) gives useful information on integration issues between T-Server and other Genesys software and solutions.

1. If a secret DN redirects a call, the PBX does not give any indication that the DN is secret, so T-Server cannot hide the DN in events after the redirect.
2. The One Number Service (ONS) allows two phone sets to be linked together so that if either number is dialled both phone sets will ring. The numbers are set up so that one is Primary and one is a Slave.

This feature has the following CTI limitations:

- When either number is dialled, in CTI, only a Ringing is received on the Primary. It is therefore possible to answer the call only on the Primary via CTI.
 - If one device is busy and either number is dialled, then the free device does not ring. Instead an `EventDestinationBusy` is received.
 - It is not possible to set Call Forward from the Primary to the Slave and vice versa.
3. If DND and/or Forwarding are set, on startup, T-Server is unable to display the correct status for these features for VoIP telephones. This is due to switch reporting.
 4. For PBX Boss/Secretary functionality, activation of the `RNGXFER`, `REP` and `DSS` keys cannot be done via CTI. It must be done manually.
 5. T-Server does not support partitioned-switch configurations.
 6. It is not possible to transfer a conference. It is only possible to delete oneself from the conference and not any other member of the conference.
 7. When using MultiLine MultiDN configuration it is not possible to answer a call via CTI on anything other than the main line. Calls ringing on the other lines need to be answered manually. Also, if a call is established on an unmonitored line then a call is received on a monitored line, it is not possible to answer the second call via CTI. It is rejected by the PBX. It has to be answered manually.
 8. It is not possible to make a supervised route of a consult call from an emulated Routing Point to an ACD Queue.
 9. If a direct call is made to an emulated Routing Point and not routed, after a while the switch moves the call to another Hunt Group member. When this happens the switch provides a `ConnectionCleared` event, but does not tell T-Server that the call has been diverted. This means that on the emulated Routing Point, T-Server generates `EventQueued` and `EventRouteRequest`, followed by an `EventAbandoned`, and then a new `EventQueued` and `EventRouteRequest`. T-Server will retain the same `ConnID` unless `retain-call-tout` is not set. If `retain-call-tout` is not set or set too low, T-Server will generate a new `ConnID` on the new `EventQueued` and `EventRouteRequest`.
 10. When T-Server makes a single-step transfer via ISCC with option `cast-type` set to `direct-ani`, the token used by ISCC is the origination of the primary call and not the destination. This does not match the ANI and the remote connection fails.
 11. The switch reports forwarding to DNIT as forwarding to an RCG number. You cannot cancel forwarding without providing the old number. But when the number is provided in the `CancelFwd` request in the form as reported by the switch, the switch rejects the request.

12. If emulated predictive dialing is originated from an emulated Routing Point, you should set configuration option `prd-dist-call-ans-time` to 0. T-Server is not always able to handle the race condition that occurs when the option is enabled.
13. At startup, T-Server tries to snapshot configured devices so it can restore call configuration. Unfortunately, the way in which the Snapshot service is implemented in CAP v1.0 makes it impossible to distinguish the established state from originated/dialing. T-Server therefore treats dialing parties as established at startup.
14. CAP v1.0 sometimes fails to report the end of agent state wrap-up. The agent may remain in wrap-up state for CTI applications, when in fact he or she is ready to accept new calls. The agent must log off and log on again to clear this situation.
15. Chained consult calls are not supported on analog lines. Also single-step transfer of the destination of a consult call from an analog line is not supported. This affects VTO scenarios where a consult call is made to a Routing Point then routed to a VTO port.
16. Support for trunk monitoring is restricted in T-Server. It is not possible to test every trunk configuration in Genesys laboratories. Genesys specifically does not undertake to provide the level of support associated with generally available software with regard to this feature. Customers who use this feature agree to restricted support levels, which may vary at Genesys' sole discretion. Customers also agree that any problems arising out of the use of this restricted feature may require customers' cooperation to resolve and test the problem.
17. Some of the stuck-calls management functions (see "T-Server Common Configuration Options" on [page 227](#)) rely on T-Server being able to query distribution devices (queues and Routing Points). HiPath 4000 CSTA III is currently able to poll DN's only, to determine whether a call is active.
18. After a call is redirected externally, the PBX reports the call state on the external T-Server as Forwarded rather than OK. This also occurs if the call is redirected to a Routing Point and then routed externally.
19. When an outbound call is made using CPDServer, if the Voice Transfer Destination is an emulated Routing Point, the `RequestInitiateTransfer` to the emulated Routing Point fails if OCS option `call_transfer_type` has value `two_step`. The transfer succeeds if OCS option `call_transfer_type` has value `one_step`.
20. In the following scenario, the switch drops the call:
 - A Hunt Group has `CQMAX=0` and has no overflow DN configured.
 - All members of the Hunt Group are busy.
 - A call is single-step transferred to the Hunt Group.
21. The following limitations apply when dialing invalid numbers:

- **Make call to invalid**
When an invalid destination is dialed over a trunk, in some cases T-Server generates `EventDestinationBusy` with a call state of `SitInvalidNumber`. However, on some trunk types, the PBX does not provide enough messaging to generate this.
 - **Consult Call to invalid**
On a call of type `consult`, the PBX does not provide enough information to generate `EventDestinationBusy` with a call state of `SitInvalidNumber`.
 - **Route to invalid/single-step transfer/redirect**
The PBX does not always provide a failed event when one of the above requests is attempted to an invalid destination via a trunk. Consequently, the operation often times out.
22. A consultation call to a busy destination cannot be released without retrieving the primary call.
 23. In order for `TMakePredictiveCall` to work with business-call type extension, option `bsns-call-type` must be set to value `ignore` on the Annex tab of RCG devices as well as on distribution devices.

Support of Switch/CTI Environments

T-Server support of customer switch/CTI environments is dependent on several factors, including:

- Number of DNs
- Number of concurrent agents
- Number of concurrent connections
- Number of concurrent calls
- Number of calls or messages per second

Information about T-Server connection limits is provided in the [Genesys Supported Operating Environment Reference Manual](#). Connection limits are determined by the platforms on which T-Servers run—T-Server itself does not set these limits.

The remaining factors are not limited by T-Servers, but could be limited by the switch and/or CTI interface. Unless specific exceptions are documented, T-Server can meet the performance capability of the switches it supports in each of these areas. The T-Server host environment and the network environment influences should also be taken into account.

Setting the DN Properties

Table 10 on [page 137](#) shows how to set DN properties for the HiPath 4000 CSTA III switch.

Note: There are several ways to configure special devices like trunks and RCGs in Configuration Manager so that T-Server can monitor them. You should only use one such valid representation for each device; you should not configure several Configuration Manager devices that would amount to the same device ID on the switch.

Table 10: Setting the DN Properties

| Switch Device Type | DN Type | Switch-Specific Type | Association | Comments |
|--------------------|--------------|----------------------|----------------|---|
| Agent Position | ACD Position | | Not applicable | |
| Agent Groups | ACD Queue | | Not applicable | <p>Agent group devices are not monitorable or dialable. However, it is possible to monitor the number of calls queued on any particular agent group using events reported at RCG. It is also possible to follow and audit the number of agents logged in and available in any configured agent group.</p> <p>Device DN in Configuration Manager should follow the pattern g<group_number>. The group number can be provided as decimal switch notation (for example, g5), or CSTA notation (switch notation + H' 1000000', for example, g16777221). T-Server automatically adds the offset if the number is less than the offset.</p> |
| Extension | Extension | 1 | Not applicable | |

Table 10: Setting the DN Properties (Continued)

| Switch Device Type | DN Type | Switch-Specific Type | Association | Comments |
|--------------------|-----------------------|----------------------|-------------|--|
| ACD Pilot | ACD Queue | | | Not a switch device, but a number. Cannot be monitored. In order to receive events on the ACD Pilot DN, either the RCG group monitor, or the individual RCG device associated with this pilot, must be configured and enabled in Configuration Manager. Use this setup to monitor the switch ACD. |
| | Routing Point | 1 or 2 | | <p>Not a switch device, but a number. Cannot be monitored. In order to receive events on the ACD Pilot DN, either the RCG group monitor, or the individual RCG device associated with this pilot, must be configured and enabled in Configuration Manager. Use this setup for Genesys Routing.</p> <p>The switch-specific type affects when EventRouteRequest is issued. The default type 1 device issues EventRouteRequest when a Queued event is received from the switch. This allows for switch announcements before the call is routed, but requires an empty agent group and specific ART script that must queue the call on that group. A type 2 device issues EventRouteRequest as soon as the call hits the queue (upon Delivered event), which allows a simple “delay” ART script.</p> |
| RCG Group monitor | ACD Queue DN =*888 | | | A single virtual device that allows monitoring of all ACD events on the switch. If this device is configured and enabled in Configuration Manager, no individual RCG devices should be configured. |

Table 10: Setting the DN Properties (Continued)

| Switch Device Type | DN Type | Switch-Specific Type | Association | Comments |
|--------------------|----------------------------|----------------------|-------------|---|
| RCG device | ACD Queue Routing Point | 1 or 2 | | <p>A monitorable ACD device that allows events reporting and call control of ACD calls. It cannot be dialed, but must be associated to one or several of the switch dialable ACD pilot numbers instead.</p> <p>Device DN in Configuration Manager should follow the pattern <code>r<rcg_number></code>. The group number can be provided as decimal switch notation (for example, <code>r2</code>), or CSTA notation (switch notation + <code>H'2000000'</code>, for example, <code>r33554434</code>). T-Server automatically adds the offset if the number is less than the offset. These devices should not be configured or enabled if RCG group device <code>*888</code> is configured and enabled.</p> <p>If the RCG device is configured as a Routing Point or ACD Queue type 2, T-Server attempts to register as a routing server on this RCG, and use CSTA routing dialog for Genesys call routing.</p> <p>If it is configured as ACD Queue type 1, T-Server uses the <code>Deflect</code> service to route calls from any pilot numbers configured as Routing Points and associated with this RCG.</p> |

Table 10: Setting the DN Properties (Continued)

| Switch Device Type | DN Type | Switch-Specific Type | Association | Comments |
|--------------------------------------|-----------------------------------|----------------------|----------------|---|
| Analog Port VTO Port | Extension Voice Treatment Port | 8 | Not applicable | <p>Provides special support for caller hang-up scenarios for analog IVR devices as well as analog dialing devices used by CPDServer.</p> <p>Note: Always configure switch VTO ports as Voice Treatment Ports in Configuration Manager.</p> <p>Note: When Configuration Manager devices of type extension have switch-specific type 8, T-Server reports EventReleased upon release of the remote party.</p> |
| Trunk | Extension Trunk | | | <p>External trunk or trunk connecting to internal resource, like IVR.</p> <p>If configured as a Configuration Manager type extension, the trunk DN follows the pattern t<trunk_number>.</p> <p>If configured as Trunk, the t prefix is not required (although recommended, because that is not a dialable number). The trunk number can be provided as decimal switch notation (for example, t200), or CSTA notation (switch notation + H'8000000', for example, t134217928). T-Server automatically adds the offset if the number is less than the offset.</p> |
| Hunt Group used for emulated routing | Routing Point | | Not applicable | <p>Specifies a Hunt Group with virtual members that T-Server uses to emulate a Routing Point. Calls delivered to Hunt Group members are reported as delivered to the Hunt Group and can be routed using this single number.</p> |

Table 10: Setting the DN Properties (Continued)

| Switch Device Type | DN Type | Switch-Specific Type | Association | Comments |
|---------------------------------|---------------|----------------------|-------------------|---|
| Hunt Group used for CTI routing | Routing Point | 2 | Not applicable | <p>Calls landing on the Hunt Group can be diverted using CTI. This differs from Emulated Routing, which uses transfer for call distribution, and requires physical digital phone sets to be connected.)</p> <p>Device prefix <code>h</code> is used to configure the Hunt Groups in Configuration Manager. In order to monitor a Hunt Group, T-Server must monitor a device identifier, not the dialing number, because the same Hunt Group may have multiple access numbers. The hunt group must be configured as <code>h<device_number></code>. Either of the following can be used:</p> <ul style="list-style-type: none"> The device number as reported by the switch. The number that is left after subtracting 0x5000000 (83886080 decimal) from the device number. <p>The Hunt Group device number can be found out by dialing the access number and examining the <code>Delivered</code> event on the origination device.</p> |
| Digital Extension | Extension | 2 | Hunt Group number | Emulated supervised router. Calls delivered to this device are reported as delivered to the Hunt Group. Routing is performed as two-step transfer to the destination number. |
| Digital Extension | Extension | 4 | | Emulated predictive dialer. Emulated <code>MakePredictiveCall</code> service makes a call from one of these devices and transfers it to the requesting queue for further distribution as soon as the call is established. |

Switch Terminology

Table 11 compares relevant Siemens HiPath 4000 CSTA III switch terminology with Genesys terminology.

Table 11: Switch Terminology Comparison

| Genesys Term | HiPath 4000 Term |
|------------------------------------|--|
| ACD | ACD |
| ACD Position | Agent position |
| ACD Queue | Agent Group ACD Pilot RCG Group Monitor RCG device |
| Agent ID used in CTI login request | Agent ID |
| Extension | Extension Analog port VTO port Trunk Digital extension (predictive dialer) |
| Position | Position |
| Voice Treatment Port | Analog port VTO Port |
| Trunk (unmonitored) | Trunk |
| Trunk (monitored) | Trunk |
| Routing Point | ACD Pilot RCG device |
| Group DN | Not applicable |
| Predictive dialing device | Digital extension |
| Emulated Routing Point | Hunt Group (emulated routing) (CTI routing) |
| Emulated Routing Point member | Digital extension |

Table 11: Switch Terminology Comparison (Continued)

| Genesys Term | HiPath 4000 Term |
|---------------|------------------|
| Logon | Logon |
| Logoff | Logoff |
| Ready | Ready |
| NotReady | NotReady |
| AfterCallWork | After Call Work |
| ReasonCode | Not applicable |

Configuration Requirements for CAP 3.0 and CAP 3.0 Inside

This section describes the special configuration requirements for CAP 3.0 and CAP 3.0 Inside.

CAP 3.0—RCGs and Licensing

CAP 3.0 requires that all RCGs be explicitly defined in the CAP device configuration. Consequently, additional CAP licenses may be required from your vendor.

Please refer to your CAP documentation for more information about configuring RCGs in CAP.

See also RCG configuration information on [page 138](#).

CAP 3.0 Inside (CA4000)—T-Server Configuration

To enable CAP 3.0 Inside (CA4000), additional configuration is required within T-Server.

Table 12: CAP 3.0 SMR 8—T-Server Configuration

| Option | Action/Required Value |
|-----------------------------|--|
| Link-Control Section | |
| hostname | Set to the name of the configured CAP link host. |
| port | Set to the name of the configured CAP link port. |

Table 12: CAP 3.0 SMR 8—T-Server Configuration (Continued)

| Option | Action/Required Value |
|----------------|---|
| acse-enable | Set to <code>true</code> . |
| authentication | <p>Add this option in the T-Server Link-control section and set its value to that of the <code>feature-id</code> in the <code>license</code> section (indicated by the <code><license></code> tag) of the license file.</p> <p>Sample file extract:</p> <pre> <license> <feature_id>CAP-CallCenter</feature_id> <mode>STAND_ALONE</mode> <quantity>4</quantity> <validity_days>54</validity_days> </license> </pre> <p>In this example, set the value of the <code>authentication</code> option to <code>CAP-CallCenter</code>.</p> |

Support for Emulated and Supervised Routing

T-Server can emulate Routing Points using Hunt Groups (HGs) as resources on the switch. The number of member devices in the HG defines the number of calls that can be queued simultaneously on a Routing Point. Therefore, the number of devices assigned to such an HG must be greater than the maximum number of calls expected to be queuing on the Routing Point at any time.

When you use emulated routing, T-Server can determine whether calls are answered at the routing destination. If calls are not answered within the specified timeout, you can configure T-Server to recall the calls to the Routing Point and initiate rerouting. The supervision of the call travels with the call, so if a supervised call is routed to from one Routing Point to another and is ultimately unanswered, T-Server cancels the supervision on the first Routing Point and recalls the call back to second Routing Point for rerouting. See configuration option `supervised-route-timeout` and the Extension attribute `SUPERVISED_ROUTE` for more details.

Calls that arrive at an HG can never queue—they are immediately delivered to one of the HG members. If no members are available, the call is reported as busy. When HGs are used as Routing Points in this way, T-Server emulates routing events on the HG and hides all events for the HG members, even though the call is actually alerting on the member.

When a call is successfully routed, T-Server distributes an EventRouteUsed to its clients for the HG (Routing Point), and the call is redirected from the HG member.

Note: Any CTI applications that try to register with T-Server for the HG members receive an error.

Configuring Hunt Groups as Routing Points

Table 13 illustrates an example configuration using Hunt Groups as Routing Points.

Table 13: Example Configuration

| Switch Device Type/Value | Configuration Layer Device Type/Value | Switch-Specific Type | Association Field Value |
|--------------------------|---------------------------------------|----------------------|-------------------------|
| Hunt Group/2500 | Routing Point/2500 | 2 | Not applicable |
| Hunt Group member/4000 | Extension/4000 | 2 | 2500 (Routing Point) |
| Hunt Group member/4001 | Extension/4001 | 2 | 2500 (Routing Point) |



Chapter

7

Supported Functionality in T-Server for HiPath 4000

This chapter describes the telephony functionality that T-Server for Siemens HiPath 4000 CSTA III supports and includes these sections:

- [Business-Call Handling, page 147](#)
- [Support for Emulated Agents, page 151](#)
- [Support for Emulated Predictive Dialing, page 161](#)
- [Support for No-Answer Supervision, page 163](#)
- [Smart OtherDN Handling, page 166](#)
- [Keep-Alive Feature, page 168](#)
- [Call Type Prediction, page 174](#)
- [Call Release Tracking, page 174](#)
- [Failed Route Notification, page 176](#)
- [Link Bandwidth Monitoring, page 177](#)
- [Request Handling Enhancements, page 180](#)
- [T-Library Functionality, page 180](#)
- [Support for Agent Work Modes, page 189](#)
- [Use of the Extensions Attribute, page 189](#)
- [Private Services and Events, page 195](#)
- [User Data Keys, page 197](#)
- [Error Messages, page 198](#)
- [Integration Notes, page 205](#)

Business-Call Handling

This section describes how T-Server handles different types of call

T-Server Call Classification

T-Server automatically assigns every call to one of three categories—*Business*, *Work-Related*, or *Private*. Based on this assignment, T-Server applies the appropriate business-call handling after the call is released.

Business Call Type Configuration

T-Server uses the following options to determine the business call type of a call. The options are given in order of precedence, highest to lowest:

- T-Server supports a request extension to define the business call type upon call initiation or answer.
- T-Server uses the originator agent state to determine if the call is work related.
- T-Server supports the distribution device configuration option to define the business call type for calls that pass through the device. By default, T-Server considers all calls that pass a distribution device as business calls. Distribution devices include the following device types:
 - Routing Point
 - ACD Queue
 - Routing Queue
- T-Server supports global Configuration Manager options to define whether specific call types (inbound, outbound, internal or unknown) are to be classified as business calls.

The extension `BusinessCallType` can be attached to `RequestMakeCall`, `RequestInitiateTransfer`, `RequestMuteTransfer`, `RequestInitiateConference` and `RequestMakePredictiveCall` to specify the business call type for the new call. This extension will take precedence over all other Configuration Manager business call type configuration options. The extension can also be attached to `RequestAnswerCall` to specify the business call type for the answering party and call.

The Configuration Manager Annex tab option `bsns-call-type` specifies the business call type for calls that pass through or arrive at a distribution device (Routing Point, Route Queue or ACD Queue). If the call passes through a distribution device and there is no Annex tab option present, the call will be classified as a business call. If the call passes through more than one distribution device, then the usual rules for assigning a business call type are followed. Once set, the business call type cannot be overridden unless it is changed to be a business call.

The global Configuration Manager options `inbound-bsns-call`, `internal-bsns-call` and `outbound-bsns-call` control whether the call type of the associated calls are to be classified as business calls. T-Server will not classify the business type of the call using these options until the destination is known. Also these options are not be used to set the originating party's business type

as business until after the `Dialing` event has been reported. (This is to ensure that Genesys reporting is consistent regardless of the switch reported order of events).

The private request, `RequestSetBusinessCall` allows T-Server clients to set the business call type of an existing call to be “business”. T-Server will respond to a successful request by distributing the private event `EventBusinessCallSet`.

Business Calls

T-Server automatically categorizes as a *business call* any call distributed to an agent either from a Queue or from a Routing Point. Use the following configuration options to define what additional calls to or from an agent are classified as business calls:

- `inbound-bsns-calls`
- `outbound-bsns-calls`
- `inherit-bsns-type`
- `internal-bsns-calls`
- `unknown-bsns-calls`
- `agent-only-private-calls`

inbound-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether all established inbound calls should be considered business calls.

outbound-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether all established outbound calls should be considered business calls.

inherit-bsns-type

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Determines whether a consult call that is made from a business primary call should inherit the `business call` attribute.

internal-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Determines whether T-Server considers internal calls made from or to any agent as business calls.

unknown-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Determines whether T-Server considers calls of unknown call type made from or to any agent as business calls.

agent-only-private-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server blocks the classification of a call's business type as `private` when there is no agent on the call. When set to `false`, calls with no agents present are classified with business type `private`, enabling No-Answer Supervision (NAS) to be applied for private calls.

When set to `true`, calls remain classified with business type `unknown`.

bsns-call-type

Default Value: `none`

Valid Values: `business`, `private`, `ignore`

Changes Take Effect: Immediately

Specifies the business call type for calls that pass through or arrive at the associated device. Valid values are:

| | |
|-----------------------|---|
| <code>business</code> | The call is classified as a business call. |
| <code>private</code> | The call is classified as a private call. |
| <code>ignore</code> | The distribution point has no effect on business call classification. |

This option takes precedence over the global options `inbound-bsns-call`, `internal-bsns-call` and `outbound-bsns-call`. It may be over ridden by the `BusinessCallType` extension.

Work-Related Calls

T-Server categorizes as a *work-related* call any non-business call that an agent makes while in ACW. T-Server does not apply any automatic business-call handling after a work-related call.

Because emulated agents can make or receive a direct work-related call while in wrap-up time, T-Server pauses the emulated wrap-up timer for the duration of such a call.

If an agent receives a direct work-related call during legal-guard time, T-Server cancels the legal-guard timer and reapplies it at the end of the work-related call.

Private Calls

T-Server categorizes as a *private call* any call that does not fall into the business or work-related categories. T-Server does not apply any automatic business-call handling after a private call. If emulated agents receive a direct private call while in wrap-up or legal-guard time, the emulated wrap-up or legal-guard timer is not interrupted.

Support for Emulated Agents

T-Server provides a fully functional emulated-agent model that you can use either in addition to agent features available on the PBX or in place of them where they are not available on the PBX.

When this feature is used, T-Server emulates the following functionality:

- Login and logout
- Agent set ready
- Agent set not ready (using various work modes)
- Automatic after call work (ACW)
- After call work in idle
- Automatic legal-guard time to provide a minimum break between business related calls

Emulated Agent Login/Logout

You can configure T-Server to perform emulated login either always, never, or on a per-request basis. Use the following T-Server configuration options to configure emulated agent login:

- `emulate-login`
- `emulated-login-state`
- `agent-strict-id`

emulate-login

Default Value: `on-RP`

Valid Values: `true`, `false`, `on-RP`

Changes Take Effect: Immediately

Specifies whether T-Server performs emulated agent login when the login device is configured in the Configuration Layer as a device of type extension.

| | |
|--------------------|--|
| <code>true</code> | T-Server performs an emulated login. |
| <code>false</code> | T-Server passes a login request to the PBX. |
| <code>on-RP</code> | T-Server checks the Agent Group associated with the login request. If the Agent Group is a standard Routing Point the emulated login request succeeds. This value can only be set at the global level, and is available for backwards compatibility. |

This value can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next highest level, and so on.

1. In `RequestAgentLogin`, using attribute extension `EmulateLogin`.
2. In the `Agent ID` object on the `Annex` tab.
3. In the login device object on the `Annex` tab.
4. In the device representing an `Agent Group` object, on the `Annex` tab.
5. In the `T-Server Application` object, in the `TServer` section.
6. Using an `Agent Group` corresponding to an object which is configured in the Configuration Layer as a device of type `Routing Point`.

emulated-login-state

Default Value: `ready`

Valid Values: `ready`, `not-ready`

Changes Take Effect: Immediately

When T-Server performs an emulated agent login and the client specifies an agent work mode other than `ManualIn` or `AutoIn`, T-Server uses this option to determine which event to distribute.

| | |
|------------------------|---|
| <code>not-ready</code> | T-Server distributes <code>EventAgentNotReady</code> after <code>EventAgentLogin</code> . |
| <code>ready</code> | T-Server distributes <code>EventAgentReady</code> after <code>EventAgentLogin</code> . |

This option can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next level, and so on.

1. In the `Agent ID` object on the `Annex` tab.
2. In the agent login device on the `Annex` tab.
3. In the login device representing an `Agent Group` during login, on the `Annex` tab.
4. In the `T-Server Application` object in the `Tserver` section.

agent-strict-id

Default Value: `false`

Valid Values: `true`, `false`, `passwd`

Changes Take Effect: Immediately

Specifies whether, for emulated agents, T-Server allows:

- Any Agent ID to be used during login (value `false`)
- Only Agent IDs configured in Configuration Layer to be used during login (value `true`)
- Only Agent IDs that match an Agent ID configured in Configuration Layer and that also have a matching password (value `passwd`).

sync-emu-acw

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server synchronizes emulated ACW for native agents. The `TAgentLogin` extension `SyncEmuACW` overrides the value configured for this option.

Agent Logout on Client Unregistering from DN

In some scenarios (such as a desktop crash or power failure/disconnection), agents may still receive calls but be unable to handle them. To prevent this problem, T-Server can be configured to automatically logout the agent in such circumstances.

When a client desktop or application disconnects from the T-Server while an agent is still logged in, the T-Server receives a notification that the application is unregistering from the agent's DN. Also, the T-Server is able to uniquely identify the client application which sends a T-Library request, including `TAgentLogin` and `TRegisterAddress`.

The T-Server can associate the client application (the one that sends the initial `TAgentLogin` request) with the agent and automatically log that agent out when the client application unregisters the agent DN while the agent is still logged in. (The initial `TAgentLogin` request is the one which first logs the agent in). This feature is enabled/disabled by the following configuration options.

agent-logout-on-unreg

Default Value: `false`

Valid Values: `true`, `false`, `emu-only`

| | |
|-----------------------|--|
| <code>true</code> | T-Server will log out emulated and native agents on unregister. |
| <code>false</code> | T-Server will not log out emulated or native agents on unregister. |
| <code>emu-only</code> | T-Server will log out only emulated agents on unregister. |

Changes Take Effect: At the next agent login session

Specifies whether T-Server performs an automatic logout of an agent whenever their client application unregisters the DN from the T-Server. This happens whenever a client application disconnects from the T-Server.

The option can be set in the Configuration Layer in the following places in order of precedence (highest to lowest):

1. The TServer section in the Annex tab of the device representing the agent's group (such as an ACD queue).
2. The TServer section in the Annex tab of an agent.
3. The TServer section in the Annex tab of a device.
4. The TServer section of the application.

The Configuration Layer configuration setting may be overridden by adding the extension `AgentLogoutOnUnregister` to the `TAgentLogin` request.

Any subsequent self-transition `TAgentLogin` request can override the current agent association by adding the extension `AgentLogoutOnUnregister` with a value of `true`.

Similarly a `TRegisterAddress` request can override the current agent association by adding the extension `AgentLogoutOnUnregister` with a value of `true`.

agent-logout-reassoc

Default Value: `false`

Valid Values: `true`, `false`

| | |
|--------------------|--|
| <code>true</code> | T-Server will automatically associate a new client application with the agent. |
| <code>false</code> | T-Server will not automatically associate a new client application with the agent. |

Specifies whether the T-Server will automatically associate a new client application with the agent, when the application either:

- Registers on the agent DN, or;
- Sends a login request while the T-Server is currently waiting to log the agent out due to the previously associated client disconnecting.

Note that the new client application must have the same application name as the previously disconnected client.

The value can also be set by using the `AssociateClientWithLogin` extension in the `TAgentLogin` or `TRegisterAddress` requests. The value specified by the extension, where present, takes precedence over the settings configured in Configuration Layer.

agent-emu-login-on-call

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether the T-Server allows an emulated agent login or logout on a device where there is a call in progress.

The option can be set in Configuration Layer in the following places in order of precedence (highest to lowest):

1. The TServer section in the Annex tab of an agent.
2. The TServer section in the Annex tab of a device.
3. The TServer section of the application.

The value can also be set by using the `AgentEmuLoginOnCall` extension in the `TAgentLogin` or `TAgentLogout` requests. The value specified by the extension, where present, takes precedence over the settings configured in Configuration Layer.

HA Considerations

If the T-Server is running in HA mode, a client connecting to one T-Server will be connected to both with the same session ID. Therefore the client's session ID must be used as part of the association data to ensure consistency across the primary and backup T-Servers. The primary T-Server will send an HA synchronization message to the backup when there is a change in client associations.

Emulated Agent Ready/NotReady

Emulated agents can perform an emulated Ready or NotReady request regardless of whether they are on a call, subject to the rules governing work modes.

T-Server also reports any change in agent mode requested by the agent while remaining in a NotReady state (*self-transition*).

Note: Note that the *Genesys 7 Events and Models Reference Manual* and the *Voice Platform SDK 8 .NET (or Java) API Reference* define which agent state/agent mode transitions are permissible.

Emulated After-Call Work (ACW)

T-Server can apply emulated wrap-up (ACW) for agents after a business call is released, unless the agent is still involved in another business call (see “Business Calls” on [page 149](#)).

Timed and Untimed ACW

T-Server applies emulated ACW for an agent after any business call is released from an established state. T-Server automatically returns the agent to the Ready state at the end of a *timed* ACW period. The agent must return to the Ready state manually when the ACW period is *untimed*.

Events and Extensions

T-Server indicates the expected amount of ACW for an agent in `EventEstablished` using the extension `WrapUpTime`. It is not indicated in `EventRingin` because the value may change between call ringing and call

answer. Untimed ACW is indicated by the string value `untimed`, otherwise the value indicates the expected ACW period in seconds.

T-Server reports ACW using `EventAgentNotReady` with `workmode = 3` (`AgentAfterCallWork`) and indicates the amount of ACW it will apply using the extension `WrapUpTime`.

T-Server sends the `EventNotReady` (ACW) before the `EventReleased` at the end of the business call.

Emulated ACW Period

The amount of emulated ACW that T-Server applies (when required) after a business call is determined by the value in configuration option `wrap-up-time`.

Configuration option `untimed-wrap-up-value` determines which specific integer value of `wrap-up-time` indicates *untimed* ACW. To specify untimed ACW in request extensions or user data, you should use the string `untimed` instead. All positive integer values are treated as indicating timed ACW (in seconds). For backwards compatibility, the default value of `untimed-wrap-up-value` is `1000`.

Note: Changing the value of untimed ACW should be done with care, because may affect the interpretation of all integer values of the option `wrap-up-time` in Configuration Manager. If lowered, it may change timed ACW to untimed, or disable ACW altogether. If raised it may change untimed or disabled ACW to timed ACW. The use of the new option (string) value `untimed` is encouraged where possible to minimize the impact of any future changes to the value of option `untimed-wrap-up-value`.

wrap-up-time

Default Value: `0`

Valid Value: Any positive integer, `untimed`

Changes Take Effect: Immediately

Specifies the amount of wrap-up time (ACW) allocated to emulated agents at the end of a business call.

| | |
|--|--|
| <code>0</code> | ACW is disabled Exception: When set in the Annex tab of the Agent ID object, value <code>0</code> (zero) means T-Server will process from Step 4 in the processing order of precedence below. |
| Value greater than <code>0</code> but less than <code>untimed-wrap-up-value</code> | The number of seconds of timed ACW, after which T-Server returns the agent automatically to the Ready state. |
| Value equal to <code>untimed-wrap-up-value</code> | ACW is untimed and the agent must manually return to the Ready state. |

| | |
|--|---|
| Value greater than <code>untimed-wrap-up-value</code> <code>untimed</code> | Disables ACW. ACW is untimed and the agent must manually return to the Ready state. Note: This value cannot be set on the Annex tab of an Agent ID object. |
|--|---|

This option can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next level, and so on.

1. In `RequestAgentPendingACW`, in attribute extension `WrapUpTime` (applies to this agent only).
2. In `RequestACWInIdle`, in attribute extension `WrapUpTime` (applies to this agent only).
3. In the call, in user data `WrapUpTime` (limited to ISCC scenarios).
4. In a configuration object of type `ACD Queue` or `Routing Point`, on the Annex tab.
5. In `RequestAgentLogin`, in attribute extension `WrapUpTime` (applies to this agent only).
6. In the Agent ID object, in the Annex tab (not value `untimed`).
7. In the login device object, on the Annex tab.
8. Using an Agent Group corresponding to an object configured in the Configuration Layer as a device of type `ACD Queue`.
9. In the T-Server Application object.

untimed-wrap-up-value

Default Value: 1000

Valid Value: Any positive integer

Changes Take Effect: Immediately

Specifies the threshold at which the timing of ACW stops and manual intervention is required (*untimed ACW*).

wrap-up-threshold

Default Value: 0

Valid Values: Any positive integer

Changes Take Effect: Immediately

Specifies the minimum period (in seconds) that a business call must last before emulated ACW is applied at the end of the call.

Pending ACW

An agent can request emulated ACW, or override the period of (emulated) ACW to be applied to themselves, while on an established call. T-Server will apply the emulated ACW when the call is released. The agent sends `RequestAgentReady` with `workmode = 3` to request pending ACW while on an established call. The extension `WrapUpTime` indicates the amount of ACW that T-Server will apply, using the following parameters and rules:

- Extension missing—request is rejected
- Value = 0—ACW is disabled
- Value greater than 0—period of timed ACW in seconds
- Value = `untimed`—untimed ACW

If the request is successful, T-Server sends `EventAgentReady` with `workmode = 3` (ACW). T-Server will also indicate that the agent is in a pending ACW state by adding the extension `ReasonCode` with the new value `PendingACW`. It will also indicate the period of ACW to be applied using the `WrapUpTime` extension.

An agent may alter the period of pending ACW by sending a new `RequestAgentReady` with `workmode = 3`, using a different value for the `WrapUpTime` extension. If the request is successful, T-Server sends another `EventAgentReady` event, indicating the new value in the `WrapUpTime` extension.

Note: To enable this feature the agent desktop the `WrapUpTime` extension must be enabled on the agent desktop.

ACW In Idle

An agent can activate wrap-up time on request when idle, by issuing a `RequestAgentNotReady` with `workmode = 3` (`AgentAfterCallWork`) to request emulated ACW while idle.

You can configure this feature in T-Server using the following options:

- `timed-acw-in-idle`
- `acw-in-idle-force-ready`

timed-acw-in-idle

Default Value: `true`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server applies the automatic wrap-up timer (using the wrap-up-time parameter) when an agent sends `RequestAgentNotReady`. With value `false`, T-Server does not automatically end manual wrap-up—the agent must return manually from ACW.

acw-in-idle-force-ready

Default Value: `true`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether, after timed automatic wrap-up (when you have set option `timed-acw-in-idle` to `true`), T-Server forces the agent to the Ready state. With value `false`, T-Server returns the agent to the state he or she was in prior to wrap-up.

Extending ACW

An agent can request an extension to the amount of emulated ACW for a call while in emulated ACW or in the legal-guard state.

The agent requests an extension to ACW by sending `RequestAgentNotReady` with `workmode = 3` (`AgentAfterCallWork`). T-Server determines the period of the extended ACW from the extension `WrapUpTime`, as follows:

- Value = `0`—No change to ACW period, but T-Server reports how much ACW time remains.
- Value greater than `0`—T-Server adds the given number of seconds to the timed ACW period. Untimed ACW remains unaffected.
- Value = `untimed`—T-Server applies untimed ACW.

T-Server sends `EventAgentNotReady` with `workmode = 3` (`AgentAfterCallWork`), reporting the newly extended amount of ACW using the extension `WrapUpTime`. If the agent was in the emulated legal-guard state, T-Server places the agent back into emulated ACW state.

The agent may extend the period of ACW as many times as desired. At the end of the extended timed ACW period, T-Server applies legal guard if any is configured. No legal guard is applied if the emulated ACW was untimed.

Calls While in Emulated ACW

T-Server's handling of an agent making or receiving a call while in emulated ACW is governed by the configuration option `backwds-compat-acw-behavior`.

backwds-compat-acw-behavior

Default Value: `false`

Valid Value: `true`, `false`

Changes Take Effect: Immediately

Specifies whether pre-7.5 behavior after-call work is enabled (value = `true`) or disabled (value = `false`), for backward compatibility.

With value `true`, if an agent receives or makes a business call while in emulated ACW, with value `false` T-Server does the following:

1. Stops the ACW timer.

2. Forces the agent to the Ready state.
3. Restarts ACW (and the legal-guard timer) after the new business call is released.

If an agent makes or receives a work-related call while in ACW, T-Server does the following:

1. Suspends the ACW, but leaves the agent in the ACW state.
2. Resumes the ACW timer once the work-related call is released.

Note: A work-related call is one made by an agent while in ACW, or a consult call where the main call is either a business call or a work-related call.

After the ACW and any configured legal-guard time have been completed, the agent is forced to the Ready state.

If an agent makes or receives a private call during ACW, no action is taken and the ACW timer keeps running.

With value true, pre-7.5 behavior is used. In this case, T-Server forces the agent to the Ready state after the after-call work and legal-guard timer have been applied.

Emulated Legal-Guard Time

T-Server applies emulated legal-guard time for agents before they are about to be automatically set ready after any period of timed ACW or after the last business call is released where there is no ACW to be applied. It is a regulatory requirement in many countries to guarantee that agents have a break of a few seconds before the next call can arrive. No legal-guard time is applied if the ACW period was not timed or if the agent is not being placed into the Ready state.

T-Server reports legal guard using `EventAgentNotReady` with `workmode = 2` (`LegalGuard`). If an agent requests to be logged out during emulated legal-guard time, T-Server immediately logs the agent out.

If the agent requests to go to a Not Ready or Ready state during legal-guard time, T-Server terminates legal guard and transitions the agent to the requested state. If the agent requests to return to the ACW state, T-Server re-applies legal guard at the end of ACW, provided that the agent still requires it according to the above criteria.

The period of legal guard is determined by the following option:

legal-guard-time

Default Value: 0

Valid Value: Any integer from 0-30

Changes Take Effect: Immediately

Specifies a legal-guard time (in seconds) for emulated agents to postpone the transition to the Ready state after a business call. T-Server always considers a routed call a business call.

T-Server reports the legal-guard time using `EventAgentNotReady` with `workmode = 2 (LegalGuard)`.

If an agent requests to be logged out during emulated legal guard time, T-Server immediately logs the agent out.

If the agent requests to go to a NotReady or Ready state during legal-guard time, T-Server terminates legal-guard time and transitions the agent to the requested state. If the agent requests to return to the ACW state, then T-Server reapplies legal-guard time at the end of ACW provided that the agent still requires it according to the above criteria.

The option can be set in the Configuration Layer in the following places in order of precedence (highest to lowest):

1. The TServer section in the Annex tab of an ACD Queue.
2. The TServer section in the Annex tab of a device representing an agent group (such as an ACD queue)
3. The TServer section in the Annex tab of an agent
4. The TServer section in the Annex tab of a device
5. The TServer section of the application

If used, the User Data entry `LegalGuardTime` and the TAgentLogin extension `LegalGuardTime` override this option.

HA Synchronization

On startup and link re-establishment, the Hot Standby backup T-Server requests the primary T-Server to send details of all agents. The primary T-Server replies with all the information required for switchover, including all emulated and switch-based data.

From this point on, the primary T-Server also sends a similar synchronization message whenever an emulated agent's state changes.

This means that a higher level of synchronization between the two T-Servers is maintained at all times.

Support for Emulated Predictive Dialing

This feature enables Genesys Outbound Contact Server (OCS) to initiate calls without the use of the Call Progress Detection (CPD) Server and Dialogic hardware.

Note: This feature is not related to the predictive dialing algorithm OCS uses to determine when to make the next call. This feature only concerns the outbound-call mechanism. You cannot use Emulated Predictive Dialing with Dialogic hardware.

To enable the Predictive Dialing feature in T-Server, you must configure (in the Configuration Layer) a number of devices corresponding to the number of calls that can be made simultaneously. These devices are available as a pool for T-Server to use for predictive dialing. They are not associated with any specific dialing device (Queue or Routing Point). They are configured in the Genesys Configuration Layer with switch-specific type 4.

Because of a small discrepancy in the way the availability of dialing devices is calculated in T-Server and in OCS, Genesys recommends configuring extra dialing devices. For example, if you plan to use five dialing devices in a campaign, configure six dialing devices in T-Server.

Limiting Distribution Time

Many countries forbid, by law, the queuing of more calls than there are available agents. The law in these countries states that such calls must be immediately dropped. T-Server does not handle this requirement for the duration of call distribution. The distribution mechanism must handle it.

If you use Universal Routing Server (URS) to distribute outbound calls to agents, set the `Timeout` option in the Strategy Target-Selection object to an appropriate value: for example, 1 second or 2 seconds.

Note: Your routing strategy is likely to fail if you set the value of `Timeout` to 0 (zero).

Once outbound calls have been successfully distributed to an agent, use the value of configuration option `prd-dist-call-ans-time` to limit the time that a call rings on an agent desktop without being answered.

If T-Server has no dialing devices available at the time of a `TMakePredictiveCall` request, it attempts to queue the request for the duration specified in option `max-pred-req-dly`. If a dialing device becomes available, T-Server makes the call. If not, T-Server rejects the request.

Call Progress Detection

T-Server's Emulated Predictive Dialing feature does not support call progress detection (CPD) to the same extent as Dialogic hardware. CPD is limited to normal switch signaling. In-band CPD is not supported. The following dialing results are supported:

- Answer
- No Answer

- Busy
- Dropped
- Wrong number (reported as Sit Tone by OC)
- Abandoned

Unsolicited Calls on Predictive Dialing Devices

An *unsolicited call* on a predictive dialing device is defined as:

- Any call delivered to a predictive dialing device.
- Any call originated without `TMakePredictiveCall`.

T-Server attempts to clear such unsolicited calls, in order to keep the predictive dialing device available. For delivered calls, T-Server answers and releases the call. For originated or established calls, T-Server releases the call.

Support for No-Answer Supervision

This section describes T-Server's No-Answer Supervision feature.

Agent No-Answer Supervision

This feature provides the following functionality:

- If an agent does not answer a call within a specified timeout, T-Server can divert the call to a sequence of overflow destinations. Alternatively, you can configure T-Server to return calls automatically to the last distribution device.
- If an agent fails to answer a call within a specified timeout, you can configure T-Server to either log out the agent or set the agent to `NotReady` to prevent further calls from arriving.

Configuration Options

T-Server provides three configuration options for defining the behavior of the Agent No-Answer Supervision feature:

- `agent-no-answer-timeout`
- `agent-no-answer-overflow`
- `agent-no-answer-action`

Extension No-Answer Supervision

The No-Answer Supervision feature includes devices of type `extension`. If a call is not answered on an extension within a specified timeout, T-Server can

divert the call to a sequence of overflow destinations. Alternatively, you can configure T-Server to return calls automatically to the last distribution device.

Configuration Options

T-Server provides two configuration options for defining the behavior of No-Answer Supervision with devices of type `extension`:

- `extn-no-answer-timeout`
- `extn-no-answer-overflow`

Position No-Answer Supervision

The No-Answer Supervision feature includes devices of type `position`. If a call is not answered on a position within a specified timeout, T-Server can divert the call to a sequence of overflow destinations. Alternatively, you can configure T-Server to return calls automatically to the last distribution device.

Configuration Options

T-Server provides two configuration options for defining the behavior of No-Answer Supervision with devices of type `position`:

- `posn-no-answer-timeout`
- `posn-no-answer-overflow`

Configuration Options for Device-Specific Overrides

T-Server provides three configuration options with which you can configure device-specific overrides for individual devices. You set the values for these options on the Annex tab of the TServer section of the individual device in the Framework Configuration Layer. These are the options:

- `no-answer-timeout`
- `no-answer-overflow`
- `no-answer-action`

Extension Attributes for Overrides for Individual Calls

For all of the No-Answer Supervision options, you can specify the corresponding Extension attribute in `TRequestRouteCall`, to override the configured value for individual calls. This method allows the no-answer behavior to be determined in a routing strategy. These are the three extensions:

- `NO_ANSWER_TIMEOUT`
- `NO_ANSWER_OVERFLOW`
- `NO_ANSWER_ACTION`

Private Calls

You can also apply No-Answer Supervision to private calls, using configuration option `nas-private`:

nas-private

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Place: Immediately

Specifies whether No-Answer Supervision is enabled for private calls. When configured in the T-Server section, this value is the default value applied globally to all private calls.

Note: When set in the TServer section, this option defines the default value for all private calls. However, you can also set a value for this option on the Annex tab of DNs of type extension or Agent ID in a section called TServer. When set there, this value overrides the default value for the specific DN.

Recall Scenarios

An additional configuration option allows you to configure No-Answer Supervision for recall scenarios.

recall-no-answer-timeout

Default Value: 15

Valid Values: Any integer from 0-600

Changes Take Place: Immediately

Defines the time that T-Server waits for a call to reappear on a device as a result of a recall (for example, a ringback waiting to be answered). When the timer expires, T-Server executes the actions defined by the relevant overflow option, as well as the action option for cases where an agent is logged in.

With value 0, there is no No-Answer Supervision for such calls.

This option can be defined either in the main Tserver section or in a section called Tserver on the Annex tab of any of the following configuration object types in Configuration Manager:

- Extension
- Position
- VT Port
- AgentID

Reporting

nas-indication

Default Value: none

Valid Values: none, ext, rsn

Changes Take Effect: Immediately

Specifies the reporting action in `EventReleased` when No-Answer Supervision overflows a call.

With value `none`, no reason or extension is provided in `EventReleased`.

With value `ext`, extension `NO_ANSWER_TIMEOUT` is supplied in `EventReleased`.

With value `rsn`, reason `NO_ANSWER_TIMEOUT` is supplied in `EventReleased`.

Smart OtherDN Handling

For T-Server clients that provide the Agent ID value as the `OtherDN` in requests to T-Server, T-Server can convert this `OtherDN` value using its knowledge of the association between the Agent ID and the DN to ensure the correct execution of the request by the switch. For switches expecting an Agent ID in the place of a DN for a particular operation, T-Server can convert the `OtherDN` value supplied by client to the Agent ID that the switch expects.

Configuration Option and Extension

Two configuration options and an extension are provided to enable and disable this feature.

Configuration Options

convert-otherdn

Default Value: `+agentid +reserveddn +fwd`

Valid Values: `+/-agentid +/-reserveddn, +/-fwd`

Changes Take Effect: Immediately

Defines whether T-Server has to convert (if applicable) the value provided in request's `AttributeOtherDN`.

Value `+/-agentid` turns on/off either the conversion of the Agent ID value provided in the `OtherDN` attribute to the DN associated with this Agent, or the DN value to Agent ID value (where appropriate).

Value `+/-reserveddn` turns on/off the conversion of `OtherDN` for reserved DNs.

Value `+/-fwd` turns on/off conversion of `OtherDN` in request `TSetCallForward`.

clid-withheld-name

Default Value: `PRIVATE`

Valid Values: Any string

Changes Take Effect: Immediately

Defines a name that replaces a withheld CLID (when Secret Identity is invoked). If no value is entered (empty string) the withheld CLID will be displayed.

Extension A new extension key `ConvertOtherDN` is also provided to enable this feature to be applied on a call-by-call basis.

Supported Requests

Table 14 shows the requests that assume the use of the `OtherDN` value as a switch directory number, and can therefore support Smart OtherDN Handling.

Table 14: Requests That Support Smart OtherDN Handling

| TRequest | Meaning of OtherDN Attribute | AgentID-to-DN Conversion | Reserved DN Conversion |
|----------------------------------|---|--------------------------|------------------------|
| TMakeCall | Call destination | Yes | Yes |
| TMakePredictiveCall ^a | Call destination | Yes | Yes |
| TRedirectCall | New destination for call | Yes | Yes |
| TInitiateTransfer | Call destination | Yes | Yes |
| TMuteTransfer | Call destination | Yes | Yes |
| TSingleStepTransfer | New destination for call | Yes | Yes |
| TInitiateConference | Call destination | Yes | Yes |
| TSingleStepConference | New destination for call | No | No |
| TDeleteFromConference | Conference member to be deleted | Yes | Yes |
| TListenDisconnect | Request target | No | No |
| TListenReconnect | Request target | No | No |
| TCallSetForward ^b | Request target | Yes | Yes |
| TGetAccessNumber ^c | DN for which Access Number is requested | No | No |
| TSetCallAttributes ^c | Not specified | No | No |

Table 14: Requests That Support Smart OtherDN Handling (Continued)

| TRequest | Meaning of OtherDN Attribute | AgentID-to-DN Conversion | Reserved DN Conversion |
|--|---|--------------------------|------------------------|
| TReserveAgentAndGetAccessNumber ^c | DN for which Access Number is requested | No | No |
| TMonitorNextCall | Agent DN to be monitored | No | Not applicable |
| TCancelMonitoring | Agent DN that was monitored | No | Not applicable |
| TRouteCall ^d | New destination for call | | |
| • RouteTypeUnknown | | Yes | Yes |
| • RouteTypeDefault | | Yes | Yes |
| • RouteTypeOverwriteDNIS | | Yes | Yes |
| • RouteTypeAgentID | | No | No |

- TMakePredictiveCall assumes that the directory number should be outside the switch; however, this request could also support Smart OtherDN Handling.
- TCallSetForward has a separate flag in the configuration option for enabling conversion.
- T-Server cannot intercept these requests.
- Only the listed route types are applicable for OtherDN conversion.

Keep-Alive Feature

T-Server may not always receive timely notification when the CTI link stops functioning. In order for T-Server to detect link failure and initialize alarm and recovery procedures, T-Server usually needs to actively check the link's integrity. This is referred to as Keep-Alive or "KPL" functionality.

Keep-alive functionality involves sending a *KPL request* which elicits either a positive or negative response from the CTI link. The responses are counted in four cumulative counters. If the relevant counter reaches the maximum configured limit, T-Server either:

- Decrements the relevant warning/failure KPL tolerance counter
- Attempts to reconnect to the link
- Sends a warning message to Message Server

Three configuration options are available in the Link-Control section of T-Server:

- `kpl interval` sets the interval timer for KPL requests.
- `kpl-tolerance` sets the threshold at which T-Server either attempts to reconnect to the link or issues a warning message.
- `kpl-loss-rate` settings control how the four internal counters tracking both negative and positive KPL responses are incremented and decremented.

kpl-interval

Default Value: 10

Valid Value: Any integer from 0-600

Changes Take Effect: Immediately

Specifies a “keep-alive” interval (in seconds). To check network connectivity, T-Server issues a dummy CTI request at the interval specified when there is no other activity on the link. Value 0 (zero) disables this feature.

The value of this option may need to be increased to avoid false restarts if the switch is sometimes slow to respond, for example, during busy periods.

See also option `kpl-tolerance`.

kpl-tolerance

Default Value: 3

Valid Value: Any integer from 0-10

Changes Take Effect: Immediately

Specifies the threshold number of accumulated KPL request failures. When the threshold is reached T-Server may either consider the CTI link:

- To be lost—in which case T-Server tries to reconnect to it.
- To be unstable—in which case T-Server issues a warning message.

kpl-loss-rate

Default Value: 10, 100

Valid Values: Single integer or comma-separated pair of integers. The lower value in the pair is the failure value and the higher value is the warning rate.

Changes Take Effect: Immediately

Specifies how many KPL positive responses are needed to decrement either the failure or warning tolerance counter.

Value 0 (zero) disables this option.

Two comma-separated values means T-Server will calculate both the failure counter and the warning counter.

A single value means T-Server will calculate only the failure counter.

Note: This option has no effect if option `kpl-tolerance` has value 0. In that case, a single KPL failure will trigger a link restart.

Examples

Tables 15 through 20 in this section illustrate the cumulative effect of KPL responses on the tolerance and loss-rate counters, and what how T-Server reacts when thresholds are reached.

Tables 15 through 20 use the following configuration option values:

- kpl-tolerance=3
- kpl-loss-rate=5, 15 where value 5 is the failure counter and value 15 is the warning counter

Table 15 shows how the KPL tolerance failure counter is decremented when the KPL loss-rate threshold is reached.

Table 15: Failure Counter—KPL Loss-Rate Threshold Reached

| KPL Response (X/✓) | Failure Counter | | Warning Counter | |
|-----------------------|--------------------------------------|-------------------------------------|----------------------|------------------------------|
| | kpl-tolerance=3 8 | kpl-loss-rate = 5, (15) 4 | kpl-tolerance=3 8 | kpl-loss-rate = (5), 15 4 |
| Current values | 0 | 0 | 0 | 0 |
| 8 | 1 | 0 | 1 | 0 |
| 4 | 1 | 1 | 1 | 1 |
| 2 x ✓ | 1 | 3 | 1 | 3 |
| 8 | 2 | 3 | 2 | 3 |
| 2 x ✓ | 2 | 5 | 2 | 5 |
| | kpl-loss-rate threshold (5) reached | | | |
| | Decrement KPL tolerance counter by 1 | Reset KPL loss-rate counter to zero | | |
| New values | 1 | 0 | 2 | 5 |

Table 16 shows what happens when the KPL tolerance threshold is reached on the failure counter.

Table 16: Failure Counter—KPL Tolerance Threshold Reached

| KPL Response Result (X/✓) | Failure Counter | | Warning Counter | |
|---------------------------|--|------------------------------|----------------------|------------------------------|
| | kpl-tolerance=3 8 | kpl-loss-rate = 5, (15) 4 | kpl-tolerance=3 8 | kpl-loss-rate = (5), 15 4 |
| Current values | 1 | 1 | 0 | 10 |
| 8 | 2 | 1 | 1 | 10 |
| 8 | 3 | 1 | 2 | 10 |
| | kpl-tolerance threshold reached. | | | |
| | T-Server initiates reconnection to CTI link and all counters are reset to 0. | | | |
| New values | 0 | 0 | 0 | 0 |

Table 17 shows what how the KPL tolerance warning counter is decremented on when the KPL loss-rate threshold is reached.

Table 17: Warning Counter—KPL Loss-Rate Threshold Reached—Tolerance Counter Decremented

| KPL Response Result (X/✓) | Failure Counter | | Warning Counter | |
|---------------------------|----------------------|------------------------------|----------------------|------------------------------|
| | kpl-tolerance=3 8 | kpl-loss-rate = 5, (15) 4 | kpl-tolerance=3 8 | kpl-loss-rate = (5), 15 4 |
| Current values | 0 | 3 | 1 | 13 |
| 8 | 1 | 3 | 2 | 13 |
| 4 | 1 | 4 | 2 | 14 |
| 4 | 1 | 5 | 2 | 15 |

Table 17: Warning Counter—KPL Loss-Rate Threshold Reached—Tolerance Counter Decremented (Continued)

| | Failure Counter | | Warning Counter | |
|------------|---|---|---|---|
| | KPL loss-rate threshold reached.KPL tolerance counter decremented by 1 and loss-rate counter reset. | | KPL loss-rate threshold reached.KPL tolerance counter decremented by 1 and loss-rate counter reset. | |
| New values | 0 | 0 | 1 | 0 |

Table 18 shows what happens when the KPL tolerance threshold is reached on the warning counter.

Table 18: Warning Counter—KPL Tolerance Threshold Reached—T-Server Sends Warning Message to Message Server

| | Failure Counter | | Warning Counter | |
|---------------------------|----------------------|------------------------------|--|------------------------------|
| KPL Response Result (X/✓) | kpl-tolerance=3 8 | kpl-loss-rate = 5, (15) 4 | kpl-tolerance=3 8 | kpl-loss-rate = (5), 15 4 |
| Current values | 0 | 0 | 2 | 10 |
| 8 | 1 | 0 | 3 | 10 |
| | | | kpl-tolerance threshold (3) reached | |
| | | | Reset kpl-tolerance counter to 0 | |
| | | | T-Server sends warning message to Message Server | |
| New values | 1 | 0 | 0 | See table 19 and 20. |

Tables 19 and 20 show how the warning counters will behave depending on whether the next KPL response is positive or negative.

Table 19: Warning Counters- KPL Loss-Rate Value After Positive KPL Response

| KPL Response Result (X/✓) | Failure Counter | | Warning Counter | |
|---------------------------|----------------------|------------------------------|----------------------|---|
| | kpl-tolerance=3 8 | kpl-loss-rate = 5, (15) 4 | kpl-tolerance=3 8 | kpl-loss-rate = (5), 15 4 |
| Current values | 1 | 0 | 0 | 10 |
| 4 | 1 | 1 | 0 | 0 |
| | | | | Note: The positive KPL response, after the warning message was sent, results in the counter being reset to 0, instead of incrementing to 11. |

Table 20: Warning Counters—KPL Loss-Rate Value After Negative KPL Response

| KPL Response Result (X/✓) | Failure Counter | | Warning Counter | |
|---------------------------|----------------------|------------------------------|----------------------|--|
| | kpl-tolerance=3 8 | kpl-loss-rate = 5, (15) 4 | kpl-tolerance=3 8 | kpl-loss-rate = (5), 15 4 |
| Current values | 1 | 0 | 0 | 10 |
| 8 | 2 | 0 | 1 | 11 |
| | | | | Note: The negative KPL response, after the warning message was sent, results is the counter incrementing to 11. |

Call Type Prediction

T-Servers use CTI-provided information to assign a call type to a call. On occasions when the CTI information is either insufficient or arrives too late for T-Server to assign a definite call type, T-Server can now use a call type prediction procedure to assign a call type on a “best possible guess” basis.

Table 21 on [page 174](#) shows how T-Server assigns call types in different scenarios.

Table 21: Call Type Prediction

| Call Direction/ OtherDN | External | Internal | Unknown |
|----------------------------|------------------|------------------|-----------------|
| Incoming | CallTypeInbound | CallTypeInternal | CallTypeUnknown |
| Outgoing | CallTypeOutbound | CallTypeInternal | CallTypeUnknown |

The feature is enabled/disabled by configuration option `call-type-by-dn`:

call-type-by-dn

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Enables or disables the setting of call type based on dialing plan analysis (when configured) and on the DN configuration in the Configuration Layer.

Note: Rules for digit analysis in dialing plans are specified in configuration option `rule-<n>` in the configuration section `call-type-rules`. Those rules specify a number of dialing plans related to external, internal and unknown DNs. When the supplied value of `OtherDN` matches any of the preconfigured rules, then the configured type (`internal`, `external` or `unknown`) will be assigned to the call.

Please refer to “Number Translation Feature” on [page 87](#) for details of rule configuration and processing.

Call Release Tracking

In release 8, T-Server can now provide information about which party initiated the release of a call. This can be valuable for different applications to provide historical and real-time call reporting.

The following T-Library SDK call models can now be reported in this way:

- Normal call release

- Abnormal call release
- Call release from a conference
- Rejection of an alerting call
- Release for a failed or blocked call to a busy destination

DN-Based Reporting

In DN-based reporting, information about the call release initiator will be reported in the `AttributeExtension` using extension key `ReleasingParty` in `EventReleased` and `EventAbandoned` events, when those events are distributed.

One of the following values will be reported in the `ReleasingParty` key:

- **Local**—The call is released because the `ThisDN` value in the `EventReleased` was requesting the release.
- **Remote**—The call is released because the other party (which is remote to `ThisDN`) in the `EventReleased` or `EventAbandoned` events was requesting release operation.
- **Unknown**—The call is released, but T-Server cannot determine the release initiator.

Call-Based Reporting

Independently of DN-based reporting, T-server provides the call release initiator in `AttributeCtrlParty` for `EventCallPartyDeleted` and `EventCallDeleted` events. For scenarios where T-Server cannot provide the release initiator, `AttributeCtrlParty` will not appear in event reporting.

T-Server will provide `AttributeCtrlParty` reporting (for the party that initiated the call release) either:

- When the call is released using a GCTI request and T-Server is aware of the result of the requested operation, or;
- The PBX CTI protocol provides reliable information about the identity of party that released.

Configuration Option

The feature is enabled/disabled by configuration option `releasing-party-report`:

releasing-party-report

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server reports Attribute Extension ReleasingParty in events EventReleased and EventAbandoned to indicate which party initiated the call release.

Failed Route Notification

In release 8, T-Server supports alarm messages for unsuccessful routing scenarios.

When this feature is enabled, a failed route timer is set using the interval defined in configuration option `route-failure-alarm-period`. Each routing failure reported during this period is added to a counter. If this counter exceeds a “high water mark” threshold value defined by the option `route-failure-alarm-high-wm`, T-Server sets a route failure alarm condition, and resets the counter.

The alarm condition is cleared when fewer route failures than configured in option `route-failure-alarm-low-wm` are recorded and there is also no more than the number of route failures configured in `route-failure-alarm-high-wm` in one complete period (configured in `route-failure-alarm-period`).

Setting the value of configuration option `route-failure-alarm-period` to 0 (zero) disables the feature.

Configuration Options

The feature is controlled by the following configuration options:

route-failure-alarm-high-wm

Default Value: 10

Valid Values: Positive integer for absolute value or floating point number followed by % (percent) symbol. For example; 10%, 2.25%, 5E-2%.

Changes Take Effect: Immediately

Defines the high water mark which must be reached in order for a route failure alarm to be triggered, within the period configured in option `route-failure-alarm-period`.

route-failure-alarm-low-wm

Default Value: 1

Valid Values: Positive integer for absolute value or floating point number followed by % (percent) symbol. For example; 10%, 2.25%, 5E-2%.

Changes Take Effect: Immediately

Defines the low water mark which must be reached, while under the route failure alarm condition, within the period configured in `route-failure-alarm-period`.

route-failure-alarm-period

Default Value: 0

Valid Values: Positive integer

Changes Take Effect: Immediately

Defines the interval (in seconds) in which the number of failed route requests is totalled, in order to determine either a possible route failure alarm or the cancelation of an alarm, based on the failed route counter reaching the relevant high or low water mark.

Note: This option also specifies the minimum time between alarm setting and alarm clearing.

HA Considerations

Only the primary T-Server maintains the failed routing counter. The backup T-server will not run the `route-failure-alarm-period` timer, and so keeps the routing failure alarm in the canceled state.

On switchover from primary role to backup role, T-Server stops the `route-failure-alarm-period` timer and clears any alarm internally, without sending any LMS message.

On switchover from backup role to primary role, T-Server starts the `route-failure-alarm-period` timer and starts counting route requests and routing failures.

Link Bandwidth Monitoring

In release 8, T-Server can provide bandwidth monitoring on a CTI link and can notify the Genesys Management Layer when Configuration Layer limits are exceeded.

When configured high or low thresholds are reached, T-Server sends alarm messages `LINK_ALARM_HIGH LMS` or `LINK_ALARM_LOW LMS`, as appropriate.

High and Low Watermarks

Configuration option `link-alarm-high`, specified as a percentage of the `max-bandwidth` value, defines an upper threshold bandwidth value which when breached raises a `LINK_ALARM_HIGH LMS` message.

Configuration option `link-alarm-low`, specified as a percentage of the `max-bandwidth` value, defines a lower threshold bandwidth value which when breached raises a `LINK_ALARM_LOW LMS` message.

Alarm Set Algorithm

T-Server measures requests sent to the CTI link and whenever there is a 99.7% probability that a high or low watermark threshold has been crossed, an appropriate LMS message is generated.

If link-alarm-high is set to 0 (zero), no high alarm will be generated.

Notes: A high or low watermark LMS message will only be generated when there is at least a 99.7% probability that the requisite threshold has been crossed. Therefore, if the link-alarm-low is set to 0 (zero), it cannot be crossed and no low alarm can be generated. Since a subsequent high alarm LMS message will only be generated after a low watermark message, no further alarms can be raised.

Configuration Options

link-alarm-high

Default Value: 0

Valid Values: 0-100

Changes Take Effect: Immediately

Specifies percentage of use-link-bandwidth option when LMS message LINK_ALARM_HIGH will be triggered.

Value 0 (zero) disables the feature.

link-alarm-low

Default Value: 0

Valid Values: 0-100

Changes Take Effect: Immediately

Specifies percentage of use-link-bandwidth option when LMS message LINK_ALARM_LOW will be triggered.

use-link-bandwidth

Default Value: auto

Valid Values: 0-999, auto

Changes Take Effect: Immediately

Specifies the maximum number of requests per second throughput to be used by T-Server to calculate link alarm messages. Value 0 (zero) disables the feature.

LMS Messages

High alarm

STANDARD Link bandwidth: %d1 requests per second exceeds alarm threshold %d2 requests per second on CTI Link ID %d3

Attributes:

%d1 represents estimated requests rate

%d2 represents $\text{link-alarm-high} * \text{max_bandwidth} / 100$

%d3 represents the CTI Link ID

Low alarm

STANDARD Link bandwidth: %d1 requests per second dropped below alarm threshold %d2 requests per second on CTI Link ID %d3

Attributes:

%d1 represents estimated requests rate

%d2 represents $\text{link-alarm-low} * \text{max_bandwidth} / 100$

%d3 represents the CTI Link ID

-
- Notes:**
- Setting the link-alarm-low option to a value of 0 (zero) will not create a link alarm low LMS message. The link bandwidth must drop below the set low alarm level in order to create the low watermark message. For a high watermark, the bandwidth recorded must exceed the set high alarm watermark to create the high watermark LMS message. The consequence of setting the low alarm watermark to 0 (zero) is that T-Server will only generate one high watermark LMS message since a low watermark LMS message is never created. Therefore, T-Server will remain in high watermark alarm state indefinitely and never generate a subsequent LMS high watermark message.
 - If the link-alarm-low option is set to a value higher than the value of the link-alarm-high option, then the two values are swapped. However, the values are not swapped if either value is set to 0 (zero).
-

The LinkLoad extension attribute has been introduced for the link bandwidth feature. See the description of the extension on [page 194](#).

HA Considerations

If the primary T-Server is at the high watermark prior to a switchover, its state is not transferred to the backup T-Server.

Request Handling Enhancements

In release 8, T-Server introduces two major new enhancements to queue handling: request conflict resolution and a new device queue.

Requests submitted by different clients are treated no differently to requests submitted by the same client. For this reason, having multiple clients controlling the same device can result in unexpected behavior.

Note: While this configuration is supported, it should be recognised that there is no special handling for multiple clients.

Use the following T-Server configuration options to configure this feature:

device-rq-gap

Default Value: 250

Valid Value: Any integer from 0-1000

Changes Take Place: Immediately

Specifies (in milliseconds) the minimum time gap between sequential requests relating to a device. Note that this setting only affects the gap between requests in a device queue. This option can be overridden by DN Annex option `rq-gap`.

rq-conflict-check

Default Value: true

Valid Value: true, false

Changes Take Place: Immediately

Specifies whether the request conflict checking feature is enabled. This feature intelligently resolves conflicting client requests.

T-Library Functionality

[Table 22](#) presents T-Library functionality supported in the T-Server for Siemens HiPath 4000 CSTA III. The table entries use these notations:

N—Not supported

Y—Supported

I—Supported, but reserved for Genesys Engineering

E—Event only supported

In [Table 22](#), when a set of events is sent in response to a single request, the events are listed in an arbitrary order. An asterisk (*) indicates the event that contains the same Reference ID as the request. For more information, refer to the *Genesys 7 Events and Models Reference Manual* and the *Voice Platform SDK 8 .NET (or Java) API Reference*.

Table 22 reflects only that switch functionality used by Genesys software and might not include the complete set of events offered by the switch.

Certain requests in Table 22 are reserved for Genesys Engineering and are listed here merely for completeness of information.

Notes describing specific functionalities appear at the end of a table.

Table 22: Supported Functionality

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|-------------------------------|------------------|-------------------------|-----------|
| General Requests | | | |
| TOpenServer | | EventServerConnected | Y |
| TOpenServerEx | | EventServerConnected | Y |
| TCloseServer | | EventServerDisconnected | Y |
| TSetInputMask | | EventACK | Y |
| TDispatch | | Not Applicable | Y |
| TScanServer | | Not Applicable | Y |
| TScanServerEx | | Not Applicable | Y |
| Registration Requests | | | |
| TRegisterAddress | | EventRegistered | Y |
| TUnregisterAddress | | EventUnregistered | Y |
| Call-Handling Requests | | | |
| TMakeCall | Regular | EventDialing | Y |
| | DirectAgent | | N |
| | SupervisorAssist | | N |
| | Priority | | N |
| | DirectPriority | | N |
| TAnswerCall | | | Y |
| TReleaseCall | | EventReleased | Y |
| TClearCall | | EventReleased | N |
| THoldCall | | EventHeld | Y |
| TRetrieveCall | | EventRetrieved | Y |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|-------------------------------------|-----------------|--|----------------|
| TRedirectCall ^a | | EventReleased | Y |
| TMakePredictiveCall | | EventDialing*, EventQueued | Y |
| Transfer/Conference Requests | | | |
| TInitiateTransfer | | EventHeld, EventDialing* | Y |
| TCompleteTransfer | | EventReleased*, EventPartyChanged | Y |
| TInitiateConference | | EventHeld, EventDialing* | Y |
| TCompleteConference | | EventReleased*, EventRetrieved, EventPartyChanged, EventPartyAdded | Y |
| TDeleteFromConference | | EventPartyDeleted*, EventReleased | Y ^b |
| TReconnectCall | | EventReleased, EventRetrieved* | Y |
| TAlternateCall | | EventHeld*, EventRetrieved | Y |
| TMergeCalls | ForTransfer | EventReleased*, EventPartyChanged | N |
| | ForConference | EventReleased*, EventRetrieved, EventPartyChanged, EventPartyAdded | N |
| TMuteTransfer | | EventHeld, EventDialing*, EventReleased, EventPartyChanged | Y |
| TSingleStepTransfer | | EventReleased*, EventPartyChanged | Y |
| TSingleStepConference | | EventRinging*, EventEstablished | N |
| Call-Routing Requests | | | |
| TRouteCall | Unknown | EventRouteUsed | Y |
| | Default | | Y |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|-------------------------|----------------------------|--|-----------|
| | Label | | N |
| | OverwriteDNIS | | Y |
| | DDD | | Y |
| | IDDD | | Y |
| | Direct | | Y |
| | Reject ^c | | Y |
| | Announcement | | N |
| | PostFeature | | N |
| | DirectAgent | | N |
| | Priority | | N |
| | DirectPriority | | N |
| | AgentID | | N |
| Call-Treatment Requests | | | |
| TApplyTreatment | Unknown | (EventTreatmentApplied + EventTreatmentEnd)/EventTreatmentNotApplied | N |
| | IVR | | N |
| | Music | | N |
| | RingBack | | N |
| | Silence | | N |
| | Busy | | N |
| | CollectDigits | | N |
| | PlayAnnouncement | | N |
| | PlayAnnouncementAnd-Digits | | N |
| | VerifyDigits | | N |
| | RecordUserAnnouncement | | N |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|---|------------------------|------------------------|-----------|
| | DeleteUserAnnouncement | | N |
| | CancelCall | | N |
| | PlayApplication | | N |
| | SetDefaultRoute | | N |
| | TextToSpeech | | N |
| | TextToSpeechAndDigits | | N |
| | FastBusy | | N |
| | RAN | | N |
| TGiveMusicTreatment | | EventTreatmentApplied | N |
| TGiveRingBackTreatment | | EventTreatmentApplied | N |
| TGiveSilenceTreatment | | EventTreatmentApplied | N |
| DTMF (Dual-Tone Multifrequency) Requests | | | |
| TCollectDigits | | EventDigitsCollected | N |
| TSendDTMF ^d | | EventDTMFSent | Y |
| Voice-Mail Requests | | | |
| TOpenVoiceFile | | EventVoiceFileOpened | N |
| TCloseVoiceFile | | EventVoiceFileClosed | N |
| TLoginMailBox | | EventMailBoxLogin | N |
| TLogoutMailBox | | EventMailBoxLogout | N |
| TPlayVoice | | EventVoiceFileEndPlay | N |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|--|--------------------|--------------------------|-----------|
| Agent & DN Feature Requests | | | |
| TAgentLogin | WorkModeUnknown | EventAgentLogin | Y |
| | ManualIn | | Y |
| | AutoIn/Legal Guard | | Y |
| | AfterCallWork | | Y |
| | AuxWork | | Y |
| | Walk Away | | Y |
| | Return Back | | Y |
| | NoCallDisconnect | | N |
| TAgentLogout | | EventAgentLogout | Y |
| TAgentSetIdleReason | | EventAgentIdleReasonSet | N |
| TAgentSetReady | | EventAgentReady | Y |
| TAgentSetNotReady | WorkModeUnknown | EventAgentNotReady | Y |
| | ManualIn | | Y |
| | AutoIn/Legal Guard | | Y |
| | AfterCallWork | | Y |
| | AuxWork | | Y |
| | Walk Away | | Y |
| | Return Back | | Y |
| | NoCallDisconnect | | N |
| TMonitorNextCall | OneCall | EventMonitoringNextCall | N |
| | AllCalls | | N |
| TStartCallMonitoring | | EventStartCallMonitoring | Y |
| TStopCallMonitoring | | EventStopCallMonitoring | Y |
| TCancelMonitoring | | EventMonitoringCanceled | N |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|-----------------------|-------------------|-------------------------|-----------|
| TCallSetForward | None | EventForwardSet | N |
| | Unconditional | | Y |
| | OnBusy | | Y |
| | OnNoAnswer | | Y |
| | OnBusyAndNoAnswer | | N |
| | SendAllCalls | | N |
| TCallCancelForward | None | EventForwardCancel | N |
| | Unconditional | | Y |
| | OnBusy | | Y |
| | OnNoAnswer | | Y |
| | OnBusyAndNoAnswer | | N |
| | SendAllCalls | | N |
| TSetMuteOff | | EventMuteOff | N |
| TSetMuteOn | | EventMuteOn | N |
| TListenDisconnect | | EventListenDisconnected | N |
| TListenReconnect | | EventListenReconnected | N |
| TSetDNDOOn | | EventDNDOOn | Y |
| TSetDNDOff | | EventDNDOff | Y |
| TSetMessageWaitingOn | | EventMessageWaitingOn | Y |
| TSetMessageWaitingOff | | EventMessageWaitingOff | Y |
| Query Requests | | | |
| TQuerySwitch | DateTime | EventSwitchInfo | N |
| | ClassifierStat | | N |
| TQueryCall | PartiesQuery | EventPartyInfo | N |
| | StatusQuery | | Y |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|-----------------|--------------------------------|--------------------------------|-----------|
| TQueryAddress | AddressStatus | EventAddressInfo | Y |
| | MessageWaitingStatus | | N |
| | AssociationStatus | | N |
| | CallForwardingStatus | | N |
| | AgentStatus | | Y |
| | NumberOfAgentsInQueue | | Y |
| | NumberOfAvailableAgentsInQueue | | Y |
| | NumberOfCallsInQueue | | Y |
| | AddressType | | Y |
| | CallsQuery | | Y |
| | SendAllCallsStatus | | N |
| | QueueLoginAudit | | N |
| | NumberOfIdleTrunks | | N |
| | NumberOfTrunksInUse | | N |
| | DatabaseValue | | N |
| | DNSStatus | | Y |
| | QueueStatus | | Y |
| TQueryLocation | AllLocations | EventLocationInfo ^c | I |
| | LocationData | | I |
| | MonitorLocation | | I |
| | CancelMonitorLocation | | I |
| | MonitorAllLocations | | I |
| | CancelMonitorAllLocations | | I |
| TQueryServer | | EventServerInfo | Y |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|--|-----------------|-------------------------------------|-----------|
| User-Data Requests | | | |
| TAttachUserData | | EventAttachedDataChanged | Y |
| TUpdateUserData | | EventAttachedDataChanged | Y |
| TDeleteUserData | | EventAttachedDataChanged | Y |
| TDeleteAllUserData | | EventAttachedDataChanged | Y |
| ISCC (Inter-Server Call Control) Requests | | | |
| TGetAccessNumber | | EventAnswerAccessNumber | I |
| TCancelReqGetAccess Number | | EventReqGetAccessNumber Canceled | I |
| Special Requests | | | |
| TReserveAgent | | EventAgentReserved | I |
| TSendEvent | | EventACK | I |
| TSendEventEx | | EventACK | I |
| TSetCallAttributes | | EventCallInfoChanged | Y |
| TSendUserEvent | | EventACK | Y |
| TPrivateService | | EventPrivateInfo | Y |
| TCopyEvent | | | Y |
| TFreeEvent | | | Y |
| Network Requests^f | | | |
| TNetworkConsult | | EventNetworkCallStatus | Y |
| TNetworkAlternate | | EventNetworkCallStatus | Y |
| TNetworkTransfer | | EventNetworkCallStatus | Y |
| TNetworkMerge | | EventNetworkCallStatus | Y |
| TNetworkReconnect | | EventNetworkCallStatus | Y |
| TNetworkSingleStep Transfer | | EventNetworkCallStatus | Y |

Table 22: Supported Functionality (Continued)

| Feature Request | Request Subtype | Corresponding Event(s) | Supported |
|---|-----------------|-------------------------|-----------|
| TNetworkPrivateService | | EventNetworkPrivateInfo | Y |
| ISCC Transaction Monitoring Requests | | | |
| TTransactionMonitoring | | EventACK | Y |
| | | EventTransactionStatus | E |

- The switch rejects TRedirectCall for calls distributed via a Hunt Group.
- You can delete only yourself from a conference. You cannot delete any other parties.
- From 7.6, subtype Reject no longer requires the SupervisedRoute = 1 extension to clear the call, because T-Server intelligently clears the call in the best manner for the switch.
- The CSTA III GenerateDigits service request is acknowledged immediately by CAP, and no events follow when the digits are actually sent. Therefore, T-Server generates EventDTMFsSent as soon as the request is acknowledged, not when generation of digits is complete. T-Server client applications should work out the time required for service completion based on the digits' string length and tone/pulse duration.
- Two subtypes are supported by EventLocationInfo: LocationMonitorCanceled and InfoAllLocationsMonitor-Canceled.
- All T-Servers support NAT/C requests with AttributeHomeLocation, provided that this attribute identifies a network location that is capable of processing such requests.

Support for Agent Work Modes

Table 23 indicates the types of agent work modes that T-Server for Siemens HiPath 4000 CSTA III supports.

Table 23: Supported Agent Work Modes

| Agent Work Mode Type | Feature Request | Supported |
|----------------------|--|-----------|
| AgentWorkModeUnknown | TAgentLogin TAgentSetReady TAgentSetNotReady | Y |
| AgentAfterCallWork | TAgentSetNotReady | Y |

Use of the Extensions Attribute

The T-Server for the Siemens HiPath 4000 switch supports the use of the extensions attribute as documented in the *Genesys 7 Events and Models*

Reference Manual and the Voice Platform SDK 8 .NET (or Java) API Reference.

Additionally, the extensions described in Table 24 on [page 190](#) are also supported.

Table 24: Use of the Extensions Attribute

| Extension | | Used In | Description |
|--------------------|----------------------|------------|--|
| Key | Type | | |
| NO_ANSWER_TIMEOUT | string | TRouteCall | If set, the value of this extension overrides any value set in any of the following configuration options for the current call: <ul style="list-style-type: none"> no-answer-timeout agent-no-answer-timeout extn-no-answer-timeout posn-no-answer-timeout |
| NO_ANSWER_ACTION | string | TRouteCall | If set, the value of this extension overrides any value set in any of the following configuration options for the current call: <ul style="list-style-type: none"> no-answer-action agent-no-answer-action |
| NO_ANSWER_OVERFLOW | comma-separated list | TRouteCall | If set, the value of this extension overrides any value set in any of the following configuration options for the current call: <ul style="list-style-type: none"> no-answer-overf low agent-no-answer-overf low extn-no-answer-overf low posn-no-answer-overf low |
| SUPERVISED_ROUTE | string | TRouteCall | Overrides the value in configuration option supervised-route-timeout for individual calls. |

Table 24: Use of the Extensions Attribute (Continued)

| Extension | | Used In | Description |
|---|-----------------------------|---|---|
| Key | Type | | |
| GCTI_CSTA_ACCOUNT_INFO GCTI_CSTA_AUTH_CODE | string | EventPrivateEvent TMakeCall TMakePredictiveCall TSingleStepTransfer TInitiateTransfer TInitiateConference TMuteTransfer | Reports or provides Account Information and Authorization Code to/from relevant CSTA III events and services. |
| UU_DATA GCTI_DATA_CORRELATOR | integer string binary | TMakeCall TMakePredictiveCall TSingleStepTransfer TRouteCall TInitiateTransfer TInitiateConference TMuteTransfer | Contains User-to-User data or correlator data that may be sent to the switch with the corresponding CSTA III service request. |
| GCTI_AUTO_ORIGINATE | integer string | TMakeCall | Specifies whether to ring the phone before proceeding with the call set-up. Value 0 (zero) disables this feature, and therefore means that the phone will be rung. Any other integer makes T-Server attempt to auto-originate the call. Cannot be used with analog devices. |
| origination | integer | TSetDNDOOn TSetDNDOff | Specifies the origination of called that have to be barred: 0—Default 1—Internal 2—Inbound 3—Both internal and inbound Note: CAP 1.0 does not support this parameter. |
| caller-1, caller-2... | string | TSetDNDOOn TSetDNDOff | Each extension represents a call number, calls from which are to be barred. Note: CAP 1.0 does not support this parameter. |

Table 24: Use of the Extensions Attribute (Continued)

| Extension | | Used In | Description |
|--------------------|---------|--|---|
| Key | Type | | |
| device | string | TSetMessageWaitingOn TSetMessageWaitingOff | Parameter deviceforMessage for CSTA setMessageWaitingIndicator operation. |
| rotary | integer | TSendDTMF | Selects Rotary Digits mode if the extension is not 0 (zero). Note: CAP 1.0 does not support this parameter. |
| tone_duration | integer | TSendDTMF | Duration of the DTMF tone, in milliseconds. Not applicable to rotary pulse. |
| pulse_rate | integer | TSendDTMF | Rotary pulse rate, in pulses per second. Not applicable to DTMF. |
| pause_duration | integer | TSendDTMF | Duration of the pauses between digits (interdigit delay). |
| ConvertOtherDN | string | See “Smart OtherDN Handling” on page 166 . | Value 0 disables all conversions for the call. Value 1 forces the relevant conversion for the call. |
| SwitchSpecificType | string | TRegisterAddress | Defines the switch-specific type of a DN that is not configured in Configuration Manager. |
| EmulateLogin | string | TAgentLogin | With value yes, T-Server performs an emulated login. With value no, T-Server attempt a real login. |
| EmulateLogin | string | EventAgentLogin EventAddressInfo EventRegistered | Value yes indicates that the T-Server has performed an emulated login. |

Table 24: Use of the Extensions Attribute (Continued)

| Extension | | Used In | Description |
|-------------------------|-------------------|--|--|
| Key | Type | | |
| WrapUpTime | integer | TAgentLogin | Specifies the amount of emulated wrap-up time (in seconds) allocated to this agent at the end of a business call. This value is effective for the duration of this login's agent session. It can be overridden by the value in the WrapUpTime extension in TAgentNotReady. |
| WrapUpTime | integer | TAgentNotReady | Specifies the amount of emulated wrap-up time (in seconds) allocated to this agent at the end of a business call. This value is effective only for the lifespan of this request. |
| BusinessCallType | string or integer | TMakeCall TInitiateTransfer TMuteTransfer TInitiateConference TMakePredictiveCall TAnswerCall | Specifies the call business type to be used by TServer for the new call or the answering party. Valid values are: 0/private—Private call 1/business—Business call 2/work—Work-related call |
| AgentLogoutOnUnregister | string | TAgentLogin TRegisterAddress | Specifies whether the T-Server performs an automatic logout of an agent whenever their client application unregisters its DN from the T-Server. true—the T-Server will logout emulated and native agents on unregister false—the T-Server will not logout emulated or native agents on unregister emu-only—the T-Server will logout emulated agents only on unregister. |

Table 24: Use of the Extensions Attribute (Continued)

| Extension | | Used In | Description |
|--------------------------|---------|--|--|
| Key | Type | | |
| AssociateClientWithLogin | boolean | TAgentLogin TRegisterAddress | Specifies whether the client should be associated with the agent session. |
| AssociateClientWithLogin | boolean | EventAgentLogin EventRegistered EventPrivateInfo | Specifies that the client has been associated with the agent session. |
| AgentEmuLoginOnCall | boolean | TAgentLogin TAgentLogout | Specifies whether the T-Server allows an emulated agent login or logout from a device where there is a call in progress. |
| LegalGuardTime | integer | TAgentLogin | Specifies the amount of emulated legal guard time allocated to an agent at the end of a business call. |
| SyncEmuACW | integer | TAgentLogin | Specifies whether the T-Server synchronizes emulated ACW and/or legal guard with the switch for native agents. |
| ReleasingParty | string | EventReleased EventAbandoned | Identifies which party was the initiator of the call release. Possible values are: 1—Local 2—Remote 3—Unknown |
| LinkLoad | integer | EventRouteRequest | A value of 1—High indicates that T-Server is in a high watermark condition. The feature is disabled if the use-link-bandwidth option is set to 0 (zero). Possible values are: 0—OK 1—High |

Table 24: Use of the Extensions Attribute (Continued)

| Extension | | Used In | Description |
|---------------------------------|---------|-----------------|--|
| Key | Type | | |
| T-Server Common Part Extensions | | | |
| sdn-licenses-in-use | integer | EventServerInfo | Specifies how many SDN licenses are currently in use. |
| sdn-licenses-available | integer | | Specifies how many SDN licenses are currently available. |

Private Services and Events

Table 25 describes private services and events.

Table 25: Private Services and Events

| Function | Switch Function | Synopsis | Description |
|--------------------------------|----------------------|---|--|
| PrivateEvent AccountInfo(1) | CallInformationEvent | Account Code or Authorization Set | CallInformationEvent received from the switch. Extensions GCTI_CSTA_ACCOUNT_INFO and GCTI_CSTA_AUTH_CODE will contain the relevant information. |
| DialDigits(0, 516) | Dial Digits | Overlap dialing | Invokes switch function Dial Digits. for overlap (partial number) dialing. May be used to invoke function codes such as call monitoring. An originating call has to be initiated beforehand by lifting a handset or dialing partial number using Make Call function with Auto-Originate. The digits to dial have to be passed with the request as extension digits. |
| SetDisplay(1) | Set Display | Display text | Displays text on the telephone set display for a few seconds. The text to display has to be provided with this request in the extension text. |
| PrivateEvent Ringback (500) | | Reports ringback | Reports ringback of a held call. The Genesys call model does not allow state transition from Held to Ringing, so ringback is reported using a private event. |

Table 25: Private Services and Events (Continued)

| Function | Switch Function | Synopsis | Description |
|--------------------------------------|------------------------------------|-------------------------|--|
| PrivateEvent AccountCode (501) | | Reports an account code | May report an account code reported by the switch, if option <code>accode-privateservice</code> is enabled. The code is reported as an extension under key name <code>AccountCode</code> . |
| RequestSet BusinessCall | Service Number (700) | | Sets the business call type of the associated call to <code>business</code> . |
| | ThisDN = Agent DN | | DN of agent connected to call—the agent is also set to type <code>business</code> (but there is no change to current NAS or ACW settings). |
| | Extension key = AttributeConnID | | Connection ID of the call. |
| EventSet BusinessCall | Event Number (510) | | Sent in response to successful <code>TSetBusinessCall</code> . |
| | ThisDN = Agent DN | | DN of agent connected to call |
| | Attribute = AttributeConnID | | Connection ID of the call. |

User Data Keys

The T-Server for the Siemens HiPath 4000 switch supports the use of the user data keys in [Table 26](#).

Table 26: User Data Keys

| Extension | | Used In | Description |
|---------------------------------|-----------------------------|---|--|
| Key | Type | | |
| UU_DATA GCTI_CSTA_CORRELATOR | string integer binary | TMakeCall TMakePredictiveCall TSingleStepTransfer TAnswerCall TReleaseCall TRedirectCall TInitiateTransfer TInitiateConference TMuteTransfer All call events | <p>If this key is present in the user data attached to the call, T-Server passes the attached data attached on to the CAP with a corresponding function request. This enables the switch to do one of the following:</p> <ul style="list-style-type: none"> • Pass the UU data to the remote switch using trunk signaling • Attach the Correlator data to the local call <p>The remote T-Server attaches the UU data to the incoming call as binary, unless option <code>uu-i-as-text</code> is enabled. Data type information is not propagated. Integer values are propagated as a formatted decimal ASCII string.</p> |
| WrapUpTime | integer | Call-related requests | Specifies the amount of emulated wrap-up time allocated to all agents at the end of the business call. |
| LegalGuardTime | integer | Call-related requests | Specifies the amount of emulated Legal Guard time allocated to the agent at the end of a business call. |

Error Messages

Table 27 presents the complete set of error messages T-Server distributes in the EventError

Table 27: Error Messages

| Code | Description |
|--------------------------------|--|
| T-Server-Defined Errors | |
| 40 | No additional licenses |
| 41 | Client has not registered for DN |
| 42 | Resource is already seized |
| 43 | Object is already in requested state |
| 50 | Unknown error |
| 51 | Unsupported operation |
| 52 | Internal error |
| 53 | Invalid attribute |
| 54 | Switch not connected |
| 55 | Incorrect protocol version |
| 56 | Invalid connection ID |
| 57 | Timeout expired |
| 58 | Out of service |
| 59 | DN not configured in Configuration Manager |
| 71 | Invalid called DN |
| 96 | Cannot complete conference |
| 97 | Cannot initiate transfer |
| 98 | Cannot complete transfer |
| 99 | Cannot retrieve original signal |
| 100 | Unknown cause |
| 105 | Information element missing |

Table 27: Error Messages (Continued)

| Code | Description |
|------|--|
| 109 | Link down or bad link specified |
| 111 | Too many outstanding requests |
| 118 | Requested service unavailable |
| 119 | Invalid password |
| 123 | DN for association does not exist |
| 128 | Invalid DN type for DN registration |
| 132 | Invalid link ID |
| 133 | Link already established |
| 147 | No link responding |
| 148 | Facility already enabled |
| 149 | Facility already disabled |
| 164 | Invalid system command |
| 166 | Resource unavailable |
| 168 | Invalid origination address |
| 169 | Invalid destination request |
| 171 | Switch cannot retrieve call |
| 172 | Switch cannot complete transfer |
| 173 | Switch cannot complete conference |
| 174 | Cannot complete answer call |
| 175 | Switch cannot release call |
| 177 | Target DN invalid |
| 179 | Feature could not be invoked |
| 185 | Set is in invalid state for invocation |
| 186 | Set is in target state |
| 191 | Agent ID IE is missing or invalid |

Table 27: Error Messages (Continued)

| Code | Description |
|------|---|
| 192 | Agent ID is invalid |
| 202 | Another application has acquired the resource |
| 220 | No internal resource available |
| 221 | Service not available on device |
| 223 | Invalid parameter passed to function |
| 231 | DN is busy |
| 236 | Timeout performing operation |
| 256 | API restricted from monitor |
| 259 | Invalid password |
| 263 | Must be logged on to use this command |
| 302 | Invalid DTMF string |
| 323 | No answer at DN |
| 380 | Interdigit timeout occurred |
| 402 | Invalid route address |
| 452 | No trunk for outbound calls |
| 477 | Invalid Call ID |
| 496 | Invalid call state |
| 503 | Network failed to deliver outbound call |
| 504 | Network rejected outbound call |
| 527 | Agent ID already in use |
| 627 | Unknown information element detected |
| 700 | Invalid login request |
| 701 | Invalid logout request |
| 704 | Invalid make call request |
| 705 | Route request is invalid |

Table 27: Error Messages (Continued)

| Code | Description |
|--|--|
| 706 | Invalid mute transfer request |
| 708 | Invalid initiate transfer request |
| 710 | Invalid complete transfer request |
| 711 | Invalid retrieve request |
| 712 | Cannot find route point in call |
| 717 | Agent not logged in |
| 714 | Invalid Call_ID |
| 742 | Invalid DN |
| 749 | Agent already logged in |
| 750 | Extension in use |
| 804 | Invalid Call_ID |
| ISCC (Inter Server Call Control) Errors | |
| 1000 | Invalid or missing server location name |
| 1001 | Remote server disconnected |
| 1002 | Remote server has not processed request |
| 1004 | Remote link disconnected |
| 1005 | External routing feature not initiated |
| 1006 | No free CDNs |
| 1007 | No access number |
| 1008 | TCS feature is not initiated |
| 1009 | Invalid route type |
| 1010 | Invalid request |
| 1011 | No primary server was found on location |
| 1012 | Location is invalid or missing |
| 1013 | Timeout performing requested transaction |

Table 27: Error Messages (Continued)

| Code | Description |
|---------------------------|--|
| 1014 | No configured access resources are found |
| 1015 | No registered access resources are found |
| 1016 | Client is not authorized |
| 1017 | Invalid transaction type |
| 1018 | Invalid or missing transaction data |
| 1019 | Invalid location query request |
| 1020 | Invalid origin location |
| Operational Errors | |
| 1110 | Duplicate invocation (packet missed) |
| 1111 | Unrecognized operation (packet transmission error) |
| 1112 | Mistyped argument (packet transmission error) |
| 1113 | Resource limitation |
| 1114 | Initiator releasing |
| 1115 | Unrecognized link ID |
| 1116 | Unexpected linked response |
| 1117 | Unexpected child operation |
| 1120 | Unrecognized invocation |
| 1121 | Result response unexpected |
| 1122 | Mistyped result |
| 1130 | Unrecognized invocation |
| 1131 | Unexpected error response |
| 1132 | Unrecognized error |
| 1133 | Unexpected error |
| 1134 | Mistyped parameter |
| 1135 | ROLM switch RouteSelect failed |

Table 27: Error Messages (Continued)

| Code | Description |
|-------------------------------------|--|
| 1140 | Generic |
| 1141 | Request incompatible with object |
| 1142 | Value is out of range |
| 1143 | Object not known |
| 1144 | Invalid calling device |
| 1145 | Invalid called device |
| 1146 | Invalid forwarding destination |
| 1147 | Request caused privilege violation on device |
| 1148 | Request caused privilege violation on called device |
| 1149 | Request caused privilege violation on calling device |
| 1150 | Invalid call identifier |
| 1151 | Invalid device identifier |
| 1152 | Invalid CSTA connection identifier |
| 1153 | Invalid call destination |
| 1154 | Invalid feature requested |
| 1155 | Invalid allocation state |
| 1156 | Invalid cross-reference identifier |
| 1157 | Invalid object type provided in the request |
| 1158 | Security violation |
| State-Incompatibility Errors | |
| 1160 | Generic |
| 1161 | Invalid object state |
| 1162 | Invalid connection ID |
| 1163 | No active call |
| 1164 | No held call |

Table 27: Error Messages (Continued)

| Code | Description |
|--|------------------------------------|
| 1165 | No call to clear |
| 1166 | No connection to clear |
| 1167 | No call to answer |
| 1168 | No call to complete |
| System Resource–Availability Errors | |
| 1170 | Generic |
| 1171 | Service is busy |
| 1172 | Resource is busy |
| 1173 | Resource is out of service |
| 1174 | Network busy |
| 1175 | Network out of service |
| 1176 | Overall monitor limit exceeded |
| 1177 | Conference member limit exceeded |
| Subscribed Resource–Availability Errors | |
| 1180 | Generic |
| 1181 | Object monitor limit exceeded |
| 1182 | Trunk limit exceeded |
| 1183 | Outstanding request limit exceeded |
| Performance-Management Errors | |
| 291 | Other telephony operation in prog |
| 1185 | Generic |
| 1186 | Performance limit exceeded |
| Security Errors | |
| 1190 | Unspecified |
| 1191 | Sequence number violated |

Table 27: Error Messages (Continued)

| Code | Description |
|--|---|
| 1192 | Timestamp violated |
| 1193 | PAC violated |
| 1194 | Seal violated |
| 1700 | The agent is already reserved by another server |
| Switch-Routing Errors | |
| 1195 | Routing timer or delay ringback timer expired |
| 1196 | Caller abandoned call |
| 1197 | Call successfully routed |
| 1198 | Aborted because of RouteSelect resource problem |
| Network Attended Transfer/Conference Errors | |
| 1901 | Unexpected request TNetworkConsult. |
| 1902 | Unexpected request TNetworkAlternate. |
| 1903 | Unexpected request TNetworkReconnect. |
| 1904 | Unexpected request TNetworkTransfer. |
| 1905 | Unexpected request TNetworkMerge. |
| 1906 | Unexpected request TNetworkSingleStepTransfer. |
| 1907 | Unexpected request TNetworkPrivateService. |
| 1908 | Unexpected message. |

Integration Notes

URS In a single-step transfer from an analog device to an agent the PBX never sends a `ConnectionCleared` event for the analog device, which has to be physically hung up. This means that using URS and an IVR treatment with `transfer_to_agent` set to `true` leaves the analog device stuck. Note that if the single-step transfer is made to a queuing device, then the switch correctly sends `ConnectionCleared`.

VTO Chained consult calls are not supported on analog lines. Also single-step transfer of the destination of a consult call from an analog line is not supported.

This affects VTO scenarios where a consult call is made to a Routing Point then routed to a VTO port.

If connected to a HiPath 4000 switch, VTServer cannot transfer a consult call by two-step or single-step transfer.

So, consultation calls to VTO ports must be transferred before VTO transfers the call.



Chapter

8

Common Configuration Options

Unless otherwise noted, the common configuration options that this chapter describes are common to all Genesys server applications and applicable to any Framework server component. This chapter includes the following sections:

- [Setting Configuration Options, page 208](#)
- [Mandatory Options, page 208](#)
- [Log Section, page 208](#)
- [Log-Extended Section, page 222](#)
- [Log-Filter Section, page 224](#)
- [Log-Filter-Data Section, page 225](#)
- [SML Section, page 225](#)
- [Common Section, page 225](#)
- [Changes from 7.6 to 8.0, page 226](#)

Note: Some server applications also support log options that are unique to them. For descriptions of a particular application's unique log options, refer to the chapter/document about that application.

Setting Configuration Options

Unless specified otherwise, set common configuration options in the `Application` object, using the following navigation path:

- In Configuration Manager—`Application` object > `Properties` dialog box > `Options` tab

Warning! Configuration section names, configuration option names, and predefined option values are case-sensitive. Type them in Configuration Manager exactly as they are documented in this chapter.

Mandatory Options

You do not have to configure any common options to start Server applications.

Log Section

This section must be called `log`.

verbose

Default Value: `all`

Valid Values:

| | |
|--------------------------|--|
| <code>all</code> | All log events (that is, log events of the Standard, Trace, Interaction, and Debug levels) are generated. |
| <code>debug</code> | The same as <code>all</code> . |
| <code>trace</code> | Log events of the Trace level and higher (that is, log events of the Standard, Interaction, and Trace levels) are generated, but log events of the Debug level are not generated. |
| <code>interaction</code> | Log events of the Interaction level and higher (that is, log events of the Standard and Interaction levels) are generated, but log events of the Trace and Debug levels are not generated. |
| <code>standard</code> | Log events of the Standard level are generated, but log events of the Interaction, Trace, and Debug levels are not generated. |
| <code>none</code> | No output is produced. |

Changes Take Effect: Immediately

Determines whether a log output is created. If it is, specifies the minimum level of log events generated. The log events levels, starting with the highest

priority level, are Standard, Interaction, Trace, and Debug. See also “Log Output Options” on [page 214](#).

Note: For definitions of the Standard, Interaction, Trace, and Debug log levels, refer to the *Framework 8.0 Management Layer User’s Guide* or to *Framework 8.0 Solution Control Interface Help*.

buffering

Default Value: true

Valid Values:

| | |
|-------|---------------------|
| true | Enables buffering. |
| false | Disables buffering. |

Changes Take Effect: Immediately

Turns on/off operating system file buffering. The option is applicable only to the stderr and stdout output (see [page 214](#)). Setting this option to true increases the output performance.

Note: When buffering is enabled, there might be a delay before log messages appear at the console.

segment

Default Value: false

Valid Values:

| | |
|----------------------------|--|
| false | No segmentation is allowed. |
| <number> KB or <number> | Sets the maximum segment size, in kilobytes. The minimum segment size is 100 KB. |
| <number> MB | Sets the maximum segment size, in megabytes. |
| <number> hr | Sets the number of hours for the segment to stay open. The minimum number is 1 hour. |

Changes Take Effect: Immediately

Specifies whether there is a segmentation limit for a log file. If there is, sets the mode of measurement, along with the maximum size. If the current log segment exceeds the size set by this option, the file is closed and a new one is created. This option is ignored if log output is not configured to be sent to a log file.

expireDefault Value: `false`

Valid Values:

| | |
|--|--|
| <code>false</code> | No expiration; all generated segments are stored. |
| <code><number> file</code> or <code><number></code> | Sets the maximum number of log files to store. Specify a number from 1–100. |
| <code><number> day</code> | Sets the maximum number of days before log files are deleted. Specify a number from 1–100. |

Changes Take Effect: Immediately

Determines whether log files expire. If they do, sets the measurement for determining when they expire, along with the maximum number of files (segments) or days before the files are removed. This option is ignored if log output is not configured to be sent to a log file.

Note: If an option's value is set incorrectly—out of the range of valid values—it will be automatically reset to 10.

keep-startup-fileDefault Value: `false`

Valid Values:

| | |
|--------------------------------|--|
| <code>false</code> | No startup segment of the log is kept. |
| <code>true</code> | A startup segment of the log is kept. The size of the segment equals the value of the <code>segment</code> option. |
| <code><number> KB</code> | Sets the maximum size, in kilobytes, for a startup segment of the log. |
| <code><number> MB</code> | Sets the maximum size, in megabytes, for a startup segment of the log. |

Changes Take Effect: After restart

Specifies whether a startup segment of the log, containing the initial T-Server configuration, is to be kept. If it is, this option can be set to `true` or to a specific size. If set to `true`, the size of the initial segment will be equal to the size of the regular log segment defined by the `segment` option. The value of this option will be ignored if segmentation is turned off (that is, if the `segment` option set to `false`).

Note: This option applies only to T-Servers.

messagefile

Default Value: As specified by a particular application

Valid Values: `<string>.lms` (message file name)

Changes Take Effect: Immediately, if an application cannot find its *.lms file at startup

Specifies the file name for application-specific log events. The name must be valid for the operating system on which the application is running. The option value can also contain the absolute path to the application-specific *.lms file. Otherwise, an application looks for the file in its working directory.

Warning! An application that does not find its *.lms file at startup cannot generate application-specific log events and send them to Message Server.

message_format

Default Value: short

Valid Values:

| | |
|-------|--|
| short | An application uses compressed headers when writing log records in its log file. |
| full | An application uses complete headers when writing log records in its log file. |

Changes Take Effect: Immediately

Specifies the format of log record headers that an application uses when writing logs in the log file. Using compressed log record headers improves application performance and reduces the log file's size.

With the value set to short:

- A header of the log file or the log file segment contains information about the application (such as the application name, application type, host type, and time zone), whereas single log records within the file or segment omit this information.
- A log message priority is abbreviated to Std, Int, Trc, or Dbg, for Standard, Interaction, Trace, or Debug messages, respectively.
- The message ID does not contain the prefix GCTI or the application type ID.

A log record in the full format looks like this:

```
2002-05-07T18:11:38.196 Standard localhost cfg_dbserver GCTI-00-05060
Application started
```

A log record in the short format looks like this:

```
2002-05-07T18:15:33.952 Std 05060 Application started
```

Note: Whether the full or short format is used, time is printed in the format specified by the [time_format](#) option.

time_convertDefault Value: `local`

Valid Values:

- `local` The time of log record generation is expressed as a local time, based on the time zone and any seasonal adjustments. Time zone information of the application's host computer is used.
- `utc` The time of log record generation is expressed as Coordinated Universal Time (UTC).

Changes Take Effect: Immediately

Specifies the system in which an application calculates the log record time when generating a log file. The time is converted from the time in seconds since the Epoch (00:00:00 UTC, January 1, 1970).

time_formatDefault Value: `time`

Valid Values:

- `time` The time string is formatted according to the HH:MM:SS.sss (hours, minutes, seconds, and milliseconds) format.
- `locale` The time string is formatted according to the system's locale.
- `ISO8601` The date in the time string is formatted according to the ISO 8601 format. Fractional seconds are given in milliseconds.

Changes Take Effect: Immediately

Specifies how to represent, in a log file, the time when an application generates log records.

A log record's time field in the ISO 8601 format looks like this:

```
2001-07-24T04:58:10.123
```

print-attributesDefault Value: `false`

Valid Values:

- `true` Attaches extended attributes, if any exist, to a log event sent to log output.
- `false` Does not attach extended attributes to a log event sent to log output.

Changes Take Effect: Immediately

Specifies whether the application attaches extended attributes, if any exist, to a log event that it sends to log output. Typically, log events of the Interaction log level and Audit-related log events contain extended attributes. Setting this option to `true` enables audit capabilities, but negatively affects performance. Genesys recommends enabling this option for Solution Control Server and Configuration Server when using audit tracking. For other applications, refer to *Genesys 8.0 Combined Log Events Help* to find out whether an application generates Interaction-level and Audit-related log events; if it does, enable the option only when testing new interaction scenarios.

check-point

Default Value: 1

Valid Values: 0–24

Changes Take Effect: Immediately

Specifies, in hours, how often the application generates a check point log event, to divide the log into sections of equal time. By default, the application generates this log event every hour. Setting the option to 0 prevents the generation of check-point events.

memory

Default Value: No default value

Valid Values: <string> (memory file name)

Changes Take Effect: Immediately

Specifies the name of the file to which the application regularly prints a snapshot of the memory output, if it is configured to do this (see “Log Output Options” on [page 214](#)). The new snapshot overwrites the previously written data. If the application terminates abnormally, this file will contain the latest log messages. Memory output is not recommended for processors with a CPU frequency lower than 600 MHz.

Note: If the file specified as the memory file is located on a network drive, an application does not create a snapshot file (with the extension *.memory.log).

memory-storage-size

Default Value: 2 MB

Valid Values:

<number> KB or <number> The size of the memory output, in kilobytes.
The minimum value is 128 KB.

<number> MB The size of the memory output, in megabytes.
The maximum value is 64 MB.

Changes Take Effect: When memory output is created

Specifies the buffer size for log output to the memory, if configured. See also “Log Output Options” on [page 214](#).

spool

Default Value: The application’s working directory

Valid Values: <path> (the folder, with the full path to it)

Changes Take Effect: Immediately

Specifies the folder, including full path to it, in which an application creates temporary files related to network log output. If you change the option value while the application is running, the change does not affect the currently open network output.

compatible-output-priorityDefault Value: `false`

Valid Values:

- `true` The log of the level specified by “[Log Output Options](#)” is sent to the specified output.
- `false` The log of the level specified by “[Log Output Options](#)” and higher levels is sent to the specified output.

Changes Take Effect: Immediately

Specifies whether the application uses 6.x output logic. For example, you configure the following options in the log section for a 6.x application and for a 7.x application:

```
[log]
verbose = all
debug = file1
standard = file2
```

The log file content of a 6.x application is as follows:

- `file1` contains Debug messages only.
- `file2` contains Standard messages only.

The log file content of a 7.x application is as follows:

- `file1` contains Debug, Trace, Interaction, and Standard messages.
- `file2` contains Standard messages only.

If you set `compatible-output-priority` to `true` in the 7.x application, its log file content will be the same as for the 6.x application.

Warning! Genesys does not recommend changing the default value of the this option unless you have specific reasons to use the 6.x log output logic—that is, to mimic the output priority as implemented in releases 6.x. Setting this option to `true` affects log consistency.

Log Output Options

To configure log outputs, set log level options (`all`, `alarm`, `standard`, `interaction`, `trace`, and/or `debug`) to the desired types of log output (`stdout`, `stderr`, `network`, `memory`, and/or `[filename]`, for log file output).

You can use:

- One log level option to specify different log outputs.
- One log output type for different log levels.
- Several log output types simultaneously, to log events of the same or different log levels.

You must separate the log output types by a comma when you are configuring more than one output for the same log level. See “Examples” on [page 219](#).

Note: The log output options are activated according to the setting of the [verbose](#) configuration option.

Warnings!

- If you direct log output to a file on the network drive, an application does not create a snapshot log file (with the extension `*.snapshot.log`) in case it terminates abnormally.
- Directing log output to the console (by using the `stdout` or `stderr` settings) can affect application performance. Avoid using these log output settings in a production environment.

all

Default Value: No default value

Valid Values (log output types):

| | |
|-------------------------|---|
| <code>stdout</code> | Log events are sent to the Standard output (<code>stdout</code>). |
| <code>stderr</code> | Log events are sent to the Standard error output (<code>stderr</code>). |
| <code>network</code> | Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database. Setting the <code>all</code> log level option to the network output enables an application to send log events of the Standard, Interaction, and Trace levels to Message Server. Debug-level log events are neither sent to Message Server nor stored in the Log Database. |
| <code>memory</code> | Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance. |
| <code>[filename]</code> | Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application’s working directory. |

Changes Take Effect: Immediately

Specifies the outputs to which an application sends all log events. The log output types must be separated by a comma when more than one output is configured. For example:

```
all = stdout, logfile
```

Note: To ease the troubleshooting process, consider using unique names for log files that different applications generate.

alarm

Default Value: No default value

Valid Values (log output types):

| | |
|-------------------------|--|
| <code>stdout</code> | Log events are sent to the Standard output (stdout). |
| <code>stderr</code> | Log events are sent to the Standard error output (stderr). |
| <code>network</code> | Log events are sent to Message Server, which resides anywhere on the network, and Message Server stores the log events in the Log Database. |
| <code>memory</code> | Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance. |
| <code>[filename]</code> | Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory. |

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Alarm level. The log output types must be separated by a comma when more than one output is configured. For example:

```
standard = stderr, network
```

standard

Default Value: No default value

Valid Values (log output types):

| | |
|-------------------------|--|
| <code>stdout</code> | Log events are sent to the Standard output (stdout). |
| <code>stderr</code> | Log events are sent to the Standard error output (stderr). |
| <code>network</code> | Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database. |
| <code>memory</code> | Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance. |
| <code>[filename]</code> | Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory. |

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Standard level. The log output types must be separated by a comma when more than one output is configured. For example:

```
standard = stderr, network
```

interaction

Default Value: No default value

Valid Values (log output types):

| | |
|---------------------|--|
| <code>stdout</code> | Log events are sent to the Standard output (stdout). |
| <code>stderr</code> | Log events are sent to the Standard error output (stderr). |

| | |
|-------------------------|--|
| <code>network</code> | Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database. |
| <code>memory</code> | Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance. |
| <code>[filename]</code> | Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory. |

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the `Interaction` level and higher (that is, log events of the `Standard` and `Interaction` levels). The log outputs must be separated by a comma when more than one output is configured. For example:

```
interaction = stderr, network
```

trace

Default Value: No default value

Valid Values (log output types):

| | |
|-------------------------|--|
| <code>stdout</code> | Log events are sent to the Standard output (<code>stdout</code>). |
| <code>stderr</code> | Log events are sent to the Standard error output (<code>stderr</code>). |
| <code>network</code> | Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database. |
| <code>memory</code> | Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance. |
| <code>[filename]</code> | Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory. |

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the `Trace` level and higher (that is, log events of the `Standard`, `Interaction`, and `Trace` levels). The log outputs must be separated by a comma when more than one output is configured. For example:

```
trace = stderr, network
```

debug

Default Value: No default value

Valid Values (log output types):

| | |
|---------------------|--|
| <code>stdout</code> | Log events are sent to the Standard output (<code>stdout</code>). |
| <code>stderr</code> | Log events are sent to the Standard error output (<code>stderr</code>). |
| <code>memory</code> | Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance. |

[filename] Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory.

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Debug level and higher (that is, log events of the Standard, Interaction, Trace, and Debug levels). The log output types must be separated by a comma when more than one output is configured—for example:

```
debug = stderr, /usr/local/genesys/logfile
```

Note: Debug-level log events are never sent to Message Server or stored in the Log Database.

Log File Extensions

You can use the following file extensions to identify log files that an application creates for various types of output:

- *.log—Assigned to log files when you configure output to a log file. For example, if you set `standard = confservlog` for Configuration Server, it prints log messages into a text file called `confservlog.<time_stamp>.log`.
- *.qsp—Assigned to temporary (spool) files when you configure output to the network but the network is temporarily unavailable. For example, if you set `standard = network` for Configuration Server, it prints log messages into a file called `confserv.<time_stamp>.qsp` during the time the network is not available.
- *.snapshot.log—Assigned to files that contain the output snapshot when you configure output to a log file. The file contains the last log messages that an application generates before it terminates abnormally. For example, if you set `standard = confservlog` for Configuration Server, it prints the last log message into a file called `confserv.<time_stamp>.snapshot.log` in case of failure.

Note: Provide *.snapshot.log files to Genesys Technical Support when reporting a problem.

- *.memory.log—Assigned to log files that contain the memory output snapshot when you configure output to memory and redirect the most recent memory output to a file. For example, if you set `standard = memory` and `memory = confserv` for Configuration Server, it prints the latest memory output to a file called `confserv.<time_stamp>.memory.log`.

Examples

This section presents examples of a log section that you might configure for an application when that application is operating in production mode and in two lab modes, debugging and troubleshooting.

Production Mode Log Section

```
[log]
verbose = standard
standard = network, logfile
```

With this configuration, an application only generates the log events of the Standard level and sends them to Message Server, and to a file named `logfile`, which the application creates in its working directory. Genesys recommends that you use this or a similar configuration in a production environment.

Warning! Directing log output to the console (by using the `stdout` or `stderr` settings) can affect application performance. Avoid using these log output settings in a production environment.

Lab Mode Log Section

```
[log]
verbose = all
all = stdout, /usr/local/genesys/logfile
trace = network
```

With this configuration, an application generates log events of the Standard, Interaction, Trace, and Debug levels, and sends them to the standard output and to a file named `logfile`, which the application creates in the `/usr/local/genesys/` directory. In addition, the application sends log events of the Standard, Interaction, and Trace levels to Message Server. Use this configuration to test new interaction scenarios in a lab environment.

Failure-Troubleshooting Log Section

```
[log]
verbose = all
standard = network
all = memory
memory = logfile
memory-storage-size = 32 MB
```

With this configuration, an application generates log events of the Standard level and sends them to Message Server. It also generates log events of the Standard, Interaction, Trace, and Debug levels, and sends them to the memory output. The most current log is stored to a file named `logfile`, which the

application creates in its working directory. Increased memory storage allows an application to save more of the log information generated before a failure. Use this configuration when trying to reproduce an application's failure. The memory log file will contain a snapshot of the application's log at the moment of failure; this should help you and Genesys Technical Support identify the reason for the failure.

Note: If you are running an application on UNIX, and you do not specify any files in which to store the memory output snapshot, a core file that the application produces before terminating contains the most current application log. Provide the application's core file to Genesys Technical Support when reporting a problem.

Debug Log Options

The following options enable you to generate Debug logs containing information about specific operations of an application.

x-conn-debug-open

Default Value: 0

Valid Values:

- | | |
|---|--------------------------------|
| 0 | Log records are not generated. |
| 1 | Log records are generated. |

Changes Take Effect: After restart

Generates Debug log records about “open connection” operations of the application.

Warning! Use this option only when requested by Genesys Technical Support.

x-conn-debug-select

Default Value: 0

Valid Values:

- | | |
|---|--------------------------------|
| 0 | Log records are not generated. |
| 1 | Log records are generated. |

Changes Take Effect: After restart

Generates Debug log records about “socket select” operations of the application.

Warning! Use this option only when requested by Genesys Technical Support.

x-conn-debug-timers

Default Value: 0

Valid Values:

- 0 Log records are not generated.
- 1 Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about the timer creation and deletion operations of the application.

Warning! Use this option only when requested by Genesys Technical Support.

x-conn-debug-write

Default Value: 0

Valid Values:

- 0 Log records are not generated.
- 1 Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about “write” operations of the application.

Warning! Use this option only when requested by Genesys Technical Support.

x-conn-debug-security

Default Value: 0

Valid Values:

- 0 Log records are not generated.
- 1 Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about security-related operations, such as Transport Layer Security and security certificates.

Warning! Use this option only when requested by Genesys Technical Support.

x-conn-debug-api

Default Value: 0

Valid Values:

- 0 Log records are not generated.
- 1 Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about connection library function calls.

Warning! Use this option only when requested by Genesys Technical Support.

x-conn-debug-dns

Default Value: 0

Valid Values:

0 Log records are not generated.

1 Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about DNS operations.

Warning! Use this option only when requested by Genesys Technical Support.

x-conn-debug-all

Default Value: 0

Valid Values:

0 Log records are not generated.

1 Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about open connection, socket select, timer creation and deletion, write, security-related, and DNS operations, and connection library function calls. This option is the same as enabling or disabling all of the previous x-conn-debug-`<op type>` options.

Warning! Use this option only when requested by Genesys Technical Support.

Log-Extended Section

This section must be called log-extended.

level-reassign-`<eventID>`

Default Value: Default value of log event `<eventID>`

Valid Values:

alarm The log level of log event `<eventID>` is set to Alarm.

standard The log level of log event `<eventID>` is set to Standard.

interaction The log level of log event `<eventID>` is set to Interaction.

| | |
|-------|---|
| trace | The log level of log event <eventID> is set to Trace. |
| debug | The log level of log event <eventID> is set to Debug. |
| none | Log event <eventID> is not recorded in a log. |

Changes Take Effect: Immediately

Specifies a log level for log event <eventID> that is different than its default level, or disables log event <eventID> completely. If no value is specified, the log event retains its default level. This option is useful when you want to customize the log level for selected log events.

These options can be deactivated with the option [level-reassign-disable](#).

Warning! Use caution when making these changes in a production environment.

Depending on the log configuration, changing the log level to a higher priority may cause the log event to be logged more often or to a greater number of outputs. This could affect system performance.

Likewise, changing the log level to a lower priority may cause the log event to be not logged at all, or to be not logged to specific outputs, thereby losing important information. The same applies to any alarms associated with that log event.

In addition to the preceding warning, take note of the following:

- Logs can be customized only by release 7.6 or later applications.
- When the log level of a log event is changed to any level except none, it is subject to the other settings in the [log] section at its new level. If set to none, it is not logged and is therefore not subject to any log configuration.
- Using this feature to change the log level of a log changes only its priority; it does not change how that log is treated by the system. For example, increasing the priority of a log to Alarm level does not mean that an alarm will be associated with it.
- Each application in a High Availability (HA) pair can define its own unique set of log customizations, but the two sets are not synchronized with each other. This can result in different log behavior depending on which application is currently in primary mode.
- This feature is not the same as a similar feature in Universal Routing Server (URS) release 7.2 or later. In this Framework feature, the priority of log events are customized. In the URS feature, the priority of debug messages only are customized. Refer to the *Universal Routing Reference Manual* for more information about the URS feature.
- You cannot customize any log event that is not in the unified log record format. Log events of the Alarm, Standard, Interaction, and Trace levels feature the same unified log record format.

Example

This is an example of using customized log level settings, subject to the following log configuration:

```
[log]
verbose=interaction
all=stderr
interaction=log_file
standard=network
```

Before the log levels of the log are changed:

- Log event 1020, with default level standard, is output to stderr and log_file, and sent to Message Server.
- Log event 2020, with default level standard, is output to stderr and log_file, and sent to Message Server.
- Log event 3020, with default level trace, is output to stderr.
- Log event 4020, with default level debug, is output to stderr.

Extended log configuration section:

```
[log-extended]
level-reassign-1020=none
level-reassign-2020=interaction
level-reassign-3020=interaction
level-reassign-4020=standard
```

After the log levels are changed:

- Log event 1020 is disabled and not logged.
- Log event 2020 is output to stderr and log_file.
- Log event 3020 is output to stderr and log_file.
- Log event 4020 is output to stderr and log_file, and sent to Message Server.

level-reassign-disable

Default Value: false

Valid Values: true, false

Changes Take Effect: Immediately

When this option is set to true, the original (default) log level of all log events in the [log-extended] section are restored. This option is useful when you want to use the default levels, but not delete the customization statements.

Log-Filter Section

The log-filter section contains configuration options used to define the default treatment of filtering data in logs. This section contains one configuration option, default-filter-type. Refer to the chapter “Hide

Selected Data in Logs” in the *Genesys 8.0 Security Deployment Guide* for complete information about this option.

Log-Filter-Data Section

The `log-filter-data` section contains configuration options used to define the treatment of filtering data in logs on a key-by-key basis. This section contains one configuration option in the form of `<key name>`. Refer to the chapter “Hide Selected Data in Logs” in the *Genesys 8.0 Security Deployment Guide* for complete information about this option.

SML Section

This section must be called `sml`.

suspending-wait-timeout

Default Value: 10

Valid Values: 5-600

Changes Take Effect: Immediately

Specifies a timeout (in seconds) after the `Stop Graceful` command is issued to an application during which the status of the application should change to `Suspending` if the application supports graceful shutdown. If the status of the application does not change to `Suspending` before the timeout expires, it is assumed that the application does not support graceful shutdown, and it is stopped ungracefully.

Use this option if you are unsure whether the Application supports graceful shutdown.

Note: This option is defined in the `Application` object, as follows:

- in Configuration Manager— `Application object > Properties` dialog box > Annex tab
-

Common Section

This section must be called `common`.

enable-async-dns

Default Value: `off`

Valid Values:

off Disables asynchronous processing of DNS requests.
on Enables asynchronous processing of DNS requests.

Changes Take Effect: Immediately

Enables the asynchronous processing of DNS requests such as, for example, host-name resolution.

Warnings! • Use this option only when requested by Genesys Technical Support.
 • Use this option only with T-Servers.

rebind-delay

Default Value: 10

Valid Values: 0–600

Changes Take Effect: After restart

Specifies the delay, in seconds, between socket-bind operations that are being executed by the server. Use this option if the server has not been able to successfully occupy a configured port.

Warning! Use this option only when requested by Genesys Technical Support.

Changes from 7.6 to 8.0

Table 28 on [page 226](#) provides all the changes to common configuration options between release 7.6 and the latest 8.0 release.

Table 28: Common Configuration Option Changes from 7.6 to 8.0

| Option Name | Option Values | Type of Change | Details |
|--------------------------------|--------------------------|----------------|---|
| log-filter Section | | | |
| default-filter-type | Additional option values | Modified | See description on page 224 . |
| log-filter-data Section | | | |
| <key-name> | Additional option values | Modified | See description on page 225 . |
| sml Section | | | |
| suspending-wait-timeout | 5-600 | New | See description on page 225 . |



Chapter

9

T-Server Common Configuration Options

This chapter describes the configuration options that are generally common to all T-Server types, with some exceptions noted. It contains the following sections:

- [Setting Configuration Options, page 227](#)
- [Mandatory Options, page 228](#)
- [T-Server Section, page 228](#)
- [License Section, page 233](#)
- [Agent-Reservation Section, page 236](#)
- [Multi-Site Support Section, page 237](#)
- [Translation Rules Section, page 247](#)
- [Backup-Synchronization Section, page 248](#)
- [Call-Cleanup Section, page 249](#)
- [Security Section, page 251](#)
- [Timeout Value Format, page 251](#)
- [Changes from Release 7.6 to 8.0, page 252](#)

T-Server also supports common log options described in Chapter 8, “Common Configuration Options,” on [page 207](#).

Setting Configuration Options

Unless it is specified otherwise, you set configuration options in Configuration Manager in the corresponding sections on the `options` tab for the T-Server `Application` object.

Mandatory Options

Except as noted for certain environments, the configuration of common options is not required for basic T-Server operation.

T-Server Section

The T-Server section contains the configuration options that are used to support the core features common to all T-Servers.

TServer This section must be called `TServer`.

ani-distribution

Default Value: `inbound-calls-only`

Valid Values: `inbound-calls-only`, `all-calls`, `suppressed`

Changes Take Effect: Immediately

Controls the distribution of the ANI information in TEvent messages. When this option is set to `all-calls`, the ANI attribute will be reported for all calls for which it is available. When this option is set to `suppressed`, the ANI attribute will not be reported for any calls. When this option is set to `inbound-calls-only`, the ANI attribute will be reported for inbound calls only.

background-processing

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

When set to `true`, T-Server processes all client requests in the background, giving higher priority to the rest of the messages. This ensures that it processes these messages without any significant delay.

With Background Processing functionality enabled, T-Server processes all switch messages immediately and waits until there are no switch messages before processing the message queue associated with T-Server client requests. T-Server reads all connection sockets immediately and places client requests in the input buffer, which prevents T-Server clients from disconnecting because of configured timeouts.

When T-Server processes client requests from the message queue, requests are processed in the order in which T-Server received them.

When set to `false`, T-Server processes multiple requests from one T-Server client before proceeding to the requests from another T-Server client, and so on.

Note: Use of this option can negatively impact T-Server processing speed.

background-timeout

Default Value: 60 msec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval that T-Server waits before processing client requests in background mode. You must set the `background-processing` option to `true` in order for this option to take effect.

check-tenant-profile

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: For the next connected client

When set to `true`, T-Server checks whether a client provides the correct name and password of a tenant. If it does, T-Server allows that client to register DNs that are included in the switch configuration in the Configuration Database, but it does not allow the client to register DNs that are *not* included in the switch configuration.

consult-user-data

Default Value: `separate`

Valid Values:

| | |
|------------------------|--|
| <code>separate</code> | Stores user data for original and consultation calls in separate structures. The data attached to the original call is available for review or changes only to the parties of that call. The data attached to the consultation call is available only to the parties of the consultation call. |
| <code>inherited</code> | Copies user data from an original call to a consultation call when the consultation call is created; thereafter, stores user data separately for the original and the consultation call. Changes to the original call’s user data are not available to the parties of the consultation call, and vice versa. |
| <code>joint</code> | Stores user data for an original call and a consultation call in one structure. The user data structure is associated with the original call, but the parties of both the original and consultation calls can see and make changes to the common user data. |

Changes Take Effect: For the next consultation call created

Specifies the method for handling user data in a consultation call.

Note: A T-Server client can also specify the `consult-user-data` mode in the `Extensions` attribute `ConsultUserData` key for a conference or transfer request. If it is specified, the method of handling user data is based on the value of the `ConsultUserData` key-value pair of the request and takes precedence over the T-Server `consult-user-data` option. If it is not specified in the client request, the value specified in the `consult-user-data` option applies.

customer-id

Default Value: No default value. (A value must be specified for a multi-tenant environment.)

Valid Values: Any character string

Changes Take Effect: Immediately

Identifies the T-Server customer. You must set this option to the name of the tenant that is using this T-Server. You must specify a value for this option if you are working in a multi-tenant environment.

Note: Do not configure the `customer-id` option for single-tenant environments.

dn-scope

Default Value: `undefined`

Valid Values: `undefined`, `switch`, `office`, `tenant`

Specifies whether DNs associated with the `Switch`, `Switching Office`, or `Tenant` objects will be considered in the T-Server monitoring scope, enabling T-Server to report calls to or from those DNs as internal.

With a value of `tenant`, all DNs associated with the switches that are within the `Tenant` will be in the T-Server monitoring scope. With a value of `office`, all DNs associated with the switches that are within the `Switching Office` will be in the T-Server monitoring scope. With a value of `switch`, all DNs associated with the `Switch` will be in the T-Server monitoring scope.

With a value of `undefined` (the default), pre-8.0 T-Server behavior applies.

Note: Setting the option to a value of `office` or `tenant`, which requires T-Server to monitor a large set of configuration data, may negatively affect T-Server performance.

log-trace-flags

Default Value: `+iscc, +cfg$dn, -cfgserv, +passwd, +udata, -devlink, -sw, -req, -callops, -conn, -client`

Valid Values (in any combination):

| | |
|-------------------------|--|
| <code>+/-iscc</code> | Turns on/off the writing of information about Inter Server Call Control (ISCC) transactions. |
| <code>+/-cfg\$dn</code> | Turns on/off the writing of information about DN configuration. |
| <code>+/-cfgserv</code> | Turns on/off the writing of messages from Configuration Server. |
| <code>+/-passwd</code> | Turns on/off the writing of <code>AttributePassword</code> in <code>TEvents</code> . |
| <code>+/-udata</code> | Turns on/off the writing of attached data. |
| <code>+/-devlink</code> | Turns on/off the writing of information about the link used to send CTI messages to the switch (for multilink environments). |
| <code>+/-sw</code> | Reserved by Genesys Engineering. |
| <code>+/-req</code> | Reserved by Genesys Engineering. |
| <code>+/-callops</code> | Reserved by Genesys Engineering. |
| <code>+/-conn</code> | Reserved by Genesys Engineering. |
| <code>+/-client</code> | Turns on/off the writing of additional information about the client's connection. |

Changes Take Effect: Immediately

Specifies—using a space-, comma- or semicolon-separated list—the types of information that are written to the log files.

management-port

Default Value: `0`

Valid Values: `0` or any valid TCP/IP port

Changes Take Effect: After T-Server is restarted

Specifies the TCP/IP port that management agents use to communicate with T-Server. If set to `0` (zero), this port is not used.

merged-user-data

Default Value: `main-only`

Valid Values:

| | |
|-------------------------------|--|
| <code>main-only</code> | T-Server attaches user data from the remaining call only. |
| <code>merged-only</code> | T-Server attaches user data from the merging call. |
| <code>merged-over-main</code> | T-Server attaches user data from the remaining and the merging call. In the event of equal keys, T-Server uses data from the merging call. |
| <code>main-over-merged</code> | T-Server attaches data from the remaining and the merging call. In the event of equal keys, T-Server uses data from the remaining call. |

Changes Take Effect: Immediately

Specifies the data that is attached to the resulting call after a call transfer, conference, or merge completion.

Note: The option setting does not affect the resulting data for merging calls if the `consult-user-data` option is set to `joint`. (See “consult-user-data” on [page 229](#).)

propagated-call-type

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

When set to `false`, T-Server reports a value in the `CallType` attribute as it did in pre-8.0 releases and extends distribution of call-related TEvents that contain the `PropagatedCallType` attribute (if known). This provides backward compatibility with existing T-Server clients.

When set to `true`, T-Server extends distribution of call-related TEvents that contain a call type value in the `LocalCallType` attribute (as in a single-site T-Server deployment) and replaces the value of the regular `CallType` attribute with the `PropagatedCallType` value.

server-id

Default Value: An integer equal to the value `ApplicationDBID` as reported by Configuration Server

Valid Values: Any integer from 0–16383

Changes Take Effect: Immediately

Specifies the Server ID that T-Server uses to generate Connection IDs and other unique identifiers. In a multi-site environment, you must assign each T-Server a unique Server ID, in order to avoid confusion in reporting applications and T-Server behavior.

Configuration of this option is necessary for Framework environments in which there are two or more instances of the Configuration Database.

Note: If you do not specify a value for this option, T-Server populates it with the `ApplicationDBID` as reported by Configuration Server. Each data object in the Configuration Database is assigned a separate DBID that maintains a unique Server ID for each T-Server configured in the database.

Warning! Genesys does not recommend using multiple instances of the Configuration Database.

user-data-limit

Default Value: 16000

Valid Values: 0–65535

Changes Take Effect: Immediately

Specifies the maximum size (in bytes) of user data in a packed format.

Note: When T-Server works in mixed 8.x/7.x/6.x environment, the value of this option must not exceed the default value of 16000 bytes; otherwise, 6.x T-Server clients might fail.

License Section

The License section contains the configuration options that are used to configure T-Server licenses. They set the upper limit of the seat-related DN licenses (`tserver_sdn`) that T-Server tries to check out from a license file. See “License Checkout” on [page 234](#).

license This section must be called `license`.

Notes: T-Server also supports the `license-file` option described in the *Genesys Licensing Guide*.

The `license` section is not applicable to Network T-Server for DTAG.

If you use two or more T-Servers, and they share licenses, you must configure the following options in the `license` section of the T-Servers.

num-of-licensesDefault Value: 0 or `max` (all available licenses)Valid Values: 0 or string `max`

Changes Take Effect: Immediately

Specifies how many DN licenses T-Server checks out. T-Server treats a value of 0 (zero) the same as it treats `max`—that is, it checks out all available licenses.

The sum of all `num-of-licenses` values for all concurrently deployed T-Servers must not exceed the number of seat-related DN licenses (`tserver_sdn`) in the corresponding license file. The primary and backup T-Servers share the same licenses, and therefore they need to be counted only once. T-Server checks out the number of licenses indicated by the value for this option, regardless of the number actually in use.

num-sdn-licenses

Default Value: 0 or max (All DN licenses are seat-related)

Valid Values: String max (equal to the value of num-of-licenses), or any integer from 0–9999

Changes Take Effect: Immediately

Specifies how many seat-related licenses T-Server checks out. A value of 0 (zero) means that T-Server does not grant control of seat-related DNs to any client, and it does not look for seat-related DN licenses at all.

The sum of all num-sdn-licenses values for all concurrently deployed T-Servers must not exceed the number of seat-related DN licenses (tserver_sdn) in the corresponding license file. The primary and backup T-Servers share the same licenses, and therefore they need to be counted only once. T-Server checks out the number of licenses indicated by the value for this option, regardless of the number actually in use.

Notes: For Network T-Servers, Genesys recommends setting this option to 0.

Be sure to configure in the Configuration Database all the DNs that agents use (Extensions and ACD Positions) and that T-Server should control. For further information, see Chapter 2, “DNs and Agent Logins,” [page 41](#).

License Checkout

[Table 29](#) shows how to determine the number of seat-related DN licenses that T-Server attempts to check out. See the examples on [page 235](#).

Table 29: License Checkout Rules

| Options Settings ^a | | License Checkout ^b |
|-------------------------------|------------------|-------------------------------|
| num-of-licenses | num-sdn-licenses | Seat-related DN licenses |
| max (or 0) | max | all available |
| max (or 0) | x | x |
| max (or 0) | 0 | 0 |
| x | max | x |
| x | y | min (y, x) |
| x | 0 | 0 |

- a. In this table, the following conventions are used: x and y - are positive integers; \max is the maximum number of licenses that T-Server can check out; $\min(y, x)$ is the lesser of the two values defined by y and x , respectively.
- b. The License Checkout column shows the number of licenses that T-Server attempts to check out. The actual number of licenses will depend on the licenses' availability at the time of checkout, and it is limited to 9999.

Examples

This section presents examples of option settings in the `License` section.

Example 1

| If... | | Then... |
|---------------------------|-----------------------|----------------------|
| Options Settings | License File Settings | License Checkout |
| num-of-licenses = \max | tserver_sdn = 500 | 500 seat-related DNs |
| num-sdn-licenses = \max | | |

Example 2

| If... | | Then... |
|---------------------------|-----------------------|----------------------|
| Options Settings | License File Settings | License Checkout |
| num-of-licenses = 1000 | tserver_sdn = 500 | 500 seat-related DNs |
| num-sdn-licenses = \max | | |

Example 3

| If... | | Then... |
|------------------------|-----------------------|----------------------|
| Options Settings | License File Settings | License Checkout |
| num-of-licenses = 1000 | tserver_sdn = 600 | 400 seat-related DNs |
| num-sdn-licenses = 400 | | |

Example 4

| If... | | Then... |
|-------------------------|-----------------------|-----------------------|
| Options Settings | License File Settings | License Checkout |
| num-of-licenses = max | tserver_sdn = 5000 | 1000 seat-related DNs |
| num-sdn-licenses = 1000 | | |

Agent-Reservation Section

The Agent-Reservation section contains the configuration options that are used to customize the T-Server Agent Reservation feature. See “Agent Reservation” on [page 28](#) section for details on this feature.

agent-reservation This section must be called `agent-reservation`.

Note: The Agent Reservation functionality is currently a software-only feature that is used to coordinate multiple client applications. This feature does not apply to multiple direct or ACD-distributed calls.

collect-lower-priority-requests

Default Value: `true`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether an agent reservation request is collected, depending on its priority during the time interval specified by the `request-collection-time` configuration option. When set to `false`, during the `request-collection-time` interval, T-Server collects reservation requests of the highest priority only, rejecting newly submitted requests that have a lower priority, or rejecting all previously submitted requests if a request with a higher priority arrives. When set to `true` (the default), agent reservation requests are collected as they were in pre-8.0 releases.

reject-subsequent-request

Default Value: `true`

Valid Values:

`true` T-Server rejects subsequent requests.

`false` A subsequent request prolongs the current reservation made by the same client application for the same agent.

Changes Take Effect: Immediately

Specifies whether T-Server rejects subsequent requests from the same client application, for an agent reservation for the same Agent object that is currently reserved.

Note: Genesys does not recommend setting this option to `false` in a multi-site environment in which remote locations use the Agent-Reservation feature.

request-collection-time

Default Value: 100 msec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the interval that agent reservation requests are collected before a reservation is granted. During this interval, agent reservation requests are delayed, in order to balance successful reservations between client applications (for example, Universal Routing Servers).

reservation-time

Default Value: 10000 msec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the default interval for which an Agent DN is reserved. During this interval, the agent cannot be reserved again.

Multi-Site Support Section

The Multi-Site Support section contains the configuration options that are used to support multi-site environments with the Inter Server Call Control (ISCC) feature. The configuration options in this section of the document are grouped with related options that support the same functionality, as follows:

- [ISCC Transaction Options, page 239](#)
- [Transfer Connect Service Options, page 243](#)
- [ISCC/COF Options, page 244](#)
- [Event Propagation Options, page 246](#)
- [Number Translation Option, page 247](#)

extrouter This configuration section must be called `extrouter`.

For a description of the ways in which T-Server supports multi-site configurations and for an explanation of the configuration possibilities for a multi-site operation, see the “[Multi-Site Support](#)” chapter.

Note: In a multi-site environment, you must configure the `timeout`, `cast-type`, and `default-dn` options with the same value for both the primary and backup T-Servers. If you do not do this, the value specified for the backup T-Server overrides the value specified for the primary T-Server.

match-call-once

Default Value: `true`

Valid Values:

| | |
|--------------------|--|
| <code>true</code> | ISCC does not process (match) an inbound call that has already been processed (matched). |
| <code>false</code> | ISCC processes (attempts to match) a call as many times as it arrives at an ISCC resource or multi-site-transfer target. |

Changes Take Effect: Immediately

Specifies how many times ISCC processes an inbound call when it arrives at an ISCC resource. When set to `false`, ISCC processes (attempts to match) the call even if it has already been processed.

Note: Genesys does not recommend changing the default value of the `match-call-once` option to `false` unless you have specific reasons. Setting this option to `false` may lead to excessive or inconsistent call data updates.

reconnect-tout

Default Value: `5 sec`

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: At the next reconnection attempt

Specifies the time interval after which a remote T-Server attempts to connect to this T-Server after an unsuccessful attempt or a lost connection. The number of attempts is unlimited. At startup, T-Server immediately attempts the first connection, without this timeout.

report-connid-changes

Default Value: `false`

Valid Values:

| | |
|--------------------|--|
| <code>true</code> | <code>EventPartyChanged</code> is generated. |
| <code>false</code> | <code>EventPartyChanged</code> is not generated. |

Changes Take Effect: Immediately

Specifies whether the destination T-Server generates `EventPartyChanged` for the incoming call when the resulting `ConnID` attribute is different from the `ConnID` attribute of an instance of the same call at the origination location.

use-data-from

Default Value: `current`

Valid Values:

| | |
|--|---|
| <code>active</code> | The values of <code>UserData</code> and <code>ConnID</code> attributes are taken from the consultation call. |
| <code>original</code> | The values of <code>UserData</code> and <code>ConnID</code> attributes are taken from the original call. |
| <code>active-data-original-call</code> | The value of the <code>UserData</code> attribute is taken from the consultation call and the value of <code>ConnID</code> attribute is taken from the original call. |
| <code>current</code> | <p>If the value of <code>current</code> is specified, the following occurs:</p> <ul style="list-style-type: none"> • Before the transfer or conference is completed, the <code>UserData</code> and <code>ConnID</code> attributes are taken from the consultation call. • After the transfer or conference is completed, <code>EventPartyChanged</code> is generated, and the <code>UserData</code> and <code>ConnID</code> are taken from the original call. |

Changes Take Effect: Immediately

Specifies the call from which the values for the `UserData` and `ConnID` attributes are taken for a consultation call that is routed or transferred to a remote location.

Note: For compatibility with the previous T-Server releases, you can use the values `consult`, `main`, and `consult-user-data` for this option. These are aliases for `active`, `original`, and `current`, respectively.

ISCC Transaction Options

cast-type

Default Value: `route`, `route-uu`, `reroute`, `direct-callid`, `direct-uu`, `direct-network-callid`, `direct-notoken`, `direct-digits`, `direct-ani`, `dnis-pool`, `pullback`

Valid Values: `route`, `route-uu`, `reroute`, `direct-callid`, `direct-uu`, `direct-network-callid`, `direct-notoken`, `direct-digits`, `direct-ani`, `dnis-pool`, `pullback`

Changes Take Effect: For the next request for the remote service

Specifies—using a space-, comma- or semicolon-separated list—the routing types that can be performed for this T-Server.

The valid values provide for a range of mechanisms that the ISCC feature can support with various T-Servers, in order to pass call data along with calls between locations.

Because switches of different types provide calls with different sets of information parameters, some values might not work with your T-Server. See Table 3 on [page 79](#) for information about supported transaction types by a specific T-Server. The “[Multi-Site Support](#)” chapter also provides detailed descriptions of all transaction types.

Notes: For compatibility with the previous T-Server releases, you can use the `direct` value for this option. This is an alias for `direct-callid`.

An alias, `route-notoken`, has been added to the `route` value.

default-dn

Default Value: No default value

Valid Values: Any DN

Changes Take Effect: For the next request for the remote service

Specifies the DN to which a call is routed when a Destination DN (`AttributeOtherDN`) is not specified in the client’s request for routing. If neither this option nor the client’s request contains the destination DN, the client receives `EventError`.

Note: This option is used only for requests with route types `route`, `route-uui`, `direct-callid`, `direct-network-callid`, `direct-uui`, `direct-notoken`, `direct-digits`, and `direct-ani`.

direct-digits-key

Default Value: `CDT_Track_Num`

Valid Values: Any valid key name of a key-value pair from the `UserData` attribute

Changes Take Effect: For the next request for the remote service

Specifies the name of a key from the `UserData` attribute that contains a string of digits that are used as matching criteria for remote service requests with the `direct-digits` routing type.

Note: For compatibility with the previous T-Server releases, this configuration option has an alias value of `cdt-udata-key`.

dn-for-unexpected-calls

Default Value: No default value

Valid Values: Any DN

Changes Take Effect: Immediately

Specifies a default DN for unexpected calls arriving on an External Routing Point.

network-request-timeout

Default Value: 20 sec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: For the next network request

For a premise T-Server, this option specifies the time interval that the premise T-Server waits for a response, after relaying a TNetwork<...> request to the Network T-Server. For a Network T-Server, this option specifies the time interval that the Network T-Server waits for a response from an SCP (Service Control Point), after initiating the processing of the request by the SCP.

When the allowed time expires, the T-Server cancels further processing of the request and generates EventError.

register-attempts

Default Value: 5

Valid Values: Any positive integer

Changes Take Effect: For the next registration

Specifies the number of attempts that T-Server makes to register a dedicated External Routing Point.

register-tout

Default Value: 2 sec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: For the next registration

Specifies the time interval after which T-Server attempts to register a dedicated External Routing Point. Counting starts when the attempt to register a Routing Point fails.

request-tout

Default Value: 20 sec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: For the next request for remote service

Specifies the time interval that a T-Server at the origination location waits for a notification of routing service availability from the destination location. Counting starts when the T-Server sends a request for remote service to the destination site.

resource-allocation-mode

Default Value: circular

Valid Values:

- home** T-Server takes an alphabetized (or numerically sequential) list of configured DNs and reserves the first available DN from the top of the list for each new request. For example, if the first DN is not available, the second DN is allocated for a new request. If the first DN is freed by the time the next request comes, the first DN is allocated for this next request.
- circular** T-Server takes the same list of configured DNs, but reserves a subsequent DN for each subsequent request. For example, when the first request comes, T-Server allocates the first DN; when the second request comes, T-Server allocates the second DN; and so on. T-Server does not reuse the first DN until reaching the end of the DN list.

Changes Take Effect: Immediately

Specifies the manner in which T-Server allocates resources (that is, DNs of the External Routing Point type and Access Resources with Resource Type dn is) for multi-site transaction requests.

resource-load-maximum

Default Value: 0

Valid Values: Any positive integer

Changes Take Effect: Immediately

Specifies the maximum number of ISCC routing transactions that can be concurrently processed at a single DN of the External Routing Point route type. After a number of outstanding transactions at a particular DN of the External Routing Point type reaches the specified number, T-Server considers the DN not available. Any subsequent request for this DN is queued until the number of outstanding transactions decreases. A value of 0 (zero) means that no limitation is set to the number of concurrent transactions at a single External Routing Point. In addition, the 0 value enables T-Server to perform load balancing of all incoming requests among all available External Routing Points, in order to minimize the load on each DN.

route-dn

Default Value: No default value

Valid Values: Any DN

Changes Take Effect: Immediately

Specifies the DN that serves as a Routing Point for the route transaction type in the multiple-to-one access mode.

timeout

Default Value: 60 sec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: For the next request for remote service

Specifies the time interval that the destination T-Server waits for a call routed from the origination location. Counting starts when this T-Server notifies the requesting T-Server about routing service availability. The timeout must be long enough to account for possible network delays in call arrival.

use-implicit-access-numbers

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: After T-Server is restarted

Determines whether an External Routing Point in which at least one access number is specified is eligible for use as a resource for calls coming from switches for which an access number is not specified in the External Routing Point. If this option is set to `false`, the External Routing Point is not eligible for use as a resource for calls coming from such switches. If this option is set to `true`, an implicit access number for the External Routing Point, composed of the switch access code and the DN number of the External Routing Point, will be used.

Note: If an External Routing Point does not have an access number specified, this option will not affect its use.

Transfer Connect Service Options

tcs-queue

Default Value: No default value

Valid Values: Any valid DN number

Changes Take Effect: For the next request for the remote service

Specifies the TCS DN number to which a call, processed by the TCS feature, is dialed after the originating external router obtains an access number. This option applies only if the `tcs-use` option is activated.

tcs-use

Default Value: `never`

Valid Values:

| | |
|--------------------------|--|
| <code>never</code> | The TCS feature is not used. |
| <code>always</code> | The TCS feature is used for every call. |
| <code>app-defined</code> | In order to use the TCS feature for a multi-site call transfer request, a client application must add a key-value pair with a TC-type key and a nonempty string value to the <code>UserData</code> attribute of the request. |

Changes Take Effect: Immediately

Specifies whether the Transfer Connect Service (TCS) feature is used.

Note: For compatibility with the previous T-Server releases, you can use the value `up-app-depended` for this option. This is an alias for `app-defined`.

ISCC/COF Options

cof-ci-defer-create

Default Value: 0

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval that T-Server waits for call data from the switch before generating a negative response for a call data request from a remote T-Server. If T-Server detects the matching call before this timeout expires, it sends the requested data. This option applies only if the `cof-feature` option is set to `true`.

cof-ci-defer-delete

Default Value: 0

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval that T-Server waits before deleting call data that might be overflowed. If set to 0, deletion deferring is disabled. This option applies only if the `cof-feature` option is set to `true`.

cof-ci-req-tout

Default Value: 500 msec

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: For the next COF operation

Specifies the time interval during which T-Server will wait for call data requested with respect to a call originated at another site. After T-Server sends the call data request to remote T-Servers, all events related to this call will be suspended until either the requested call data is received or the specified timeout expires. This option applies only if the `cof-feature` option is set to `true`.

cof-ci-wait-all

Default Value: `false`

Valid Values:

- | | |
|--------------------|--|
| <code>true</code> | T-Server waits for responses from all T-Servers that might have the requested call data before updating the call data with the latest information. |
| <code>false</code> | T-Server updates the call data with the information received from the first positive response. |

Changes Take Effect: Immediately

Specifies whether T-Server, after sending a request for matching call data, waits for responses from other T-Servers before updating the call data (such as `CallHistory`, `ConnID`, and `UserData`) for a potentially overflowed call. The waiting period is specified by the `cof-ci-req-tout` and `cof-rci-tout` options. This option applies only if the `cof-feature` option is set to `true`.

cof-feature

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Enables or disables the Inter Server Call Control/Call Overflow (ISCC/COF) feature.

cof-rci-tout

Default Value: `10 sec`

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: For the next COF operation

Specifies the time interval that T-Server waits for call data from other T-Servers’ transactions. Counting starts when `cof-ci-req-tout` expires. This option applies only if the `cof-feature` option is set to `true`.

local-node-id

Default Value: `0`

Valid Values: `0` or any positive integer

Changes Take Effect: Immediately

This option, if enabled, checks all networked calls against the specified `NetworkNodeID` (the identity of the switch to which the call initially arrived). If the `NetworkNodeID` is the same as the value of this option, the request for call information is *not* sent. The default value of `0` disables the functionality of this option. To establish an appropriate `NetworkNodeID`, specify a value other than the default. This option applies only if the `cof-feature` option is set to `true`.

Note: This option applies only to T-Server for Nortel Communication Server 2000/2100.

default-network-call-id-matching

Default Value: No default value

Valid Values: See the “T-Server-Specific Configuration Options” chapter for an option description for your T-Server

Changes Take Effect: Immediately

When a value for this option is specified, T-Server uses the `NetworkCallID` attribute for the ISCC/COF call matching.

To activate this feature, the `cof-feature` option must be set to `true`.

Note: SIP Server and several T-Servers support the `NetworkCallID` attribute for the ISCC/COF call matching in a way that requires setting this option to a specific value. For information about the option value that is specific for your T-Server, see the “T-Server-Specific Configuration Options” chapter of your *T-Server Deployment Guide*.

Event Propagation Options

compound-dn-representation

Default Value: `true`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies which format T-Server uses to represent a DN when reporting an `OtherDN` or `ThirdPartyDN` attribute in event propagation messages.

When set to `true`, the `<switch>::DN` (compound) format is used. This option value supports backward compatibility for pre-8.0 T-Server ISCC/EPP functionality and is provided for multi-site deployments where the same DNs are configured under several switches.

When set to `false`, the `DN` (non-compound) format is used. This option value ensures more transparent reporting of `OtherDN` or `ThirdPartyDN` attributes and is recommended for all single-site deployments, as well as for multi-site deployments that do not have the same DNs configured under several switches. This option applies only if the `event-propagation` option is set to `list`.

Note: Local DNs are always represented in the non-compound (DN) form.

epp-tout

Default Value: `0`

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval during which T-Server attempts to resolve race conditions that may occur in deployments that use switch partitioning or

intelligent trunks. This option applies only if the `event-propagation` option is set to `list`.

Note: If the time interval is not long enough to account for possible network switching delays, T-Server may produce duplicated events, such as events that are propagated by the ISCC and generated locally.

event-propagation

Default Value: `list`

Valid Values:

- `list` Changes in user data and party events are propagated to remote locations through call distribution topology.
- `off` The feature is disabled. Changes in user data and party events are not propagated to remote locations.

Changes Take Effect: Immediately

Specifies whether the Event Propagation feature is enabled.

Number Translation Option

inbound-translator-<n>

Default Value: No default value.

Valid Value: Any valid name

Changes Take Effect: Immediately

Specifies the name of another configuration section as the value for the `inbound-translator` option. For example,

`inbound-translator-1 = ani-translator`

where `ani-translator` is the name of the configuration that describes the translation rules for inbound numbers.

Translation Rules Section

The section name is specified by the `inbound-translator-<n>` option. It contains options that define translation rules for inbound numbers.

You can choose any name for this section, provided that it matches the value of the section. Every option in this section corresponds to a rule and must conform to the format described below. You can configure as many rules as necessary to accommodate your business needs.

rule-<n>

Default Value: No default value

Valid Value: Any valid string in the following format:

`in-pattern=<input pattern value>;out-pattern=<output pattern value>`

Changes Take Effect: Immediately

Defines a rule to be applied to an inbound number. The two parts of the option value describe the input and output patterns in the rule. When configuring the pattern values, follow the syntax defined in “Using ABNF for Rules” on [page 88](#). See “Configuring Number Translation” on [page 95](#) for examples of these rules as well as detailed instructions for creating rules for your installation. For example, a value for this configuration option might look like this:

```
rule-01 = in-pattern=0111#CABBB*ccD;out-pattern=ABD
```

Backup-Synchronization Section

The Backup-Synchronization section contains the configuration options that are used to support a high-availability (hot standby redundancy type) configuration.

backup-sync This section must be called `backup-sync`.

Note: These options apply only to T-Servers that support the hot standby redundancy type.

addp-remote-timeout

Default Value: 0

Valid Values: Any integer from 0–3600

Changes Take Effect: Immediately

Specifies the time interval that the redundant T-Server waits for a response from this T-Server after sending a polling signal. The default value of 0 (zero) disables the functionality of this option. To establish an appropriate timeout, specify a value other than the default. This option applies only if the [protocol](#) option is set to `addp`.

addp-timeout

Default Value: 0

Valid Values: Any integer from 0–3600

Changes Take Effect: Immediately

Specifies the time interval that this T-Server waits for a response from another T-Server after sending a polling signal. The default value of 0 (zero) disables the functionality of this option. To establish an appropriate timeout, specify a value other than the default. This option applies only if the [protocol](#) option is set to `addp`.

addp-traceDefault Value: `off`

Valid Values:

`off, false, no` No trace (default).
`local, on, true, yes` Trace on this T-Server side only.
`remote` Trace on the redundant T-Server side only.
`full, both` Full trace (on both sides).

Changes Take Effect: Immediately

Specifies whether addp messages are traced in a log file, to what level the trace is performed, and in which direction. This option applies only if the `protocol` option is set to `addp`.

protocolDefault Value: `default`

Valid Values:

`default` The feature is not active.
`addp` Activates the Advanced Disconnect Detection Protocol.

Changes Take Effect: When the next connection is established

Specifies the name of the method used to detect connection failures. If you specify the `addp` value, you must also specify a value for the `addp-timeout`, `addp-remote-timeout`, and `addp-trace` options.

sync-reconnect-toutDefault Value: `20 sec`Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval after which the backup T-Server attempts to reconnect to the primary server (for a synchronized link).

Call-Cleanup Section

The Call-Cleanup section contains the configuration options that are used to control detection and cleanup of stuck calls in T-Server. For more information on stuck call handling, refer to the “Stuck Call Management” chapter in the *Framework 8.0 Management Layer User’s Guide*.

call-cleanup This section must be called `call-cleanup`.

cleanup-idle-toutDefault Value: `0`Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval that T-Server waits for a call to be updated from its last update. After this time elapses, if no new events about the call are received, T-Server clears this call as a stuck call, either by querying the switch (if a CTI link provides such capabilities) or by deleting the call information from memory unconditionally. The default value of `0` disables the stuck calls cleanup.

Note: If the call-cleanup functionality is enabled in T-Server for Avaya Communication Manager, the UCID (Universal Call ID) feature must be enabled on the switch as well. This allows the UCID to be generated and passed to T-Server.

notify-idle-tout

Default Value: `0`

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval that T-Server waits for a call to be updated from its last update. After this time elapses, if no new events about the call are received, T-Server reports this call as a stuck call. The default value of `0` disables the stuck calls notification.

periodic-check-tout

Default Value: `10 min`

Valid Values: See “Timeout Value Format” on [page 251](#).

Changes Take Effect: Immediately

Specifies the time interval for periodic checks for stuck calls. These checks affect both notification and cleanup functionality, and are made by checking the T-Server’s own call information with call information available in the switch. For performance reasons, T-Server does not verify whether the `notify-idle-tout` or `cleanup-idle-tout` option has expired before performing this check.

Note: Setting this option to a value of less than a few seconds can affect T-Server performance.

Examples

This section presents examples of option settings in the `call-cleanup` section.

Example 1 `cleanup-idle-tout = 0`
`notify-idle-tout = 0`
`periodic-check-tout = 10`

With these settings, T-Server will not perform any checks for stuck calls.

Example 2 `cleanup-idle-tout = 0`

```
notify-idle-tout = 5 min
periodic-check-tout = 10 min
```

With these settings, T-Server performs checks every 10 minutes and sends notifications about all calls that have been idle for at least 5 minutes.

Example 3

```
cleanup-idle-tout = 20 min
notify-idle-tout = 5 min
periodic-check-tout = 10 min
```

With these settings, T-Server performs checks every 10 minutes, sends notifications about all calls that have been idle for at least 5 minutes, and attempts to clean up all calls that have been idle for more than 20 minutes.

Security Section

The Security section contains the configuration options that are used to configure secure data exchange between T-Servers and other Genesys components. Refer to the *Genesys 8.0 Security Deployment Guide* for complete information on the security configuration.

Timeout Value Format

This section of the document describes the values to use for those T-Server common options that set various timeouts. The current format allows you to use fractional values and various time units for timeout settings.

For timeout-related options, you can specify any value that represents a time interval, provided that it is specified in one of the following formats:

```
[[[hours:]minutes:]seconds][milliseconds]
```

or

```
[hours hr][minutes min][seconds sec][milliseconds msec]
```

Where a time unit name in *italic* (such as *hours*) is to be replaced by an integer value for this time unit.

Integer values with no measuring units are still supported, for compatibility with previous releases of T-Server. When you do not specify any measuring units, the units of the default value apply. For example, if the default value equals 60 sec, specifying the value of 30 sets the option to 30 seconds.

Example 1

The following settings result in a value of 1 second, 250 milliseconds:

```
sync-reconnect-tout = 1.25
sync-reconnect-tout = 1 sec 250 msec
```

Example 2

The following settings result in a value of 1 minute, 30 seconds:

```
timeout = 1:30
```

```
timeout = 1 min 30 sec
```

Changes from Release 7.6 to 8.0

[Table 30](#) lists the configuration options that:

- Are new or changed in the 8.0 release of T-Server
- Have been added or changed since the most recent 7.6 release of this document

If a configuration option has been replaced with another that enables the same functionality, the new option name and its location in this chapter are noted.

Table 30: Option Changes from Release 7.6 to 8.0

| Option Name | Option Values | Type of Change | Details |
|----------------------------------|--|-------------------|---|
| TServer Section | | | |
| dn-scope | switch, office, tenant | New in 8.0 | See the option description on page 230 . |
| propagated-call-type | true, false | New in 8.0 | See the option description on page 232 . |
| extrouter Section | | | |
| compound-dn-representation | true, false | New in 8.0 | See the option description on page 246 . |
| default-network-call-id-matching | No default value | See Details | This option is undocumented in previous versions. See the option description on page 246 . |
| epp-tout | Timeout value format | New in 8.0 | See the option description on page 246 . |
| use-data-from | active, original, current, active-data-original-call | New default value | New default value: current. Old default value: active. See the option description on page 239 . |

Table 30: Option Changes from Release 7.6 to 8.0 (Continued)

| Option Name | Option Values | Type of Change | Details |
|----------------------------------|---------------|----------------|--|
| agent-reservation Section | | | |
| collect-lower-priority-requests | true, false | New in 8.0 | See the option description on page 236 . |



Chapter

10

Configuration Options in T-Server for Siemens HiPath 4000

This chapter describes configuration options specific to the T-Server for Siemens HiPath 4000 CSTA III. It contains these sections:

- [Mandatory Options, page 255](#)
- [T-Server Section, page 256](#)
- [Switch-Specific Type Section, page 279](#)
- [Annex Tab Options, page 280](#)
- [Link-Control Section, page 282](#)
- [Changes from 7.6 to 8.0, page 287](#)

Mandatory Options

Table 31 on [page 255](#) lists the options that you must configure for basic T-Server operation. All other options in this chapter are configured to enable T-Server to support various features. Also see the requirements in “Configuration Requirements for CAP 3.0 and CAP 3.0 Inside” on [page 143](#)

To establish a link connection, simply configure the link options (TCP/IP) that are applicable to the connection protocol used in your environment.

Table 31: Mandatory Options

| Option Name | Default Value | Details |
|-------------------------|---------------|---|
| T-Server Section | | |
| link-control | None | See description on page 273 . |

Table 31: Mandatory Options (Continued)

| Option Name | Default Value | Details |
|-------------------------|---------------|---|
| CTI-Link Section | | |
| host | None | See description on page 282 . |
| port | 1040 | See description on page 282 . |

T-Server Section

This section must be called TServer.

Emulated Agent Options

inbound-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server should consider all established inbound calls on an emulated agent as business calls.

outbound-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server should consider all established outbound calls on a emulated agent as business calls after being established.

inherit-bsns-type

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Determines whether a consult call that is made from a business primary call should inherit the `business call` attribute.

internal-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Determines whether T-Server considers internal calls made from or to any agent as business calls.

unknown-bsns-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Determines whether T-Server considers calls of unknown call type made from or to any agent as business calls.

agent-only-private-calls

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server blocks the classification of a call's business type as `private` when there is no agent on the call. When set to `false`, calls with no agents present are classified with business type `private`, enabling No-Answer Supervision (NAS) to be applied for private calls.

When set to `true`, calls remain classified with business type `unknown`.

bsns-call-type

Default Value: `none`

Valid Values: `business`, `private`, `ignore`

Changes Take Effect: Immediately

Specifies the business call type for calls that pass through or arrive at the associated device. Valid values are:

| | |
|-----------------------|---|
| <code>business</code> | The call is classified as a business call. |
| <code>private</code> | The call is classified as a private call. |
| <code>ignore</code> | The distribution point has no effect on business call classification. |

This option takes precedence over the global options `inbound-bsns-call`, `internal-bsns-call` and `outbound-bsns-call`. It may be over-ridden by the `BusinessCallType` extension.

legal-guard-time

Default Value: `0`

Valid Value: Any integer from `0-30`

Changes Take Effect: Immediately

Specifies a legal-guard time (in seconds) for emulated agents to postpone the transition to the Ready state after a business call. T-Server always considers a routed call a business call.

timed-acw-in-idle

Default Value: `true`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server applies the automatic wrap-up timer (using the wrap-up-time parameter) when an agent sends `RequestAgentNotReady`. With value `false`, T-Server does not automatically end manual wrap-up—the agent must return manually from ACW.

acw-in-idle-force-ready

Default Value: `true`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether, after timed manual wrap-up (when you have set option `timed-acw-in-idle` to `true`), T-Server forces the agent to the Ready state. With value `false`, T-Server returns the agent to the state he or she was in prior to wrap-up.

emulate-login

Default Value: `on-RP`

Valid Values: `true`, `false`, `on-RP`

Changes Take Effect: Immediately

Specifies whether T-Server performs emulated agent login when the login device is configured in the Configuration Layer as a device of type `extension`.

| | |
|--------------------|--|
| <code>true</code> | T-Server performs an emulated login. |
| <code>false</code> | T-Server passes a login request to the PBX. |
| <code>on-RP</code> | T-Server checks the Agent Group associated with the login request. If the Agent Group is a standard Routing Point the emulated login request succeeds. This value can only be set at the global level, and is available for backwards compatibility. |

This value can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next highest level, and so on.

1. In `RequestAgentLogin`, using attribute extension `EmulateLogin`.
2. In the `Agent ID` object on the `Annex` tab.
3. In the login device object on the `Annex` tab.
4. In the device representing an `Agent Group` object, on the `Annex` tab.
5. In the `T-Server Application` object, in the `Tserver` section.
6. Using an `Agent Group` corresponding to an object which is configured in the Configuration Layer as a device of type `Routing Point`.

emulated-login-state

Default Value: `ready`

Valid Values: `ready`, `not-ready`

Changes Take Effect: Immediately

When T-Server performs an emulated agent login and the client specifies an agent work mode other than `ManualIn` or `AutoIn`, T-Server uses this option to determine which event to distribute.

`not-ready` T-Server distributes `EventAgentNotReady` after `EventAgentLogin`.

`ready` T-Server distributes `EventAgentReady` after `EventAgentLogin`.

This option can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next level, and so on.

1. In the Agent ID object on the Annex tab.
2. In the agent login device on the Annex tab.
3. In the login device representing an Agent Group during login, on the Annex tab.
4. In the T-Server Application object in the Tserver section.

agent-strict-id

Default Value: `false`

Valid Values: `true`, `false`, `passwd`

Changes Take Effect: Immediately

Specifies whether, for emulated agents, T-Server allows:

- Any agent ID to be used during login (value `false`)
- Only agent IDs configured in Configuration Layer to be used during login (value `true`)
- Only agent IDs that match an agent ID configured in Configuration Layer and that also have a matching password (value `passwd`)

sync-emu-agent (removed)

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Reserved for Genesys Engineering.

sync-emu-acw

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server synchronizes emulated ACW for native agents. The `TAgentLogin` extension `SyncEmuACW` overrides the value configured for this option.

wrap-up-time

Default Value: `0`

Valid Value: Any positive integer, `untimed`

Changes Take Effect: Immediately

Specifies the amount of wrap-up time (ACW) allocated to emulated agents at the end of a business call.

| | |
|--|---|
| 0 | ACW is disabled Exception: When set in the Annex tab of the Agent ID object, value 0 (zero) means T-Server will process from Step 4 in the processing order of precedence below. |
| Value greater than 0 but less than untimed-wrap-up-value | The number of seconds of timed ACW, after which T-Server returns the agent automatically to the Ready state. |
| Value equal to untimed-wrap-up-value | ACW is untimed and the agent must manually return to the Ready state. |
| Value greater than untimed-wrap-up-value | Disables ACW. |
| untimed | ACW is untimed and the agent must manually return to the Ready state. Note: This value cannot be set on the Annex tab of an Agent ID object. |

This option can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next level, and so on.

1. In RequestAgentPendingACW, in attribute extension WrapUpTime (applies to this agent only).
2. In RequestACWInIdle, in attribute extension WrapUpTime (applies to this agent only).
3. In the call, in user data WrapUpTime (limited to ISCC scenarios).
4. In a configuration object of type ACD Queue or Routing Point, on the Annex tab.
5. In RequestAgentLogin, in attribute extension WrapUpTime (applies to this agent only).
6. In the Agent ID object, on the Annex tab (but **not** value untimed).
7. In the login device object, on the Annex tab.
8. Using an Agent Group corresponding to an object configured in the Configuration Layer as a device of type ACD Queue.
9. In the T-Server Application object.

untimed-wrap-up-value

Default Value: 1000

Valid Value: Any positive integer

Changes Take Effect: Immediately

Specifies the threshold at which the timing of ACW stops and manual intervention is required (*untimed ACW*).

wrap-up-threshold

Default Value: 0

Valid Values: Any positive integer

Changes Take Effect: Immediately

Specifies the minimum period (in seconds) that a business call must last before emulated ACW is applied at the end of the call.

backwds-compact-acw-behavior

Default Value: `false`

Valid Value: `true`, `false`

Changes Take Effect: Immediately

Specifies whether pre-7.5 behavior after-call work is enabled (value = `true`) or disabled (value = `false`), for backward compatibility.

With value `true`, if an agent receives or makes a business call while in emulated ACW, with value `false` T-Server does the following:

1. Stops the ACW timer.
2. Forces the agent to the Ready state.
3. Restarts ACW (and the legal-guard timer) after the new business call is released.

If an agent makes or receives a work-related call while in ACW, T-Server does the following:

1. Suspends the ACW, but leaves the agent in the ACW state.
2. Resumes the ACW timer once the work-related call is released.

Note: A work-related call is one made by an agent while in ACW, or a consult call where the main call is either a business call or a work-related call.

After the ACW and any configured legal-guard time have been completed, the agent is forced to the Ready state.

If an agent makes or receives a private call during ACW, no action is taken and the ACW timer keeps running.

With value `true`, pre-7.5 behavior is used. In this case, T-Server forces the agent to the Ready state after the after-call work and legal-guard timer have been applied.

override-switch-acw

Default Value: `false`

Valid Value: `true`, `false`

Changes Take Effect: Immediately
Reserved for Genesys Engineering.

agent-group

Default Value: None

Valid Value: Any agent group value

Changes Take Effect: At the next agent login session

Specifies a value for a virtual group to be used for T-Server reporting.

T-Server obtains the value for this option in the following order of precedence:

1. In the TServer section of the Annex tab of the AgentID object
2. In the TServer section of the Annex tab of the DN object
3. In the main TServer section.

agent-logout-on-unreg

Default Value: false

Valid Values: true, false, emu-only

true T-Server will log out emulated and native agents on unregister.

false T-Server will not log out emulated or native agents on unregister.

emu-only T-Server will log out only emulated agents on unregister.

Changes Take Effect: At the next agent login session

Specifies whether T-Server performs an automatic logout of an agent whenever their client application unregisters the DN from the T-Server. This happens whenever a client application disconnects from the T-Server.

The option can be set in the Configuration Layer in the following places in order of precedence (highest to lowest):

1. The TServer section in the Annex tab of the device representing the agent's group (such as an ACD queue).
2. The TServer section in the Annex tab of an agent.
3. The TServer section in the Annex tab of a device.
4. The TServer section of the application.

The Configuration Layer configuration setting may be overridden by adding the extension AgentLogoutOnUnregister to the TAgentLogin request.

Any subsequent self-transition TAgentLogin request can override the current agent association by adding the extension AgentLogoutOnUnregister with a value of true.

Similarly a TRegisterAddress request can override the current agent association by adding the extension AgentLogoutOnUnregister with a value of true.

agent-logout-reassocDefault Value: `false`Valid Values: `true`, `false`

| | |
|--------------------|--|
| <code>true</code> | T-Server will automatically associate a new client application with the agent. |
| <code>false</code> | T-Server will not automatically associate a new client application with the agent. |

Specifies whether the T-Server will automatically associate a new client application with the agent, when the application either:

- Registers on the agent DN, or;
- Sends a login request while the T-Server is currently waiting to log the agent out due to the previously associated client disconnecting.

Note that the new client application must have the same application name as the previously disconnected client.

The value can also be set by using the `AssociateClientWithLogin` extension in the `TAgentLogin` or `TRegisterAddress` requests. The value specified by the extension, where present, takes precedence over the settings configured in Configuration Layer.

agent-emu-login-on-callDefault Value: `false`Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether the T-Server allows an emulated agent login or logout on a device where there is a call in progress.

The option can be set in Configuration Layer in the following places in order of precedence (highest to lowest):

1. The `TServer` section in the Annex tab of an agent.
2. The `TServer` section in the Annex tab of a device.
3. The `TServer` section of the application.

The value can also be set by using the `AgentEmuLoginOnCall` extension in the `TAgentLogin` or `TAgentLogout` requests. The value specified by the extension, where present, takes precedence over the settings configured in Configuration Layer.

No-Answer Supervision Options

agent-no-answer-timeout

Default Value: 15

Valid Value: Any integer from 0-600

Changes Take Effect: Immediately

Defines the default time (in seconds) that T-Server allows for a logged-in agent (real or emulated) to answer a call before executing the actions defined in options `agent-no-answer-overflow` and `agent-no-answer-action`. Value 0 (zero) disables the Agent No-Answer Supervision feature. See also extension `NO_ANSWER_TIMEOUT`.

Note: When you set a value for this option on the `Annex` tab of an Agent ID object in the Configuration Layer, that value overrides, for that agent, the value of this option set in the `TServer` section.

Because this T-Server supports supervised routing, the value defined for option `supervised-route-timeout` overrides the value defined for `agent-no-answer-timeout` for supervised routed calls. If a call is delivered to a device using supervised routing, and the routing timeout expires, T-Server does not apply the specified no-answer overflow. If the call is routed to an agent, T-Server does apply the specified no-answer action after the supervised-routing timeout expires.

agent-no-answer-overflow

Default Value: No default value

Valid Values: `none`, `recall`, `release`, any valid overflow destination, in a comma-separated list

| | |
|--------------------------------|--|
| <code>none</code> | T-Server does not attempt to overflow a call on an agent desktop when <code>agent-no-answer-timeout</code> expires. T-Server treats this value as the end of a list. Subsequent values are not executed. |
| <code>recall</code> | T-Server returns the call to the last distribution device (the device reported in the <code>ThisQueue</code> attribute of the call) when <code>agent-no-answer-timeout</code> expires. |
| <code>release</code> | T-Server releases the call. |
| Any valid overflow destination | T-Server returns the call to the specified destination when <code>agent-no-answer-timeout</code> expires. |

Changes Take Effect: Immediately

Specifies a sequence of overflow destinations that T-Server attempts to overflow to when the time specified in option `agent-no-answer-timeout` expires. T-Server attempts to overflow in the order specified in the list. If all overflow attempts fail, T-Server abandons overflow. See also extension `NO_ANSWER_OVERFLOW`. If the list of overflow destinations contains the value

recall and the call was not distributed, T-Server skips to the next destination in the list.

Note: When you set a value for option `no-answer-overflow` on the Annex tab of an Agent ID object in the Configuration Layer, that value overrides, for that agent, the value of `agent-no-answer-overflow` in the TServer section.

agent-no-answer-action

Default Value: none

Valid Values: none, notready, logout

none T-Server takes no action on agents when calls are not answered.

notready T-Server sets agents NotReady when calls are not answered.

logout T-Server automatically logs out agents when calls are not answered.

Changes Take Effect: Immediately

Defines T-Server's default action if a logged-in agent (real or emulated) fails to answer a call within the time defined in `agent-no-answer-timeout`. See also extension `NO_ANSWER_ACTION`.

Note: When you set a value for option `no-answer-action` on the Annex tab of an Agent ID object in the Configuration Layer, that value overrides, for that agent, the value of `agent-no-answer-action` in the TServer section.

extn-no-answer-timeout

Default Value: 15

Valid Value: Any integer from 0-600

Changes Take Effect: Immediately

Defines the default no-answer timeout (in seconds) that T-Server applies to any device of type `extension`. When the timeout ends, T-Server executes the actions defined in option `extn-no-answer-overflow`.

Value 0 (zero) deactivates no-answer supervision for devices of type `extension`. See also extension `NO_ANSWER_TIMEOUT`.

Note: When you set a value for option `no-answer-timeout` on the Annex tab of an Extension object in the Configuration Layer, that value overrides, for that extension, the value of `extn-no-answer-timeout` in the TServer section.

posn-no-answer-timeout

Default Value: 15

Valid Value: Any integer from 0-600

Changes Take Effect: Immediately

Defines the default no-answer timeout (in seconds) that T-Server applies to any device of type `position`. When the timeout ends, T-Server executes the actions defined in option `posn-no-answer-overflow`.

Value 0 (zero) deactivates no-answer supervision for devices of type `position`. See also extension `NO_ANSWER_TIMEOUT`.

Note: When you set a value for option `no-answer-timeout` on the Annex tab of a `Position` object in the Configuration Layer, that value overrides, for that position, the value of `posn-no-answer-timeout` in the `TServer` section.

extn-no-answer-overflow

Default Value: No default value

Valid Values: `none`, `recall`, `release`, any valid overflow destination, in a comma-separated list

`none` T-Server does not attempt to overflow a call on an extension when `extn-no-answer-timeout` expires. T-Server treats this value as the end of a list. Subsequent values are not executed.

`recall` T-Server returns the call to the last distribution device (the device reported in the `ThisQueue` attribute of the call) when `extn-no-answer-timeout` expires.

`release` T-Server releases the call.

Any valid overflow destination T-Server returns the call to the specified destination when `extn-no-answer-timeout` expires.

Changes Take Effect: Immediately

Specifies a sequence of overflow destinations that T-Server attempts to overflow to when the time specified in option `extn-no-answer-timeout` has expired.

T-Server attempts to overflow in the order specified in the list. If all overflow attempts fail, T-Server abandons overflow. See also extension `NO_ANSWER_OVERFLOW`.

If the list of overflow destinations contains the value `recall` and the call was not distributed, T-Server skips to the next destination in the list.

Note: If you set a value for option `no-answer-overflow` on the Annex tab of any `Extension` object in the Configuration Layer, that value overrides, for that extension, the value of `extn-no-answer-overflow` in the `TServer` section.

posn-no-answer-overflow

Default Value: No default value.

Valid Values: none, recall, release, any valid overflow destination, in a comma-separated list

| | |
|--------------------------------|---|
| none | T-Server does not attempt to overflow a call on a position when <code>posn-no-answer-timeout</code> expires. T-Server treats this value as the end of a list. Subsequent values are not executed. |
| recall | T-Server returns the call to the last distribution device (the device reported in the <code>ThisQueue</code> attribute of the call) when <code>posn-no-answer-timeout</code> expires. |
| release | T-Server releases the call. |
| Any valid overflow destination | T-Server returns the call to the specified destination when <code>posn-no-answer-timeout</code> expires. |

Changes Take Effect: Immediately

Specifies a sequence of overflow destinations that T-Server attempts to overflow to when the time specified in option `posn-no-answer-timeout` expires. T-Server attempts to overflow in the order specified in the list. If all overflow attempts fail, T-Server abandons overflow. See also extension `NO_ANSWER_OVERFLOW`.

If the list of overflow destinations contains the value `recall` and the call was not distributed, T-Server skips to the next destination in the list.

Note: If you set a value for option `no-answer-overflow` on the Annex tab of any `Position` object in the Configuration Layer, that value overrides, for that position, the value of `posn-no-answer-overflow` in the `TServer` section.

nas-private

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Place: Immediately

Specifies whether No-Answer Supervision is enabled for private calls. When configured in the `Tserver` section, this value is the default value applied globally to all private calls.

Note: When set in the `TServer` section, this option defines the default value for all private calls. However, you can also set a value for this option on the Annex tab of DN's of type `extension` or `Agent ID` in a section called `TServer`. When set there, this value overrides the default value for the specific DN.

recall-no-answer-timeout

Default Value: 15

Valid Values: Any integer from 0-600

Changes Take Place: Immediately

Defines the time that T-Server waits for a call to reappear on a device as a result of a recall (for example, a ringback waiting to be answered). When the timer expires, T-Server executes the actions defined by the relevant overflow option, as well as the action option for cases where an agent is logged in.

With value 0, there is no No-Answer Supervision for such calls.

This option can be defined either in the main Tserver section or in a section called Tserver on the Annex tab of any of the following configuration object types in Configuration Manager:

- Extension
- Position
- VT Port
- AgentID

nas-indication

Default Value: none

Valid Values: none, ext, rsn

Changes Take Effect: Immediately

Specifies the reporting action in EventReleased when No-Answer Supervision overflows a call.

With value none, no reason or extension is provided in EventReleased.

With value ext, extension NO_ANSWER_TIMEOUT is supplied in EventReleased.

With value rsn, reason NO_ANSWER_TIMEOUT is supplied in EventReleased.

Supervised Routing Options

supervised-route-timeout

Default Value: 5

Valid Value: Any integer from 0-600

Changes Take Effect: Immediately

Specifies the interval (in seconds) that T-Server waits for a call routed from an emulated Routing Point using supervised routing to be answered. If the call is not answered within the period specified, T-Server recalls the call to the Routing Point and initiates rerouting. Value 0 (zero) deactivates this feature. See also agent-no-answer-timeout. For predictive dialing to work, you must set values greater than 0 (zero) for both this option and prd-dist-call-ans-time.

This timeout should be set to a value higher than the system latency.

Note: You can use extension `SUPERVISED_ROUTE` to override the value of this configuration option on a call-by-call basis.

When set in the `TServer` section, this option defines the default value for all Routing Points. However, you can also set a value for this option on the `Annex` tab of DNs of type `Routing Point` in a section called `TServer`. When set there, this value overrides the default value for the specific Routing Point. You can also use `Extension` attribute `SUPERVISED_ROUTE` to override the value of this configuration option on a call-by-call basis.

consult-supervised-rt

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server allows supervised routing of consultation calls. With value `false`, T-Server forces nonsupervised routing for consultation calls, regardless of configuration option or call-by-call settings.

Note: When set in the `TServer` section, this option defines the default value for all Routing Points. However, you can also set a value for this option on the `Annex` tab of DNs of type `Routing Point` in a section called `TServer`. When set there, this value overrides the default value for the specific Routing Point.

Emulated Predictive Dialing Options

prd-dist-call-ans-time

Default Value: `0`

Valid Value: Any integer from `0-10`

Changes Take Effect: Immediately

Specifies the interval (in seconds) during which an agent can answer a predictive call before T-Server abandons it. With value `0` (zero), T-Server does not automatically abandon the call, which then rings on the agent desktop until it is answered.

When an emulated predictive dial is made from an emulated Routing Point, and options `prd-dist-call-ans-time` and `supervised-route-timeout` are set,

the value in `prd-dist-call-ans-time` takes precedence. For predictive dialing to work, you must set values greater than 0 (zero) for both options.

-
- Note:**
- When set in the TServer section, this option defines the default value to be applied for all agents. However, this option can also be set on the Annex tab of any queue or Routing Point that is to be used as the origination device for a predictive call, in a section called TServer. When set there, this value overrides the value of the global T-Server option for all calls that are originated from that queue or Routing Point.
 - When using T-Server 8.0 with Outbound Contact Server (OCS) 7.6 or lower, this option must be set to 0 (zero).
-

max-pred-req-delay

Default Value: 3

Valid Value: Any integer from 0-10

Changes Take Effect: Immediately

Defines the maximum time (in seconds) that T-Server waits for a free dialing resource to become available before rejecting a `TMakePredictiveCall` request.

Account Code Options

accode-privateservice

Default Value: false

Valid Values: true, false

Changes Take Effect: Immediately

Enables or disables the use of `RequestPrivateService` and `EventPrivateInfo` for handling the Account Code feature.

accode-data

Default Value: none

Valid Values: none, udata, ext

Changes Take Effect: Immediately

Specifies whether T-Server has to map the switch account codes to call user data (value `udata`), to extensions (value `ext`) or will not map switch account codes (value `none`).

With value `udata`, T-Server attaches reported account codes as user data, using configured keys such as `GCTI_ACCOUNT_CODE_<N>`. T-Server then sends requests to set account codes to the switch, when such user data keys are used in client requests `AttachUserData` or `UpdateUserData`.

With value `ext`, T-Server attaches user data as extensions to all call events and does not intercept user data update requests with the reserved keys.

Note: T-Server always uses the reserved keys sent in any call-related client-request `Extensions` attribute, irrespective of the value of this option.

accode-name

Default Value: `AccountCode`

Valid Values: Any valid key name

Changes Take Effect: Immediately

Specifies the data key name under which T-Server attaches the account code to the call, as either user data or extensions.

accode-index

Default Value: `false`

Valid Values: `false`, `true`

Changes Take Effect: Immediately

Allows T-Server to attach multiple account codes to the call. Each new unique account code is attached to the call, as extensions or user data, with the key as configured by the option `accode-name` with an appended underscore and an incremental integer index, starting from 1 (such as `AccountCode_1`). T-Server keeps the nonindexed key updated with the latest received value, irrespective of the value of this option.

accode-agent

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server uses account codes as agent Walk-Away codes. If this option is set to `true` and the agent is in `NotReady` state, when the switch reports an account code T-Server sends another `EventAgentNotReady` with an extension `ReasonCode` set to the value of the reported account code.

acw-retain-call

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server retains the last agent business call while the agent is in after-call work for user data updates after the call is released. Used in conjunction with `accode-udata`, this allows any subsequent account code to be attached to the previous call.

With value `true`, T-Server use a Call Locking mechanism (see Call Concentrator documentation) so that the account code can be added to the

GCDR table after the call has been released. T-Server sends the account code in `EventUserEvent` rather than `EventUserDataChanged`, so as not to confuse existing desktop applications.

Warning! Use this option with caution. Unsolicited call events on behalf of a released call may cause problems with other applications.

acw-retain-lock

Default Value: 0

Valid Values: Any positive integer

Changes Take Effect: Immediately

Specifies the time (in seconds) that T-Server locks the call for Call Concentrator using `EventUserEvent`. Value 0 means no locking.

dial-separator

Default Value: , (comma)

Valid Values: String that consists of all possible symbols for separation in the dialing string.

Changes Take Effect: Immediately

Specifies the symbol that T-Server will use as a separator when splitting into separate parts the dialing string provided in requests `TMakeCall`, `TInitiateTransfer` and `TInitiateConference`.

The resulting request is made by using a combination of the CSTA requests `MakeCall` (`MakeConsultationCall`) and one or more `Escape Service Dial Digits`, separated by a pause.

Smart Connection/Request ID Handling Options

correct-connid

Default Value: true

Valid Value: true, false

Changes Take Effect: Immediately

With value true, T-Server corrects wrong connection IDs provided by the application in CTI requests. Value false disables this feature.

correct-rqid

Default Value: true

Valid Value: true, false

Changes Take Effect: Immediately

With value true, T-Server correct the ID of CTI requests provided by the application. Value false disables this feature.

Smart OtherDN Handling Options

convert-otherdn

Default Value: +agentid +reserveddn +fwd

Valid Values: +/-agentid +/-reserveddn, +/-fwd

Changes Take Effect: Immediately

Defines whether T-Server has to convert (if applicable) the value provided in request's AttributeOtherDN.

Value +/-agentid turns on/off either the conversion of the Agent ID value provided in the OtherDN attribute to the DN associated with this Agent, or the DN value to Agent ID value (where appropriate).

Value +/-reserveddn turns on/off the conversion of OtherDN for reserved DNs.

Value +/-fwd turns on/off conversion of OtherDN in request TSetCallForward.

dn-for-undesired-calls

Default Value: No default value

Valid Values: Any valid switch DN

Changes Take Effect: Immediately

Specifies the DN that T-Server uses as the request destination if the client provides a reserved DN in the request.

Note: You can set a value for this option on the Annex tab of appropriate DNs in a section called TServer. When set there, this value overrides the default value for the DN.

Other Options

link-control

Default Value: None. Required if configuration section link-control is absent.

Valid Values: Any valid section name

Changes Take Effect: Immediately

Specifies the section where CTI-link options are specified.

pend-state-sync-tout

Default Value: 0

Valid Values: Any integer from 0-10

Changes Take Effect: Immediately

Sets the timeout period (in seconds) for the PBX to send a synchronizing agent-state event after the call is released. Value 0 indicates that the PBX does not send such events.

callback-dn

Default Value: `CallBackDN`

Valid Value: Any string that does not correspond to an existing internal device

Changes Take Effect: Immediately

Defines the value of the third-party DN used in reporting the switch CallBack scenario as an emulated single-step transfer.

Note: The value for this option should not be included in any PBX dialing plan, nor should any DN with a name of this value be configured in the Configuration Layer.

call-type-by-dn

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Enables or disables the setting of call type based on dialing plan analysis (when configured) and on the DN configuration in the Configuration Layer

retain-call-tout

Default Value: `15`

Valid Value: Any integer from `0-3600`

Changes Take Effect: Immediately

Specifies the interval (in seconds) that T-Server waits before deleting information about calls that are completed, but for which it has received no notification from the switch.

expire-call-tout (removed)

Default Value: `60`

Valid Value: Any integer from `0-1440`

Changes Take Effect: Immediately

Specifies the interval (in minutes) that T-Server waits before considering calls *expired* (that is, for which it has received no event from the switch) and deleting them.

rtmem-divert-tout

Default Value: `0`

Valid Value: Any integer from `0-500`

Changes Take Effect: Immediately

Defines the length of the delay (in milliseconds) between the PBX reporting of `released` on an emulated Routing Point member device (switch-specific type 2) and the T-Server reporting the `released` event. If there is a `ringing` event on an alternate route member device during the delay, then the T-Server handles the event as an internal transfer. This prevents the reporting of abandoned

events on the emulated Routing Point when the call moves between route member devices.

uui-as-text

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether user data type `UU_DATA` is sent to CallBridge/CAP as text (value = `true`) or binary (value = `false`). Data must be in ASCII format when this option is enabled.

agent-clean-login

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Place: Immediately

With value `true`, all device calls are cleared when T-Server receives an Agent Login event from the switch. With value `false`, this workaround is disabled.

unknown-xfer-merge-udata

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Place: Immediately

With value `true`, T-Server copies the user data from the current monitored call to the call transferred from an unmonitored destination. Because the primary call was hitherto unknown, normal user data inheritance mechanisms cannot be used.

dtmf-digit-length

Default Value: `80`

Valid Value: Any integer from `40-100`

Changes Take Effect: Immediately

Specifies the length of DTMF tones generated when `RequestSendDTMF` is performed.

transfer-timer

Default Value: `1000`

Valid Value: Any integer from `0-10000`

Changes Take Effect: Immediately

Specifies the time (in milliseconds) for automatic device cleanup after a transfer. After a two-step or single-step transfer CTI request, the switch may initiate a new call, leaving the device busy. If this option has a value, T-Server starts a timer on the device after transfer: any new calls initiated on that device during the specified time are automatically cleared by T-Server using a `CSTA ClearConnection` request. `EventOnHook` is postponed until the new call is

cleared, or the timer has expired, to prevent new calls being routed to such a device.

Value 0 (zero) disables the option.

accept-dn-type

Default Value: +extension +position +acdqueue +routedn +trunk
+routequeue

Valid Values: +/-extension +/-position +/-acdqueue +/-routedn +/-trunk
+/-voicemail +/-data +/-announcement +/-routequeue

Changes Take Effect: Immediately

Defines the supported set of device types that are not configured in the Configuration Layer but that T-Server can register.

- +/-extension Accepts or rejects registration on DN of type extension (AddressTypeDN)
- +/-position Accepts or rejects registration on DN of type position (AddressTypePosition)
- +/-acdqueue Accepts or rejects registration on DN of type ACD Queue (AddressTypeQueue)
- +/-routedn Accepts or rejects registration on DN of type Routing Point (AddressTypeRouteDN)
- +/-trunk Accepts or rejects registration on DN of type Trunk or Tie Line (AddressTypeTrunk)
- +/-voicemail Accepts or rejects registration on DN of type Voice Mail (AddressTypeVoiceChannel)
- +/-data Accepts or rejects registration on DN of type modem (AddressTypeDataChannel)
- +/-announcement Accepts or rejects registration on DN of type Music port (AddressTypeAnnouncement)
- +/-routequeue Accepts or rejects registration on DN of type Routing Queue (AddressTypeRouteQueue)

default-dn-type

Default Value: none

Valid Values: none, extension, position,acdqueue, routedn,trunk,
voicemail,data, announcement,routequeue

Changes Take Effect: Immediately

Defines the value that T-Server applies for AttributeAddressType when the client does not provide that attribute or provides value AddressTypeUnknown.

- none T-Server assigns DN type using PBX-provided information
- extension T-Server uses value AddressTypeDN
- position T-Server uses value AddressTypePosition
- acdqueue T-Server uses value AddressTypeQueue

| | |
|---------------------------|--|
| <code>routedn</code> | T-Server uses value <code>AddressTypeRouteDN</code> |
| <code>trunk</code> | T-Server uses value <code>AddressTypeTrunk</code> |
| <code>voicemail</code> | T-Server uses value <code>AddressTypeVoiceChannel</code> |
| <code>data</code> | T-Server uses value <code>AddressTypeDataChannel</code> |
| <code>announcement</code> | T-Server uses value <code>AddressTypeAnnouncement</code> |
| <code>routequeue</code> | T-Server uses value <code>AddressTypeRouteQueue</code> |

dn-del-mode

Default Value: `idle`

Valid Values: `never`, `idle`, `force`, Timeout Value Format

Changes Take Effect: Immediately

Defines how T-Server handles device and device-related information when the DN is not configured in the Configuration Layer and there are no clients registered on that DN.

| | |
|--------------------|--|
| <code>never</code> | T-Server does not unregister the DN with the PBX and device related information is never deleted from T-Server memory. |
| <code>idle</code> | T-Server unregisters the DN with the PBX and device-related information is deleted from T-Server memory as soon as there are no more calls on this device. |
| <code>force</code> | T-Server unregisters DN with the PBX and device-related information is deleted from T-Server memory regardless of the calls existed on that DN. |

Note: Timeout Value Format—T-Server applies a defined delay before unregistering the DN after the last call has left that DN. Value `idle` is equivalent to setting Timeout Value to 0 (zero).

heartbeat-appname

Default Value: No default value

Valid Value: Any valid application name

Changes Take Effect: Immediately

Defines the identity of the heartbeat application that keeps calls queued while waiting for routing instructions. The switch expects heartbeat messages with this preconfigured application name.

heartbeat-overflow

Default Value: No default value

Valid Value: Any valid destination

Changes Take Effect: Immediately

Defines the destination to which queued calls are overflowed (by the application defined in `heartbeat-appname`) if the switch does not receive the expected heartbeat message.

clid-withheld-name

Default Value: `PRIVATE`

Valid Values: Any string

Changes Take Effect: Immediately

Defines a name that replaces a withheld CLID. If no value is entered (empty string) the withheld CLID will be displayed.

vto-onhook-dly

Default Value: `0`

Valid Values: Any integer from `0-5000`

Changes Take Effect: Immediately

Defines the length of the delay (in milliseconds) between the PBX reporting of on-hook for VTO devices and the T-Server sending `EventOnHook` for the device. Value `0` (zero) indicates that there will be no delay. This option is valid only for DNs configured as VTO devices (switch-specific type 8).

releasing-party-report

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Specifies whether T-Server reports `Attribute Extension ReleasingParty` in events `EventReleased` and `EventAbandoned` to indicate which party initiated the call release.

route-failure-alarm-high-wm

Default Value: `10`

Valid Values: Positive integer for absolute value or floating point number followed by % (percent) symbol. For example; `10%`, `2.25%`, `5E-2%`.

Changes Take Effect: Immediately

Defines the high water mark which must be reached in order for a route failure alarm to be triggered, within the period configured in option `route-failure-alarm-period`.

route-failure-alarm-low-wm

Default Value: `1`

Valid Values: Positive integer for absolute value or floating point number followed by % (percent) symbol. For example; `10%`, `2.25%`, `5E-2%`.

Changes Take Effect: Immediately

Defines the low water mark which must be reached, while under the route failure alarm condition, within the period configured in `route-failure-alarm-period`.

route-failure-alarm-period

Default Value: `0`

Valid Values: Positive integer

Changes Take Effect: Immediately

Defines the interval (in seconds) in which the number of failed route requests is totalled, in order to determine either a possible route failure alarm or the cancelation of an alarm, based on the failed route counter reaching the relevant high or low water mark.

Note: This option also specifies the minimum time between alarm setting and alarm clearing.

Switch-Specific Type Section

This section must be called `SwitchSpecificType`.

extension

Default Value: 0

Valid Value: Switch-specific types for DN of type `Extension` supported by T-Server

Changes Take Effect: Immediately

Defines the switch-specific type that T-Server uses for registration of DNs of type `extension` (`AddressTypeDN`) that are not configured in the Configuration Layer.

acd-queue

Default Value: 0

Valid Value: Switch-specific types for DN of type `ACD Position` supported by T-Server

Changes Take Effect: Immediately

Defines the switch-specific type that T-Server uses for registration of DNs of type `ACD Position` (`AddressTypePosition`) that are not configured in the Configuration Layer.

routing-point

Default Value: 0

Valid Value: Switch-specific types for DN of type `Routing Point` supported by T-Server

Changes Take Effect: Immediately

Defines the switch-specific type that T-Server uses for registration of DNs of type `Routing Point` (`AddressTypeRouteDN`) that are not configured in the Configuration Layer.

routing-queue

Default Value: 0

Valid Value: Switch-specific types for DN of type Routing Queue supported by T-Server

Changes Take Effect: Immediately

Defines the switch-specific type that T-Server uses for registration of DNs of type Routing Queue (AddressTypeRouteQueue) that are not configured in the Configuration Layer.

auto-reconnect-on-fail

Default Value: true

Valid Values: true, false

Changes Take Effect: Immediately

Enables/disables the automatic reconnection of the main call when a consult call is reported as either failed or blocked.

Annex Tab Options

You can only set the configuration options described in this section in the TServer section of the Annex tab of the relevant configuration object in Configuration Layer. You cannot define them in the main TServer configuration section.

no-answer-timeout

Default Value: Same as value in corresponding global option

Valid Value: Any integer from 0-600

Changes Take Effect: Immediately

Defines the time (in seconds) that T-Server waits for a call that is ringing on the device in question to be answered. When the timer expires, T-Server applies the appropriate overflow, and, in the case of agents, the appropriate logout or NotReady action.

Value 0 (zero) deactivates no-answer supervision for this device.

When set, this option overrides any of the following global T-Server configuration options for the object where it has been set (depending on type of configuration object):

- agent-no-answer-timeout if defined for an Agent ID object
- extn-no-answer-timeout if defined for an Extension object
- posn-no-answer-timeout if defined for a Position object

no-answer-overflow

Default Value: No default value

Valid Values: none, recall, release, default, any valid overflow destination, in a comma-separated list

| | |
|--------------------------------|---|
| none | T-Server does not attempt to overflow a call on an agent desktop when agent-no-answer-timeout expires. T-Server treats this value as the end of a list. Subsequent values are not executed. |
| recall | T-Server returns the call to the last distribution device (the device reported in the ThisQueue attribute of the call) when agent-no-answer-timeout expires. |
| release | T-Server releases the call. |
| default | T-Server stops execution of the current overflow sequence and continues with the T-Server default overflow sequence defined by the relevant overflow option in the main TServer section. |
| Any valid overflow destination | T-Server returns the call to the specified destination when agent-no-answer-timeout expires. |

Changes Take Effect: Immediately

Overrides any of the following global T-Server configuration options for the object where it has been set (depending on the type of configuration object):

- agent-no-answer-overflow if defined for an Agent ID object
- extn-no-answer-overflow if defined for an Extension object
- posn-no-answer-overflow if defined for a Position object

T-Server attempts to apply the overflow in the order that is listed. If the first overflow destination fails, then T-Server attempts the next one in the list. If all overflow destinations in the list fail, then T-Server abandons overflow. If the list of overflow destinations contains the value recall and the call was not distributed, T-Server skips to the next destination in the list.

no-answer-action

Default Value: none

Valid Values: none, notready, logout

| | |
|----------|--|
| none | T-Server takes no action on agents when business calls are not answered. |
| notready | T-Server sets agents NotReady when business calls are not answered. |
| logout | T-Server automatically logs out agents when business calls are not answered. |

Changes Take Effect: Immediately

Overrides the global T-Server configuration option agent-no-answer-action for that agent.

This option is defined in a section called TServer on the Annex tab of any Agent ID object in Configuration Layer. If an emulated or real PABX agent receives a

T-Server business call and the agent fails to answer the call within the time defined in option `agent-no-answer-timeout`, the `no-answer-action` option determines the action T-Server performs on this agent.

Note: If a call is abandoned before either `agent-no-answer-timeout` or `no-answer-timeout` or `supervised-route-timeout` expires (depending on which timer is applicable), T-Server performs no action on this agent.

Link-Control Section

The section name must be `link-control`.

hostname

Default Value: No default value. Mandatory option.

Valid Value: Any valid host name

Changes Take Effect: At T-Server start/restart

Specifies the hostname of the CAP server. You must specify a value for this option.

See also “Configuration Requirements for CAP 3.0 and CAP 3.0 Inside” on [page 143](#).

port

Default Value: 1040

Valid Value: Any valid TCP port address

Changes Take Effect: At T-Server start/restart

Specifies the TCP port address of the CallBridge server.

See also “Configuration Requirements for CAP 3.0 and CAP 3.0 Inside” on [page 143](#).

rq-expire-tout

Default Value: 10000

Valid Value: Any integer from 0-30000

Changes Take Effect: Immediately

Specifies the interval (in milliseconds) that T-Server waits before deleting pending requests (requests for which it has received no notification from the switch) from clients.

This timeout should be set to a value higher than the system latency.

reg-interval

Default Value: 60

Valid Values: Any integer from 0-600

Changes Take Effect: Immediately

Specifies the time interval (in seconds) for the Start Monitor request to be re-sent to the switch if the initial request fails. Value 0 (zero) switches this feature off.

kpl-interval

Default Value: 10

Valid Value: Any integer from 0-600

Changes Take Effect: Immediately

Specifies a “keep-alive” interval (in seconds). To check network connectivity, T-Server issues a dummy CTI request at the interval specified when there is no other activity on the link. Value 0 (zero) disables this feature.

The value of this option may need to be increased to avoid false restarts if the switch is sometimes slow to respond, for example, during busy periods.

kpl-tolerance

Default Value: 3

Valid Value: Any integer from 0-10

Changes Take Effect: Immediately

Specifies the threshold number of accumulated KPL request failures. When the threshold is reached T-Server may either consider the CTI link:

- To be lost—in which case T-Server tries to reconnect to it.
- To be unstable—in which case T-Server issues a warning message.

kpl-loss-rate

Default Value: 10, 100

Valid Values: Single integer or comma-separated pair of integers. The first value in the pair is the failure value.

Changes Take Effect: Immediately

Specifies how many KPL positive responses are needed to decrement either the failure or warning tolerance counter.

Value 0 (zero) disables this option.

Two comma-separated values means T-Server will calculate both the failure counter and the warning counter.

A single value means T-Server will calculate only the failure counter.

Note: This option has no effect if option `kpl-tolerance` has value 0. In that case, a single KPL failure will trigger a link restart.

See “Keep-Alive Feature” on [page 168](#) for more details.

max-outstanding

Default Value: 100

Valid Value: Any integer from 1-100

Changes Take Effect: Immediately

Specifies the maximum number of the outstanding sent requests awaiting the response from the link.

rq-gap

Default Value: 0

Valid Value: Any integer from 0-1000

Changes Take Effect: Immediately

Specifies the minimum interval (in milliseconds) between succeeding CTI requests sent over the link. You can adjust the value to meet CTI-link load and performance requirements.

call-rq-gap

Default Value: 250

Valid Value: Any integer from 0-1000

Changes Take Place: Immediately

Specifies (in milliseconds) the length of delay applied to a request issued against a busy call (a call that has another request working on it already). This prevents race conditions on the different call legs.

Set the value of this option to a time longer than the usual response time for a request from the switch.

device-rq-gap

Default Value: 250

Valid Value: Any integer from 0-1000

Changes Take Place: Immediately

Specifies (in milliseconds) the minimum time gap between sequential requests relating to a device. Note that this setting only affects the gap between requests in a device queue.

Note: You can also set a value for this option at a DN-level in the TServer section on the Annex tab with option `rq-gap`.

rq-conflict-check

Default Value: true

Valid Value: true, false

Changes Take Place: Immediately

Specifies whether the request conflict checking feature is enabled. This feature intelligently resolves conflicting client requests.

acse-enable

Default Value: false

Valid Values: true, false

Changes Take Effect: Immediately

Note: Specifies whether ACSE negotiation should be used at link startup. Genesys recommends using the default value and configuring T-Server to connect to CSTA III services on the CAP server.

See also “Configuration Requirements for CAP 3.0 and CAP 3.0 Inside” on [page 143](#).

reg-delay

Default Value: 1000

Valid Values: 0 - 5000

Changes Take Effect: Immediately

Defines the time (in milliseconds) that T-Server waits for the DN Created notification from Configuration Server before it starts processing the registration request from the client as a request for a DN not configured in the Configuration Layer.

reg-silent

Default Value: true

Valid Values: true, false

Changes Take Effect: Immediately

With value true, T-Server reports EventRegistered for “on-demand” registration with the PBX when the procedure is completed.

With value false, T-Server reports EventRegistered as early as possible during the PBX registration procedure.

Note: Reserved for Genesys Engineering.

link-alarm-high

Default Value: 0

Valid Values: 0-100

Changes Take Effect: Immediately

Specifies percentage of use-link-bandwidth option when LMS message LINK_ALARM_HIGH will be triggered.

Value 0 (zero) disables the feature.

link-alarm-low

Default Value: 0

Valid Values: 0-100

Changes Take Effect: Immediately

Specifies percentage of use-link-bandwidth option when LMS message LINK_ALARM_LOW will be triggered.

use-link-bandwidth

Default Value: `auto`

Valid Values: `0-999`, `auto`

Changes Take Effect: Immediately

Specifies the maximum number of requests per second throughput to be used by T-Server to calculate link alarm messages. Value `0` (zero) disables the feature.

Link-Disconnect Handling Options

restart-period

Default Value: `20`

Valid Values: `0-600`

Changes Take Effect: Immediately

Specifies the interval (in seconds) that T-Server waits between attempts to reconnect to the switch when the link fails. Value `0` (zero) means T-Server does not try to reconnect unless the link configuration is changed.

restart-cleanup-limit

Default Value: `0`

Valid Values: Any integer

Changes Take Effect: Immediately

Defines the maximum number of reconnect attempts for calls (and possibly agent logins) in T-Server during link outage. Value `0` zero means all the calls are deleted immediately after the link failure. See also option `restart-period`.

quiet-cleanup

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Disables the events that T-Server would otherwise send to clients during clean-up to notify them about the deleted calls. With value `true`, the T-Server clients are supposed to drop all the calls upon `EventLinkDisconnected` without waiting for T-Server notification. See also the option `restart-cleanup-limit`.

quiet-startup

Default Value: `false`

Valid Values: `true`, `false`

Changes Take Effect: Immediately

Disables the events that T-Server would otherwise send to clients during link start-up to notify clients about the changes that occurred during the link outage. With value `true`, clients should query the T-Server after the `EventLinkConnected`.

restart-cleanup-dly

Default Value: 0

Valid Values: Any integer

Changes Take Effect: Immediately

Specifies the delay, in seconds, for T-Server to keep “unreliable” calls after link startup. This delay allows T-Server to salvage calls that existed before the link failure (for which any events were received) if T-Server was unable to verify their existence using snapshot. Value 0 (zero) means any non-verified calls are cleared up immediately after completion of link startup.

ha-sync-dly-lnk-conn

Default Value: false

Valid Values: true, false

Changes Take Effect: At T-Server start/restart

Determines whether the backup T-Server delays sending of `EventLinkConnected` until it has been notified that T-Server synchronization has completed. With value `true`, the backup T-Server sends `EventLinkConnected` once it has completed switch synchronization (that is, after all calls are cleared in the primary T-Server. With value `false`, there is no delay in sending `EventLinkConnected` and synchronization takes place as for pre-7.1 T-Servers.

Changes from 7.6 to 8.0

Table 32 lists the configuration options that:

- Are new or changed in the 8.0 release of T-Server
- Have been added or changed since the most recent 7.6 release of this document

If a configuration option has been replaced with another that enables the same functionality, the new option name and its location in this chapter are noted.

Table 32: Changes from 7.6 to 8.0

| Option Name | Details |
|--------------------------|---|
| T-Server Section | |
| sync-emu-acw | Introduced in 8.0. See description on page 259 . |
| agent-only-private-calls | Introduced in 8.0. See description on page 257 . |
| agent-logout-on-unreg | Introduced in 8.0. See description on page 262 . |

Table 32: Changes from 7.6 to 8.0 (Continued)

| Option Name | Details |
|-----------------------------|---|
| agent-logout-reassoc | Introduced in 8.0. See description on page 263 . |
| agent-emu-login-on-call | Introduced in 8.0. See description on page 263 . |
| bsns-call-type | Introduced in 8.0. See description on page 257 . |
| call-type-by-dn | Introduced in 8.0. See description on page 274 . |
| releasing-party-report | Introduced in 8.0. See description on page 278 . |
| route-failure-alarm-high-wm | Introduced in 8.0. See description on page 278 . |
| route-failure-alarm-low-wm | Introduced in 8.0. See description on page 278 . |
| route-failure-alarm-period | Introduced in 8.0. See description on page 278 . |
| agent-strict-id | New value passwd added in 8.0. See description on page 259 . |
| sync-emu-agent | Removed in 8.0. See description on page 259 . |
| expire-call-tout | Removed in 7.6. See description on page 274 . |
| Link-Control Section | |
| link-alarm-high | Introduced in 8.0. See description on page 285 . |
| link-alarm-low | Introduced in 8.0. See description on page 285 . |
| use-link-bandwidth | Introduced in 8.0. See description on page 286 . |

Table 32: Changes from 7.6 to 8.0 (Continued)

| Option Name | Details |
|-----------------------|--|
| rq-conflict-check | Introduced in 8.0. See description on page 284 . |
| device-rq-gap | Introduced in 8.0. See description on page 284 . |
| restart-cleanup-limit | New default value added in 8.0. See description on page 286 . |



Supplements

Related Documentation Resources

The following resources provide additional information that is relevant to this software. Consult these additional resources as necessary.

Genesys

- *Genesys Technical Publications Glossary*, which ships on the Genesys Documentation Library DVD and which provides a comprehensive list of the Genesys and computer-telephony integration (CTI) terminology and acronyms used in this document.
- *Genesys Migration Guide*, which ships on the Genesys Documentation Library DVD, and which provides documented migration strategies for Genesys product releases. Contact Genesys Technical Support for more information.
- Release Notes and Product Advisories for this product, which are available on the Genesys Technical Support website at <http://genesyslab.com/support>.

Information about supported hardware and third-party software is available on the Genesys Technical Support website in the following documents:

- *Genesys Supported Operating Environment Reference Manual*
- *Genesys Supported Media Interfaces Reference Manual*
- *The Framework 8.0 Deployment Guide*, which will help you configure, install, start, and stop Framework components.
- *The Framework 8.0 Configuration Options Reference Manual*, which will provide you with descriptions of configuration options for other Framework components.
- *The Framework 8.0 Configuration Manager Help*, which will help you use Configuration Manager.

- *The Genesys Migration Guide*, also on the Genesys Documentation Library DVD, which contains a documented migration strategy from Genesys product releases 5.x and later to all Genesys 7.x releases. Contact Genesys Technical Support for additional information.
- *The Genesys 7 Events and Models Reference Manual*, which contains an extensive collection of events and call models describing core interaction processing in Genesys environments.
- *The Voice Platform SDK 8.0 .NET (or Java) API Reference*, which contains technical details of T-Library functions.
- *The Genesys Technical Publications Glossary*, which ships on the Genesys Documentation Library DVD and which provides a comprehensive list of the Genesys and CTI terminology and acronyms used in this document.
- *Genesys 8 Hardware Sizing Guide*, which provides information about Genesys hardware sizing guidelines for the Genesys 8.x releases.
- *Genesys 7 Interoperability Guide*, which provides information on the compatibility of Genesys products with various Configuration Layer Environments; Interoperability of Reporting Templates and Solutions; and Gplus Adapters Interoperability.
- *Genesys Licensing Guide*, which introduces you to the concepts, terminology, and procedures relevant to the Genesys licensing system.
- *Genesys Database Sizing Estimator 7.6 Worksheets*, which provides a range of expected database sizes for various Genesys products.

For additional system-wide planning tools and information, see the release-specific listings of System Level Documents on the Genesys Technical Support website, accessible from the [system level documents by release](#) tab in the Knowledge Base Browse Documents Section.

Genesys product documentation is available on the:

- Genesys Technical Support website at <http://genesyslab.com/support>.
- Genesys Documentation Library DVD, which you can order by e-mail from Genesys Order Management at orderman@genesyslab.com.

Document Conventions

This document uses certain stylistic and typographical conventions—introduced here—that serve as shorthands for particular kinds of information.

Document Version Number

A version number appears at the bottom of the inside front cover of this document. Version numbers change as new information is added to this document. Here is a sample version number:

80fr_ref_06-2008_v8.0.001.00

You will need this number when you are talking with Genesys Technical Support about this product.

Screen Captures Used in This Document

Screen captures from the product graphical user interface (GUI), as used in this document, may sometimes contain minor spelling, capitalization, or grammatical errors. The text accompanying and explaining the screen captures corrects such errors *except* when such a correction would prevent you from installing, configuring, or successfully using the product. For example, if the name of an option contains a usage error, the name would be presented exactly as it appears in the product GUI; the error would not be corrected in any accompanying text.

Type Styles

[Table 33](#) describes and illustrates the type conventions that are used in this document.

Table 33: Type Styles

| Type Style | Used For | Examples |
|--|--|---|
| Italic | <ul style="list-style-type: none"> Document titles Emphasis Definitions of (or first references to) unfamiliar terms Mathematical variables <p>Also used to indicate placeholder text within code samples or commands, in the special case where angle brackets are a required part of the syntax (see the note about angle brackets on page 294).</p> | <p>Please consult the <i>Genesys Migration Guide</i> for more information.</p> <p>Do <i>not</i> use this value for this option.</p> <p>A <i>customary and usual</i> practice is one that is widely accepted and used within a particular industry or profession.</p> <p>The formula, $x + 1 = 7$ where x stands for . . .</p> |
| Monospace font (Looks like teletype or typewriter text) | <p>All programming identifiers and GUI elements. This convention includes:</p> <ul style="list-style-type: none"> The <i>names</i> of directories, files, folders, configuration objects, paths, scripts, dialog boxes, options, fields, text and list boxes, operational modes, all buttons (including radio buttons), check boxes, commands, tabs, CTI events, and error messages. The values of options. Logical arguments and command syntax. Code samples. <p>Also used for any text that users must manually enter during a configuration or installation procedure, or on a command line.</p> | <p>Select the Show variables on screen check box.</p> <p>In the Operand text box, enter your formula.</p> <p>Click OK to exit the Properties dialog box.</p> <p>T-Server distributes the error messages in EventError events.</p> <p>If you select true for the inbound-bsns-calls option, all established inbound calls on a local agent are considered business calls.</p> <p>Enter exit on the command line.</p> |
| Square brackets ([]) | A particular parameter or value that is optional within a logical argument, a command, or some programming syntax. That is, the presence of the parameter or value is not required to resolve the argument, command, or block of code. The user decides whether to include this optional information. | <code>smcp_server -host [/flags]</code> |
| Angle brackets (< >) | <p>A placeholder for a value that the user must specify. This might be a DN or a port number specific to your enterprise.</p> <p>Note: In some cases, angle brackets are required characters in code syntax (for example, in XML schemas). In these cases, italic text is used for placeholder values.</p> | <code>smcp_server -host <confighost></code> |



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