UC Connector Deployment Guide

UC Connector Overview and Architecture

12/13/2025

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UC Connector Overview and Architecture

This section provides an overview of UCC Connector and describes its general architecture.

The Main Features

The following table lists the most notable features of UC Connector.

Feature	Description	Reference
Presence Monitoring	UC Connector determines Knowledge Worker availability by subscribing to user presence (states/updates) provided by the UC platform.	Presence
Free seating	Knowledge Workers are not tied to a particular place in the configuration. Instead, the agent and DN are dynamically assigned based on the attribute `AgentID` of the corresponding TLib event.	Free Seating
Telephony Integration	Knowledge Worker telephony integration is available through T-Server, for calls flowing from the contact center to the Enterprise. Voice call control is provided through the standard UC client.	Telephony Integration
Instant Messaging Support	When integrated with Lync / Skype for Business, UC Connector supports interaction flows that use the IM integration through SIP Server. IM content and call control is provided through the Lync /Skype for Business client. When deployed standalone, UC Connector can serve instant message interactions through its thin client user interface.	IM Integration
Interaction Preview Notification	Genesys Routing can send a preview to a targeted Knowledge Worker, letting the Knowledge Worker accept or decline the interaction before actually routing the interaction. This can be done for a selected Knowledge Worker, or round robin for a group of Knowledge Workers. Multiple preview	Preview

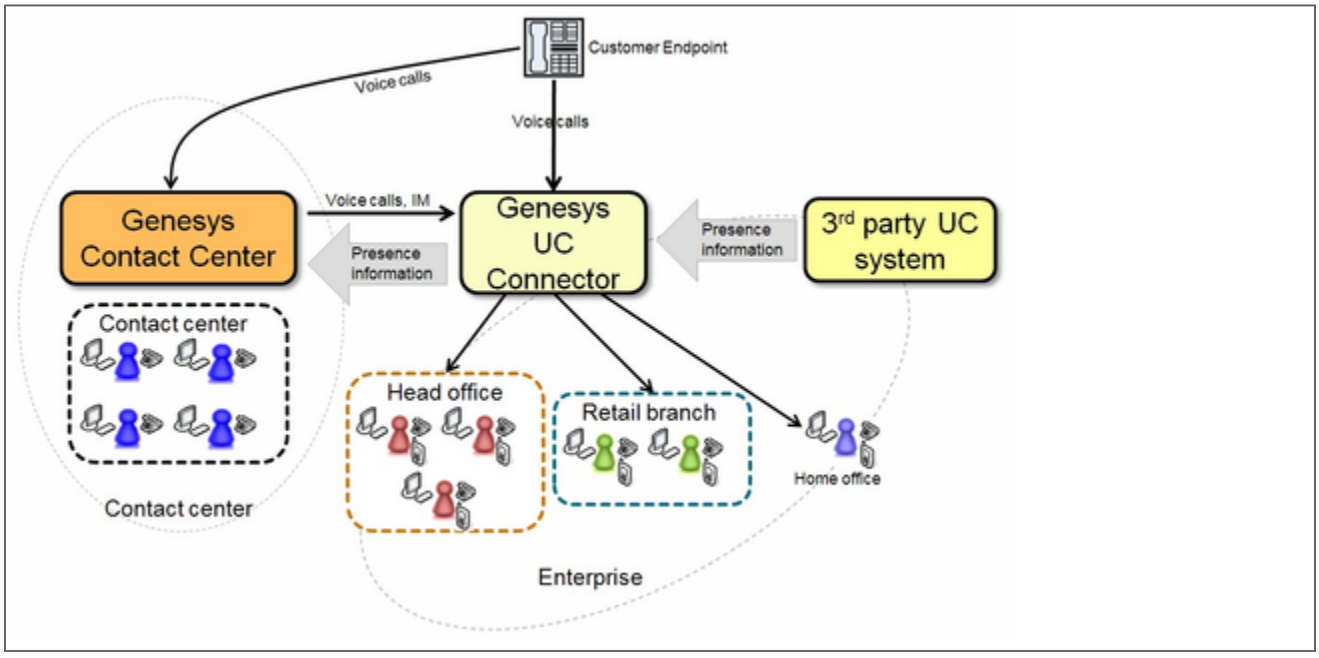
Feature	Description	Reference
	notifications can also be sent simultaneously—broadcast—to a set of Knowledge Workers. In this case the first Knowledge Worker to respond receives the interaction.	
Business Data Exchange	The Knowledge Worker can access call context and attached data related to any interaction that is transferred to them. Genesys UserData is passed to the UC client, displayed on their Interaction window, the Preview window, or the custom UC Connector tab of their UC client, depending on the configuration.	Transfers
Limited Enterprise Footprint	All deployment related to the integration with the UC platform takes place on the Genesys side, with no need for any new applications to be running on the Knowledge Worker desktop.	
Reporting	Business and performance metrics about the Knowledge Worker voice activity is provided through the Genesys Reporting solution. Knowledge Workers are configured in the Genesys system as standard agents, and standard reporting products and templates can be used to generate reports on how the Knowledge Worker is used or how the call is handled. In addition special reporting is available to track interaction previews. This is treated as a separate feature, see below for details.	Reporting
Interaction Preview-related Reporting Events	UC Connector can create reporting-related records in ICON for the user actions in the Preview window. Reporting tools can extract these records to create reports on the performance of Knowledge Workers while responding to previews.	Reporting
Default Routing	UC Connector includes an application-wide option to allow default routing in case of Universal Routing Server failure, if this functionality is supported by the T-Server and other	login-queue

Feature	Description	Reference
	solution components.	
Countdown Timer	The interaction Preview window disappears automatically after a timeout if the user does not accept or reject the interaction. This widget allows the user to see the time remaining to respond to the preview.	Timer
Customized Help Button	UC Connector includes a Help button, which you can use to link to customized help files located on your network or server. You can hide or show this help button as it appears in various parts of the user interface.	Help Button
Automated UC Connector Login	UC Connector supports automatic login for all users on startup. This feature must be enabled for integrations with Microsoft Lync / Skype for Business.	Optional Customization
Customized Default Languages	UC Connector lets you select from a variety of supported languages to be used in the interface.	Default Language
Customized Knowledge Worker States	UC Connector allows you to customize the states available to Knowledge Workers in the UC Connector web client drop-down menu. The Knowledge Worker states and the corresponding text displayed in the menu can be customized by editing application resources.	Knowledge Worker
External Number Redirect	A user or an Administrator can enable an external redirect number. Enabling this feature allows agents to accept preview calls at the specified number.	Redirect Number
Enterprise Voice	When an agent enters the After Call Work state, the agent's presence state is: • Preserved in Genesys until the agent uses the Lync client menu to change state or the After Call Work timer expires. • Propagated to the Lync server so that the agent's unavailability is also reflected in the corresponding Lync	After Call Work

Feature	Description	Reference
	presence with a configurable presence status and note values. When the agent exits the After Call Work state (either automatically or manually) the agent's Lync presence state is set back to a value that is preserved from the Lync presence update. The agent's Genesys state is also updated with the corresponding value.	
Play Audio with Interaction Preview	You can add a custom audio file that UC Connector plays when the Preview window is displayed, for additional alerting of knowledge workers.	Audio
Configurable Hotkeys for Interaction Preview	You can configure keyboard hotkeys to perform key actions when the Preview window is in focus.	Hotkeys

The Main Components

The main components and actors involved in the UC Connector interaction between contact center and enterprise are as follows:



- **Customer**—Customers use voice channels to connect with customer service provided by the Genesys contact center or directly to the enterprise through Genesys UC Connector.
- **Contact Center Agent**—Contact center agents have CTI-enabled phones and an Agent Desktop client (Genesys Workspace Desktop Edition, for example) that supports UserData. They can involve enterprise Knowledge Workers in the customer interactions through the UC Connector using voice or IM.
- **Enterprise Knowledge Worker**—Enterprise workers are not generally considered part of the contact center but their expertise can benefit customer interactions. The UC Connector can involve them directly in customer service even if a contact center is not deployed.
  Knowledge Workers are represented inside Genesys as agents (`person` objects in the Configuration Database) with access to all business rules, routing, and reporting available to regular agents.
- **Microsoft UC solution**—The Unified Communications (UC) software system used by the enterprise. In 8.0, UC Connector supports integration with the following UC solutions:
  - Microsoft Lync 2010/2013
  - Microsoft Skype for Business 2015
- **UC Connector**—The Genesys component used to integrate the Genesys environment with the third-party UC solution and enable enterprise-wide customer service.

The Main Functions

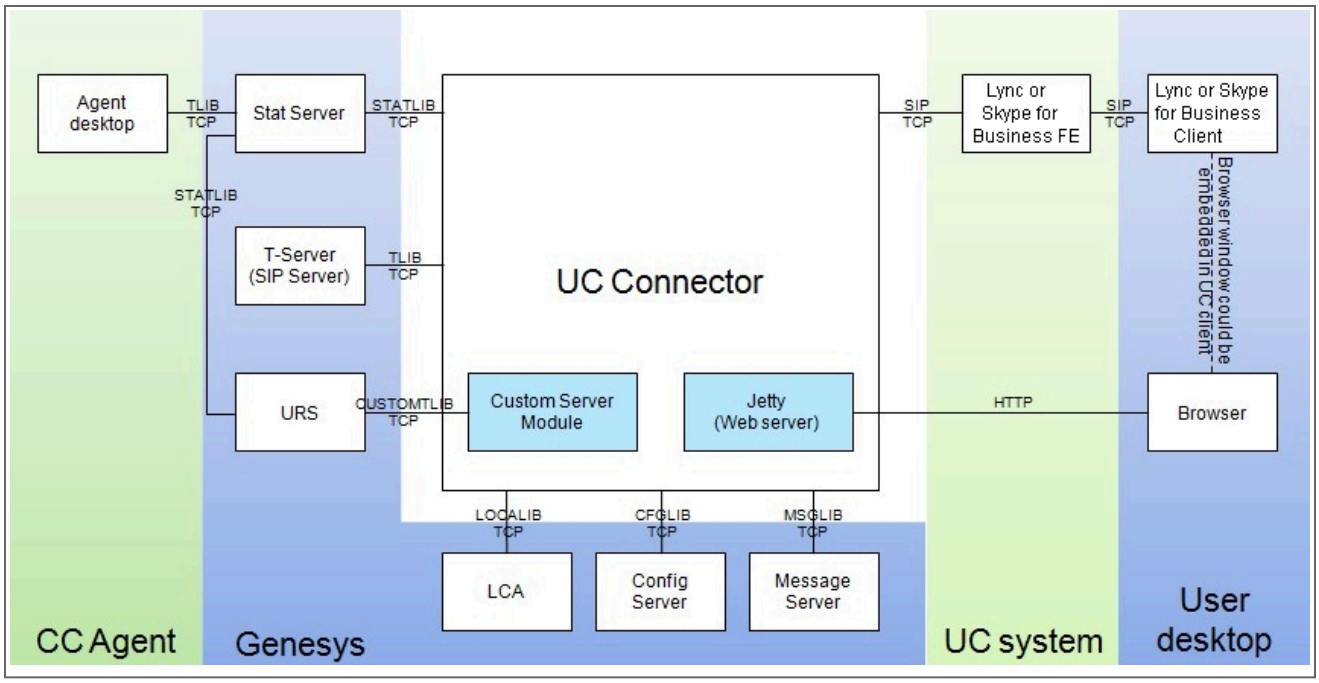
The main functions provided by a UC Connector integration are:

- **Voice interaction**—The customer uses voice to connect with the contact center or directly with the enterprise customer service function. The agent can also use voice when contacting the Knowledge Worker to determine availability (for example, when initiating a voice transfer).
- **Instant Messaging** (IM)—The agent can contact a Knowledge Worker using IM, either to ask if the Knowledge Worker can accept a particular customer interaction, or to pass typed information for convenience during a phone conversation.
- **Presence Monitoring**—By integrating with the third-party UC solution the Genesys environment is able to determine the availability status of a given Knowledge Worker so that it knows who might be available to handle the customer interaction. Note that in case of standalone deployment (not integrated with the Microsoft UC platform) UC Connector manages the presence of Knowledge Workers directly from their browser window.
- **Interaction Preview Notifications**—Knowledge Workers may not have job roles that allow for interruptions, even when their presence status shows they are available. When an agent sends a customer interaction to the Knowledge Worker a screen pop arrives at the Knowledge Worker's desktop providing relevant information about the current customer interaction. This gives the Knowledge Worker the opportunity to accept or decline the interaction based on their real availability.

Basic Architecture

The following diagram shows the different server elements involved in a UC Connector deployment, as well as the kinds of interfaces used to communicate among the components.

Genesys Components in the Solution



The server components included in the basic architecture include the following:

- **SIP Server**—SIP Server—Provides both a SIP and T-Library interface. SIP Server can act as a T-Server and softswitch for deployments with no third-party PBX. SIP Server is required for Instant Messaging.

> ### Warning
> T-Server must support emulated agent functionality to integrate with UC Connector. Most T-Servers include this functionality; for a list of supported T-Server please see the T-Server Compatibility topic.

- **Universal Routing Server (URS)**—Universal Routing Server (URS)—Provides Genesys routing for the customer interaction. Universal Routing Server processes the routing strategies designed in Interaction Routing Designer (IRD) that govern how the interaction is processed. The UC Connector integrates with URS as a Custom Server, using a proprietary protocol to execute, in this case, the Preview Mechanism for the Knowledge Worker selected in the routing strategy.

- **Workspace Desktop Edition**—The interface that appears on the desktop of Genesys contact center agents. Agents can use their Workspace Desktop Edition to send the customer interaction to the expert user or Knowledge Worker in the Enterprise, including any important notes or information that would be helpful to the expert.

> **Warning**
> Workspace Desktop Edition is not mandatory to the deployment. If using a different desktop client for your agents, some custom functionality might be required.

- **Stat Server**—Tracks information about the customer interaction. For UC Connector, Stat Server is used to monitor the DNs, agents, emulated agents, and other objects, making their states available to other Genesys components, in particular to URS for Genesys routing. UC Connector is also able to use statistics—for example, number of calls in a queue—that it can display in the Interaction window so that Knowledge Workers can check availability of a Contact Point before transferring a call.
- **Local Control Agent (LCA)**—The LCA is deployed on each host computer running Genesys components and is used to monitor the operating status of all locally running Genesys software.
- **Configuration Server**—Stores and manages the Configuration Database data that users can access through Configuration Manager or Genesys Administrator.
- **Message Server**—Receives error messages from all installed Genesys application and logs them into a common database.

Communication Between Components

The following table shows the protocols and libraries used for communication between the various server components.

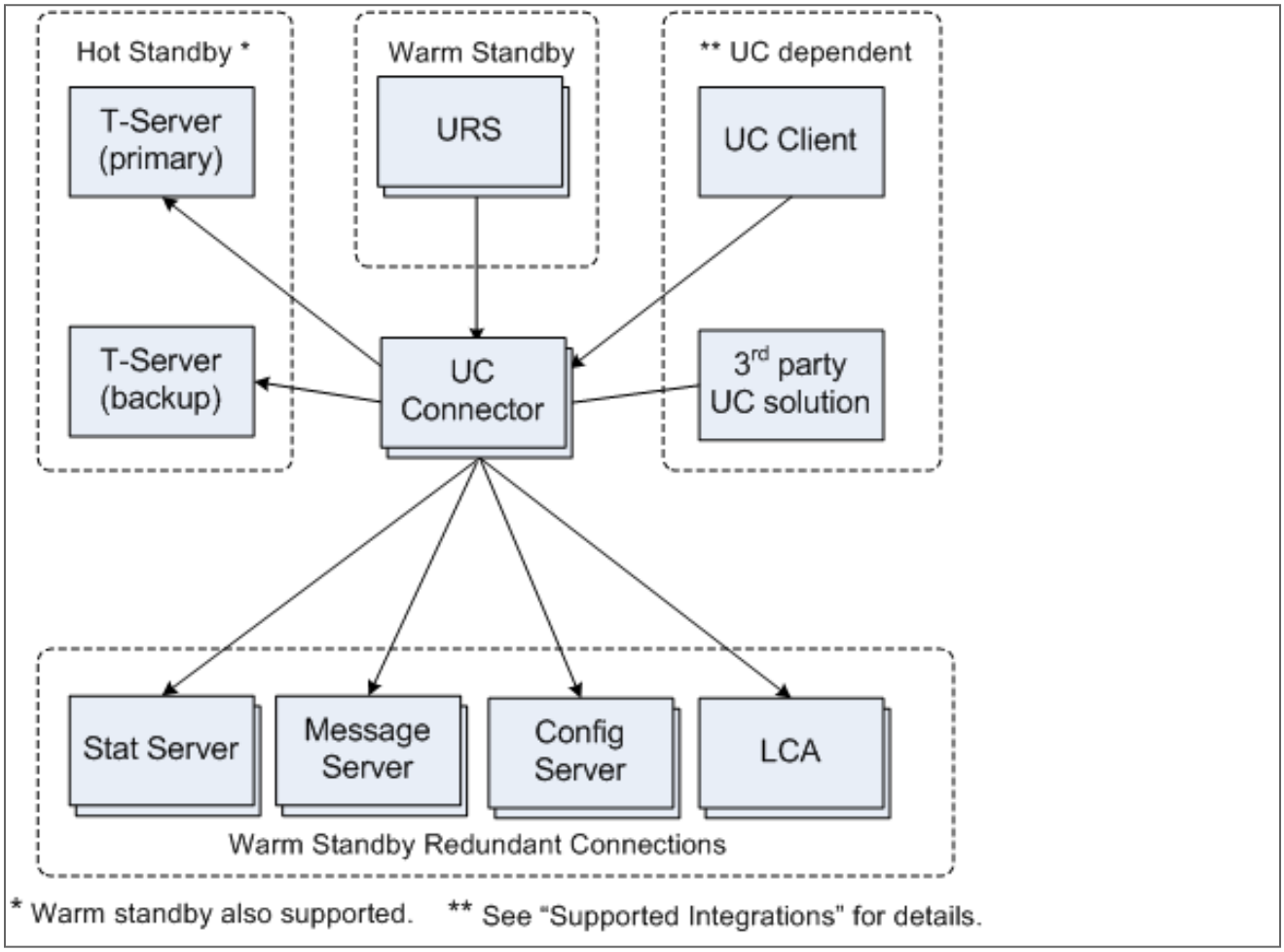
Function or Connection	Interface	Description
Communication Between Genesys Components		
Call control	T-Library messaging	All call control uses the Genesys proprietary T-Library protocol.
Instant Messaging in standalone mode	T-Library, HTTP	When not integrated with Microsoft Lync or Skype for Business, instant messages travel via T-Library between server components, and to a browser window over HTTP to the recipient's screen..
Microsoft Lync or Skype for Business		
Presence exchange between UC Connector and Lync / Skype for Business Front End Server	MS-PRES protocol (extended SIP from Microsoft)	MS-PRES extends SIP/SIMPLE in several ways for presence propagation. Please see https://msdn.microsoft.com/en-us/library/office/cc431501(v=office.12).aspx for a full definition of the MS-PRES protocol.
Instant Messaging	SIP messaging	SIP is used in direct Lync-SIP Server integration.
Lync or Skype for Business client	HTTP	A web-based "conversation

Function or Connection	Interface	Description
integration		extension window" in the Lync or Skype for Business client uses HTTP between UC Connector and the client.

High Availability

As a Genesys server component, UC Connector supports the warm standby redundancy and the IP takeover methods for a highly available (HA) deployment, meaning that a backup UC Connector server application remains initialized and ready to take over the operations of the primary server when needed. For more information, see UCC Connector High Availability Deployment.

Components



As a solution, different HA methods are used to provide greater reliability for the connections among the various components. HA is supported for the following connections:

- HA connections to Genesys servers established by UC Connector.
- HA connections to UC Connector established by Genesys servers.
- HA connections between UC Connector and the third-party UC platform.
- HA connections to UC Connector established by the UC client.

Genesys Servers

High Availability with Genesys Servers

The warm standby method is used for connections with Genesys Stat Server, Configuration Server, and Message Server. In this case, if any of these connections fails, the UC Connector will try to re-connect with the backup server instance. After a successful reconnection, UC Connector continues normal operation.

Genesys T-Servers

High Availability with Genesys T-Servers

For connections with T-Server, the *hot standby* method for HA provides a more robust redundancy. In this case, the solution maintains a connection with both T-Server instances, actively passing call data from primary to backup T-Server. This lessens the interruption in service, and allows for better survival of calls after the switchover process.

Warm standby connections are also supported with T-Server.

For more information, consult the Deployment Guide for your T-Server.

Universal Routing Server

High Availability with Universal Routing Server

For connections established from Universal Routing Server (URS) and the UC Connector, the warm standby method is used. If URS connection to UC Connector fails, it reconnects with the backup UC Connector instance, then resumes normal operation. Call processing during this process is dropped or delayed.

Connections to UC Connector initiated through the `Custom Server` are switched over as part of the Windows NLB configuration, together with the web interface. For configuration details, see High Availability.

Third-Party UC Plaform

High Availability with Third-party UC platform

For connections with the third-party UC platform, the HA method used depends on which UC platform the UC Connector is integrated with.

HA is only supported with Enterprise Edition of Microsoft Lync / Skype for Business (Standard Edition places all components on a single host).

Multiple Front End Servers make up a highly available pool of resources. UC Connector initiates and manages the connection to the FE Servers pool, which is contacted through a single URL or virtual IP address. If the connection between UC Connector and this contact point fails, UC Connector initiates the re-connection process. In this case, the Microsoft platform is configured behind a third-party load balancer. For a sample architecture diagram, see the Microsoft Lync or Skype for Business diagram above. For additional information, see the consult the Microsoft documentation.

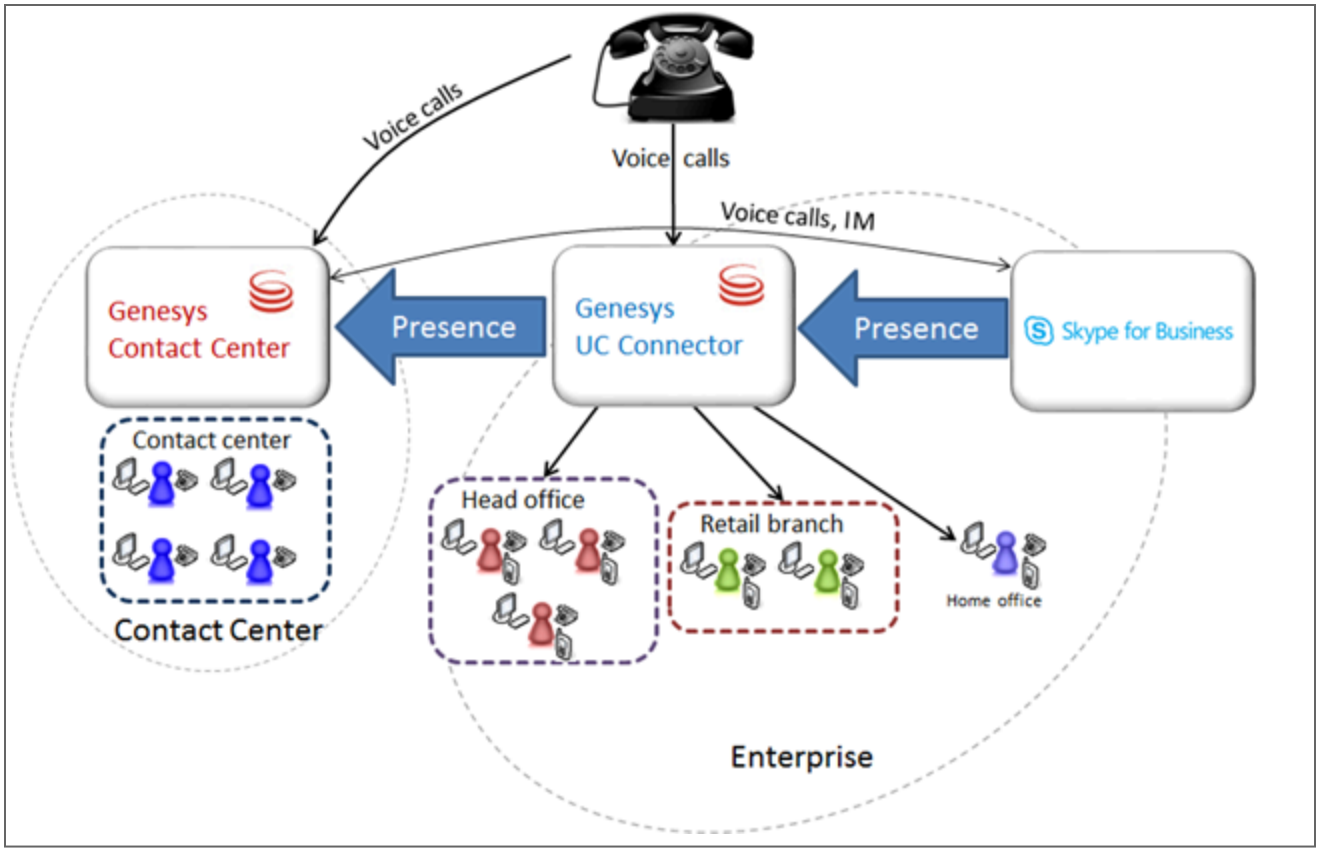
Configuring High-Availability UC Connector Instances

For information about configuring UC Connector for a high-availability deployment, see UC Connector High Availability Deployment.

Deployment Modes

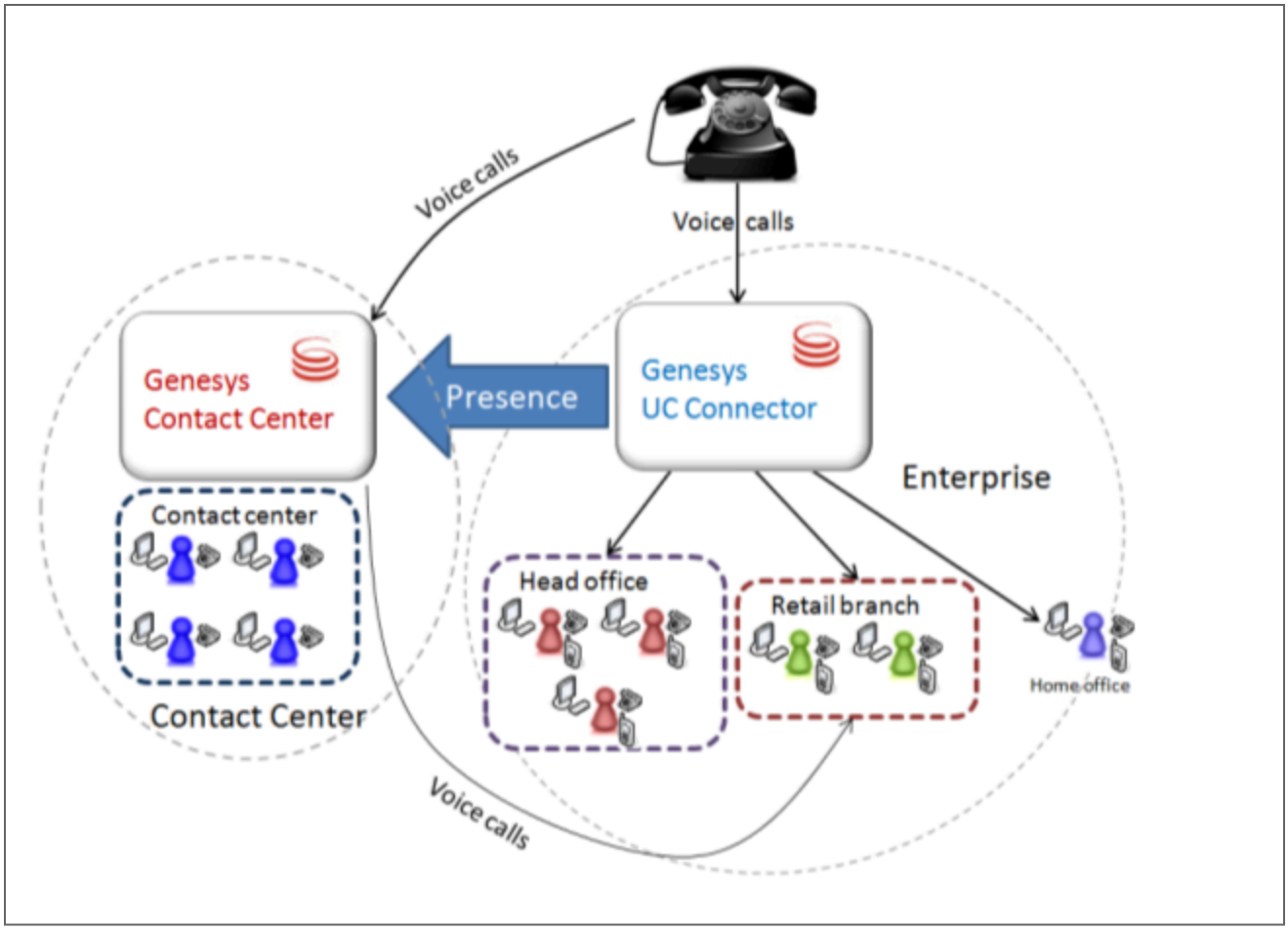
You can deploy and configure UC Connector in four different modes listed in this section.

Normal Mode



This is the typical UC Connector deployment, in which UC Connector subscribes to a Unified Communications system for presence synchronization, and acts as a web server to present interaction preview pop-ups and call control windows to users.

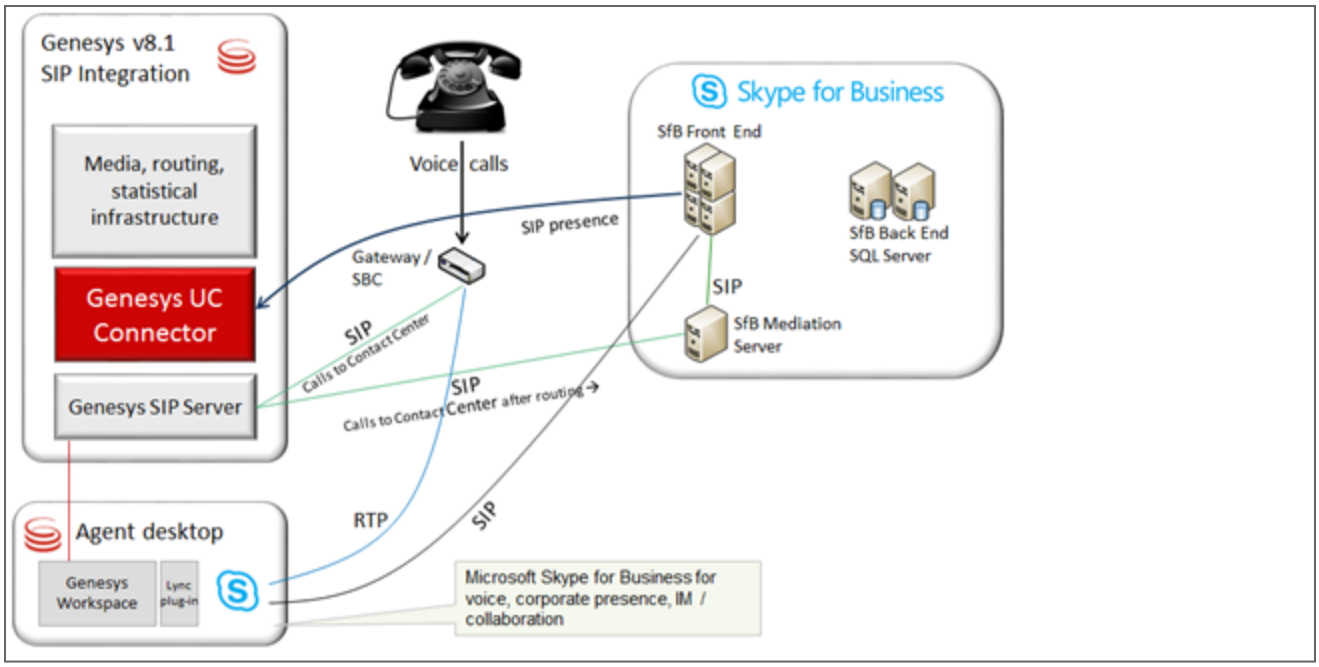
Standalone Mode



In standalone mode, UC Connector does not subscribe to a Unified Communications system to receive the user's presence. This may be because no compatible UC system is present in the Enterprise. In this case, UC Connector uses its own information to relay presence information to the Genesys environment. Users can control their presence state manually, by logging in and out of the UC Connector and acting on the control to put themselves in one of the presence states that are defined for them. See Customizing Knowledge Worker States in Customizing UCC Connector and the enable-logout-menu option.

> **Tip**
> These options are only enabled in standalone mode.

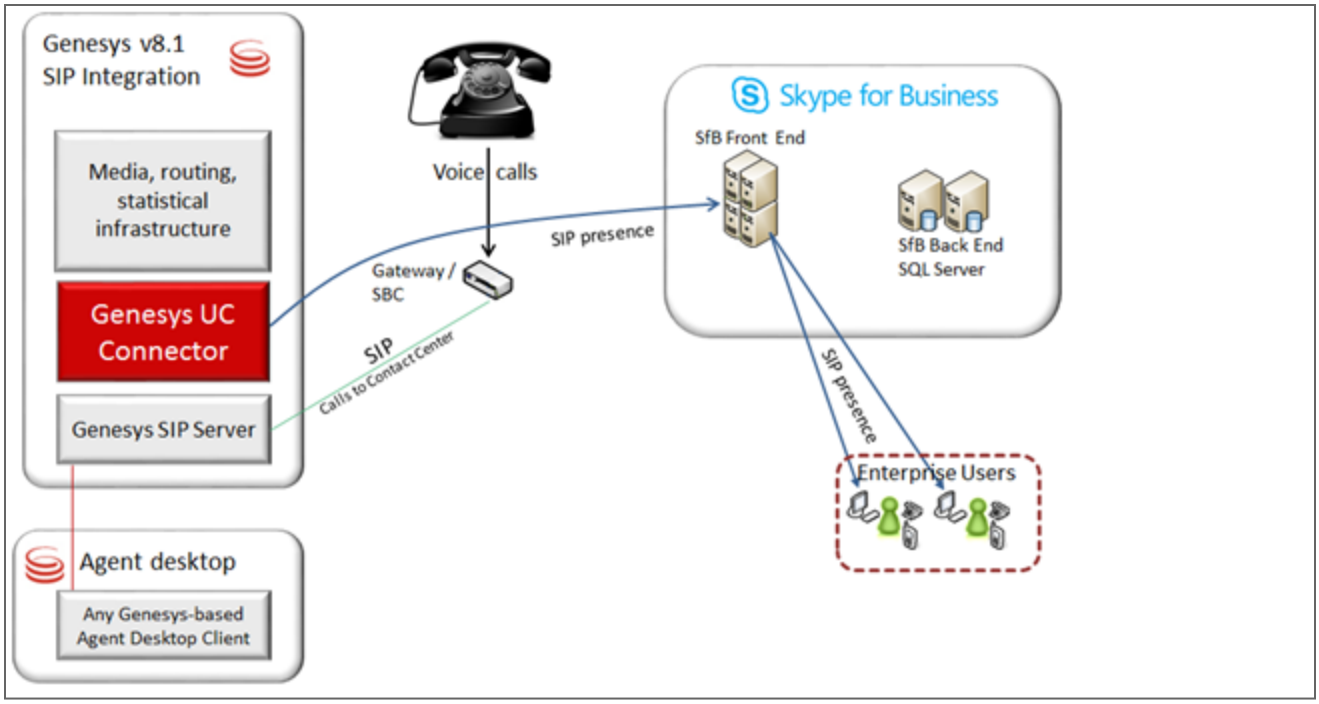
Presence propagation with a SIP Server-based integration with Lync or Skype for Business



Genesys can integrate with Lync or Skype for Business Enterprise Voice deployments using the SIP Server as a SIP Application Server. This integration only supports voice from the PSTN, and exchanges presence between Microsoft and Genesys using the UC Connector. Here the UC Connector subscribes to presence from the Lync or Skype for Business Front End Server and maps it into Genesys presence for agents. It can also push Genesys presence to Microsoft, for states that are not covered by Lync or Skype for Business like After Call Work or Legal Guard. Please see the *UC Connector Lync Integration Deployment Guide* for detailed information about this mode.

> ### Tip
> Genesys also offers a native integration with Lync 2013 and Skype for Business that does not use UC Connector. Please see the Genesys Web site for information on the Multimedia Connector for Skype for Business.

Presence Connector for Lync or Skype for Business



In this case UC Connector is used to push presence of agents in a Genesys Contact Center to the Microsoft-based corporate presence, so co-workers know when an agent is available or busy. Agents in this mode receive voice service from Genesys, and not Lync or Skype for Business. However, the corporate presence is based on Microsoft and it is necessary to let the agents' coworkers know about their status. UC Connector pushes the Genesys presence state to Microsoft, after mapping the presence to a Microsoft state.

Example of Messaging

Below is an example of messaging when UC Connector, while in the "pull" mode, monitors the Presence Information of the Lync contacts. When a call arrives at the Lync agent, UC Connector receives a SIP notification "On a Call" from the Lync server and sends the RequestAgentNotReady request to T-Server for the corresponding agent DNs.

```
16:59:31.140 Dbg 09900 [DEBUG] <<< receiving request
[NOTIFY sip:192.168.92.172:55117;ms-received-cid=3C0D700;grid SIP/2.0
Via: SIP/2.0/TLS
192.168.92.74:5061;branch=z9hG4bKEDA8FDD1.3DDFA90BEAFEDDF3;branched=FALSE;rport=5061,SIP/2.0/
TLS 192.168.92.75:56267;branch=z9hG4bK7CCE6513.0400ED9AB1C66DF3;branched=FALSE;ms-received-
port=56267;ms-received-cid=3747900
Max-Forwards: 69
To: <sip:lync-user0@lyncdco13.lab>;epid=56b4641a00000000;tag=f30acb63
From: <sip:lync-user0@lyncdco13.lab>;tag=D62C0080
Call-ID: 07dd7d53ddd1f347e9cebe4d99abed50@192.168.92.172
```

```
CSeq: 4 NOTIFY
Require: eventlist
Content-Type: application/msrtc-event-categories+xml
Event: presence
Subscription-State: active;expires=29909
Supported: ms-dialog-route-set-update
Content-Length: 659

<categories xmlns="http://schemas.microsoft.com/2006/09/sip/categories" uri="sip:lync-
user2_qa94@lyncdco13.lab"><category xmlns="http://schemas.microsoft.com/2006/09/sip/
categories" name="state" instance="1" publishTime="2017-08-22T23:59:31.107">
<state xsi:type="aggregateState" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://schemas.microsoft.com/2006/09/sip/
state"><availability>6500</availability><activity token="on-the-phone" /><delimiter
xmlns="http://schemas.microsoft.com/2006/09/sip/commontypes" /><device>computer</device><end
xmlns="http://schemas.microsoft.com/2006/09/sip/commontypes" /></state>
</category>
</categories>]


16:59:31.148 Dbg 09900 Sending message to 'Voice.TServer@SIPS - tcp://192.168.92.172:33243'
message: 'RequestAgentNotReady' (11) attributes:
                AttributeReferenceID [int] = 13
                AttributeThisDN [str] = "5002"
                AttributeReasons [bstr] = KVList:
'KW_UC_STATUS' [str] = "busy"
'KW_UC_NOTE' [str] = ""
```