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Stat Server User's Guide

Compound Categories

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Compound Categories

The formulas for Stat Server's compound statistical categories are derived from the formulas of two or more simple statistical categories. Stat Server defines the following compound statistical categories:

- [EstimWaitTime](#)
- [ExpectedWaitTime2](#)
- [LoadBalance](#)
- [ServiceFactor1](#)

With the exception of [ServiceFactor1](#), all compound statistical categories are based on formulas that are valid only for single-media mediation DNs—that is, mediation DNs that satisfy the following conditions:

- All interactions that are queued to such mediation DNs are homogenous, having the same *M* media type. The [EstimWaitTime](#) and [LoadBalance](#) categories service voice media type (it means that mediation DN must not belong to the multimedia switch); the [ExpectedWaitTime2](#) category services all media types.
- All interactions that are distributed from such mediation DNs are delivered only to agents who handle *M* media-type interactions only.

Statistics that are based on these statistical categories might generate results that are difficult to interpret if statistics are requested for other than single-media mediation DNs.

All compound statistical categories are historical and, thus, calculated over specified time intervals. Configured stat types for compound statistical categories must specify `DNAction` as the Subject and must specify a nonempty main mask.

For example:

```
[stattype]
Category=EstimWaitTime or ExpectedWaitTime2 or LoadBalance
Subject=DNAction
Main Mask=CallWait
```

```
[stattype]
Category=ServiceFactor1
Subject=DNAction
Main Mask=CallAnswered
```

Compound statistical categories are based on fixed sets of actions. Each of the following sections lists the applicable actions for each category.

Genesys recommends to use the [Sliding](#) or [Selection](#) time profiles when you request statistics that use the [EstimWaitTime](#), [ExpectedWaitTime2](#), or [LoadBalance](#) categories.

Important

For switch types such as the Nortel Meridian—in which places are configured with both Position and Extension DNs and agents are required to be logged in to the Position DN—you must set the position-extension-linked Stat Server configuration option to yes for Stat Server to properly calculate statistics that are based on these categories.

EstimWaitTime

The EstimWaitTime statistical category provides an estimate of the amount of time that the last call that entered the mediation DN must wait before it is distributed from the mediation DN. This estimate takes into account the possibility of distributing calls from different queues to the same agents.

Important

Stat Server recognizes the following aliases for the EstimWaitTime statistical category:

- StatExpectedWaitTime—Used by Universal Routing Server.
- ExpectedWaitTime—Used within the Universal Routing Designer and CCPulse+ user interfaces. Do not confuse this alias with the ExpectedWaitTime2 statistical category.

However, when you are creating stat types, Genesys recommends that you specify the proper category name.

Stat Server calculates the value of a statistic that belongs to this category as follows:

$$\text{Value} = \text{AHT} \frac{\text{CIQU}}{\text{AA} \times \text{EP}}$$

where:

- a. AHT stands for *average handling time*—that is, the time that is spent, on average, in processing a call that comes from the queue and after-call work that follow such a call:

$$\text{AHT} = \frac{\text{TotalTime}(\text{Mask1}, \text{Interval})}{\text{TotalNumber}(\text{Mask2}, \text{Interval})}$$

where

- Mask1 is given by the CallReleased and ACWCompleted actions.
- Mask2 is given by the CallReleased action.
- Interval is given by a supplied time profile.

Starting with Star Server release 8.5.103, the ACWMissed and CallMissed actions are not used in AHT calculations.

If no calls from the queue have been processed yet, AHT is considered to be 90 seconds.

NOTE: This value is not configurable.

- b. CIQU stands for *calls in queue unassigned*—that is, the number of calls that currently are waiting in the queue that cannot be distributed to agents immediately. This value is calculated, based both on the number of calls in queue:
- $$CIQ = \text{CurrentNumber}(\text{CallWait})$$
- and on the number of agents ready (AR)—that is, the number of agents who currently are logged in and have WaitForNextCall status.

The calculations are based on the following algorithm:

- CIQU equals zero (0) if the number of agents ready is greater than or equal to the number of calls in queue—that is, if all calls from this queue can be distributed to agents immediately.
- CIQU equals the number of calls in queue (CIQ) if no agents are currently ready ($AR = 0$).
- CIQU equals the difference between the number of calls in queue and the number of agents ready ($CIQ - AR$) if some agents are currently ready.

- c. AA stands for *agents active*:

$$AA = \text{CurrentNumber}(\text{AgentActive})$$

Being active means that an agent is being logged in and is not in NotReadyForNextCall status.

If $AA=0$, it is replaced by 0.0001.

- d. EP stands for *effective portion*—that is, the total time spent, by all agents who process calls from the queue, on calls from the queue and after-call work following such calls divided by the total time spent by these agents on calls from all originations and after-call work following these calls:

$$EP = \frac{\text{TotalTime}(\text{Mask1}, \text{Interval})}{\text{TotalTime}(\text{Mask2}, \text{Interval})}$$

where:

Mask1 is given by the CallReleased and ACWCompleted actions.

Mask2 is given by the CallReleased, CallMissed, ACWCompleted, and ACWMissed actions.

Interval is given by a supplied time profile.

If no calls coming from the queue have been processed yet, EP is considered to be 1.

The reported value is rounded to the nearest integer and should be interpreted as a number of seconds.

Tip

Statistics belonging to the EstimWaitTime category always return a value of 10,000 seconds (that is 2 hours, 46 minutes, and 40 seconds) for queues where no agent is currently logged in.

This statistic works only for ACD and virtual queues and only for T-Servers that propagate the queue parameter in login messages. For T-Servers that do not do this, you must configure an association between agents and a queue in Genesys Administrator Extension, as follows:

1. Select an agent (or place) group.

2. On the Origination DNs tab click Add.
3. In the Origination DN dialog box, select the queue that you want to associate with this group.
4. On the Origination DNs tab click Save or Apply to save the configured association.

ExpectedWaitTime2

Similar to the `EstimWaitTime` statistical category, the `ExpectedWaitTime2` category also provides wait-in-queue estimates for the last interaction that entered a virtual queue. This category, however, has been designed for the multimedia model which recognizes that agents can handle more than one simultaneous nonvoice interaction at a time. Starting with the 8.5.102 release of Stat Server, the `ExpectedWaitTime2` statistical category is also applicable to voice media.

Important

The `ExpectedWaitTime2` category does not support `GroupQueues` as an object.

Stat Server's formula for calculating values of statistics that use this category is the same as for the `EstimWaitTime` statistical category with exceptions along the interpretation of the formula's terms.

$$\text{Value} = \text{AHT} \frac{\text{CIQU}}{\text{AA} \times \text{EP}}$$

First, however, we revisit the definition of the Stat Server capacity vector, $[S \ N_1 \ N_2 \ N_3]$, which Stat Server logs whenever, among other factors, the number of concurrent or assignable interactions for each media type changes at a particular place. Each vector pertains to one particular media type and its definition plays role in understanding why the terms in the preceding formula have different meanings.

- S represents the state of readiness of a particular media at a particular place.
- N_1 represents the current number of interactions that are in progress at a specific target for the particular media.
- N_2 represents the maximum number of interactions of the particular media that can be routed to a specific target according to the current capacity rule given the condition that the number of interactions on each of other medias remains unchanged.
- N_3 represents the number of additional interactions of a particular media that can be routed without violating the capacity rule given the condition that the number of interactions on each of the other medias remains unchanged. N_3 can differ from 0 only when the particular media channel is ready.

Further information about this vector and vector examples are provided in the *Genesys Resource Capacity Planning Guide*.

Below are the reinterpretations of terms in the `ExpectedWaitTime2` statistical category:

- **CIQU**—The AR component of CIQU represents the sum of available capacity, N_3 , of all agents who are

logged in to the queue instead of the current number of logged-in agents having `WaitForNextCall` status.

- AA—Represents the sum of maximum capacities (N_2 of the capacity vector) of all active agents for a given media instead of the current number of active agents.
- AHT—*average handling time*—an average time, spent on processing a call that comes from the queue and after-call work that follows it.

$$AHT = \frac{\text{TotalTime}(\text{Mask1}, \text{Interval})}{\text{TotalNumber}(\text{Mask2}, \text{Interval})}$$

where:

- Mask1 is given by the `CallReleased` and `ACWCompleted` actions.
- Mask2 is given by the `CallReleased` action.
- Interval is given by a supplied time profile.

Starting with Star Server release 8.5.102, the `ACWMissed` and `CallMissed` actions are not used in AHT calculations.

If no calls from the queue have been processed yet, AHT is considered to be 90 seconds.

- EP—*effective portion*—the total time spent, by all agents who process calls from the queue, on calls from the queue and after-call work following such calls divided by the total time spent by these agents on calls from all originations specified by the same media type as given queue and after-call work following these calls:

$$EP = \frac{\text{TotalTime}(\text{Mask1}, \text{Interval})}{\text{TotalTime}(\text{Mask2}, \text{Interval})}$$

where:

- Mask1 is given by the `CallReleased` and `ACWCompleted` actions.
- Mask2 is given by the `CallReleased`, `CallMissed`, `ACWCompleted`, and `ACWMissed` actions.
- Interval is given by a supplied time profile.

Starting with Star Server release 8.5.102, EP is calculated separately for each media type. EP is calculated only if more than one virtual queue is distributing calls for a specified media type. In other case $EP=1$.

If no calls from the queue have been processed yet, EP is considered to be 1.

In Mask2 above only those `CallMissed` and `ACWMissed` actions are accounted for, that have the same media type as the given queue.

Tip

The value of 10000 seconds is assigned for the requested `ExpectedWaitTime2` statistic, regardless of the `CIQU` and `AHT` values, when `AA` is equal to 0 (for example, there are no logged in agents, or all logged in agents are not active or have 0 capacity).

To use this category in the statistics that you define, you must also assign one— and only one— media that describes the type of interactions that the virtual queue will handle. You accomplish this by setting the media-type configuration option (described in the [Stat Server Deployment Guide](#) and [RTME Options Reference](#)) among the properties of the virtual queue object in the Configuration Layer.

LoadBalance

This statistical category is intended to assist clients in balancing the call loads between ACD queues and routing points. Based on the load-balancing values of different queues and routing points (among other factors), Universal Routing Server, for instance, can determine where to route calls.

Stat Server's procedure for computing load-balancing statistics uses aggregated values based on **queue actions reflecting regular DNS**.

Stat Server calculates the value of a statistic that belongs to this category as follows:

- 10,000,000,000, if ALI = 0
Note: This value is not configurable.
- $(CIQ - AR) / ALI$, if $AR > CIQ$
- $AHT * [(CIQ - AR + 1) / ALI]$, if $AR \leq CIQ$

where:

- ALI stands for *agents logged in*:
 $ALI = \text{CurrentNumber}(\text{AgentLogin})$
- CIQ stands for *calls in queue*:
 $CIQ = \text{CurrentNumber}(\text{CallWait})$
- AR stands for *agents ready*—that is, the number of agents who currently are logged in and have the `WaitForNextCall` status:
 $AR = \text{CurrentNumber}(\text{AgentReady})$
- AHT stands for *average handling time*:

$$AHT = \frac{\text{TotalTime}(\text{Mask1}, \text{Interval})}{\text{TotalNumber}(\text{Mask2}, \text{Interval})}$$

where:

- Mask1 is given by the `CallReleased`, `ACWCompleted`, `ACWMissed`, and `CallMissed` actions.
- Mask2 is given by the `CallReleased` and `CallMissed` actions.
- Interval is given by a supplied time profile.

This value can be negative. Its implementation does not require the explicit specification of an agent group. If no calls ever entered this queue or other queues related to this queue by agent-login and/or origination-DN association, Stat Server uses the value of the `load-balance-aht` configuration option (described in the *Stat Server Deployment Guide*) for the average handling time. After the first call has been processed by the associated agent, the new calculated value of average handling time will be applied in load-balancing calculations for all related queues and routing points.

ServiceFactor1

This statistical category is the only one that requires two time ranges. Their names in a stat-type definition must be the same as Stat Server option names for these time ranges.

For example, configure two options, TimeRange and TimeRange2, in the TimeRanges section of the Stat Server configuration before you request statistics in the ServiceFactor1 category. Then, request this statistic in CCPulse+ and specify TimeRange and TimeRange2 as the time ranges. If you select Default or Not Applied as a value for either time range in CCPulse+, Stat Server uses the time range of 0-20 seconds.

$$\text{Value} = 100 \times \frac{n\text{Answ}(\text{TimeRange})}{n\text{Answ} + n\text{Aband} - n\text{Aband}(\text{TimeRange2})}$$

where:

- $n\text{Answ}(\text{TimeRange})$ is the restricted **TotalNumberInTimeRange** aggregated value for the **CallAnswered (Mediation DNs)** action.
- $n\text{Answ} + n\text{Aband}$ is the **TotalNumber** aggregated value for the list of mediation DN actions CallAnswered, CallAbandoned, and Call AbandonedFromRinging.
- $n\text{Aband}(\text{TimeRange2})$ is the restricted **TotalNumberInTimeRange** aggregated value for the mediation DN actions CallAbandoned and CallAbandonedFromRinging.

If TimeRange2 is from 0 to t_1 and TimeRange is from 0 to t , where t_1 is small enough, so that calls abandoned within t_1 seconds may be considered "stray" calls, and t is an upper limit, in seconds, for the interval within which calls are considered as answered without excessive delay, then, Service Factor1 gives the percentage ratio of the calls answered without excessive delay over all calls that have been delivered or abandoned from the queue, less the number of "stray" calls.