Clearspan® Call Center Solutions Guide

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March 2018

Clearspan®

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1 REVISION HISTORY

The following represents the revision history of this publication.

REVISION NUMBER	DATE COMPLETED	POINT OF CONTACT	DESCRIPTION
2849-005	3/2018	Clearspan Technical Publications	Updated to R22.
2849-004	12/2016	Clearspan Technical Publications	Updated to R21.
2849-003	08/2014	Aastra Technical Publications	Updated to R20.
2849-002	05/12/13	Aastra Technical Publications	Updated to R19.0.

2 SUMMARY OF CHANGES

2.1 CHANGES FOR RELEASE 22.0

Changes made in this version of the document:

- Updated section *System Configuration* with Release 22.0 examples.
- Updated section *Create BWECCR Schema*.
- Updated section *Step 1 – Configure Call Center Profile*.

2.2 CHANGES FOR RELEASE 21.0

Changes made in this version of the document:

- Updated section *SIP Protocol Extensions*.
- Updated client sections.
- Updated section *System Configuration* with Release 21.0 examples.
- Updated section *Configure Enhanced Reporting on Application Server*.
- Updated section *Mandatory Entrance Message*.

2.3 CHANGES FOR RELEASE 20.0

Changes made in this version of the document:

- Updated sections 4 System Requirements and 5.2 Deploy Call Center and Receptionist Web Application Components.
- Updated section 5 System Configuration with Release 20.0 examples.

2.4 CHANGES FOR RELEASE 19.0

- Updated section 5.2.1.2 Call Center
- Updated section 3.8.1 Canned Reports to include information about “Agent Activity Detail Report”.
- Updated sections 3.3.2.2.2 Estimated Wait Message and 7.4.6.5.2 Estimated Wait Message (EWM) to include information about “Call Center Updated Queue Wait Time/Location”.
- Updated sections 3.3.3 Call Center Policies, 7.4.6.4 Configure Routing Policies, 7.6 Configure Agent , and 10.2.3 File Column Definitions to include information about “Call Center Agent Not Reachable Stranded Policy.”
- Updated section 2.5 Dashboard and added section 3.6 Agent Dashboard to include information about “Call Center Agent Client – View Queue Status”.

- Updated sections 3.6 Agent Dashboard, 3.7 Supervisor Dashboard, 7.4.6.6 Configure Call Center Thresholds, and 7.6.1 Create Agent Threshold Profiles (optional) to include information about “Call Center Thresholds and Alerts”.
- Updated sections 3.3.1 Call Distribution Features, 3.3.9.2 Routing Policies, 3.8.1 Canned Reports,7.4.1 Step 1 – Configure Call Center Profile, 7.4.3 Step 3 – Assign Agents, 7.5.1 Assign or Unassign Agent to or from Call Center, and 10.2.3 File Column Definitions to include information about “Call Center Skill Based Routing”.
- Updated sections 7.4.1 Step 1 – Configure Call Center Profile and 7.7 Enable Enhanced Reporting to remove the CCRS as a valid reporting option.
- Added section 2.6 Presence and Messaging for “Calendar Presence Information for Receptionist” and “IM&P for Call Center Client”.

2.5 CHANGES FOR RELEASE 18.0

Changes made in this version of the document:

- Updated section 5.1.8 Configure Enhanced Reporting on Application Server.
- Updated section 3.8 Reporting to provide information on external reporting interfaces and database views.
- Removed the “useXSDiscoveryThread” instructions. This is the default value in Release 18.0.

3 OVERVIEW

The Clearspan Call Center solution provides service providers with a highly flexible, feature-rich, fully integrated Automatic Call Distribution (ACD) and Call Center service that supports the requirements of every business customer. This includes simple hunting and queuing for individuals and work groups to sophisticated call distribution and routing, conditional announcements, agent availability states, Interactive Voice Response (IVR), desktop clients, and monitoring and reporting for more complex call center environments.

There are some key capabilities associated with a hosted Call Center solution, which make the Clearspan-based solution superior to an alternative premises-based ACD platform for the customers.

Key features and benefits:

- **Virtual call centers** – Since the platform is hosted by the service provider, a call center group can include any user, regardless of their location. Inbound calls can efficiently reach a broader set of agents, including agents at different branch locations, home-based workers, and agents working from temporary locations.
- **Lower total cost of ownership** – Customers can operate a feature-rich call center, without the up-front expenditures for hardware, software, and platform integration.
- **On-demand service** – Customers can deploy the service in days instead of months, since the only activity is to configure and activate the Call Center service for the enterprise. There are no platforms to install and integrate.
- **Carrier-class availability** – Service providers can offer a solution that provides more resilience and fault tolerance than a premises-based platform. If a physical site is unreachable due to either power or transmission issues, inbound calls can be routed to alternate locations or callers can receive an announcement, instead of a busy signal and unanswered calls.
- **Supports both small/simple and large/complex environments** – The Clearspan Call Center solution can be configured to support any environment, from the most simple queuing to complex call centers, allowing even the smallest customer to obtain access to features that were previously out of their reach.
- Some of the key components of the Clearspan Call Center solution are the hosted web applications that are used by agents and supervisors. The clients, referred to in this document as the Clearspan Agent client and the Clearspan Supervisor client, are described in greater detail in the following documents:
- 2850nn CS Hosted Thin Call Center User Guide Agent/Supervisor R19.0.

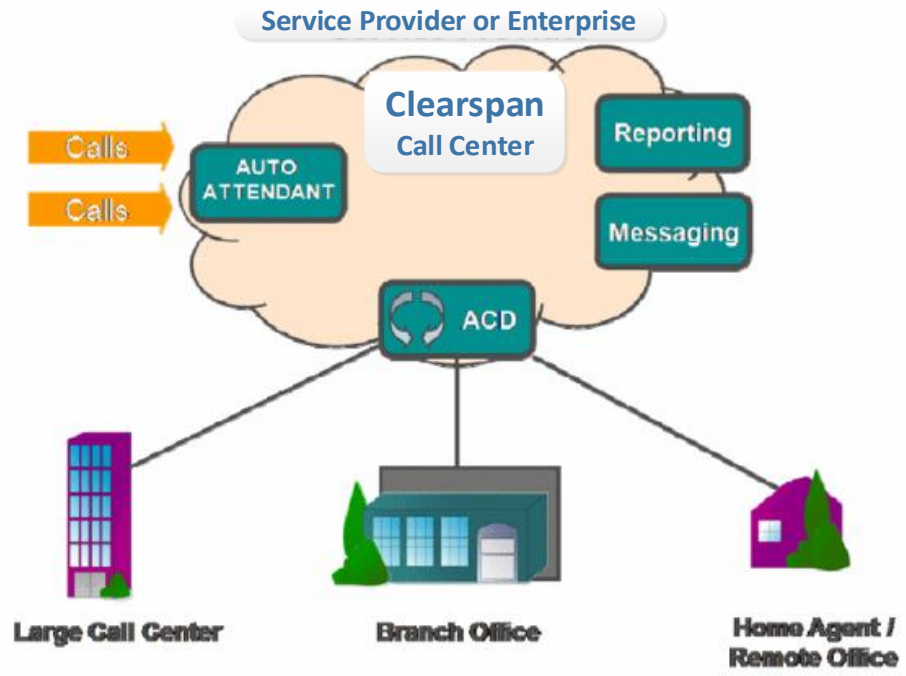

Figure 1 Clearspan Call Center

3.1 KEY FEATURES

Following are some of the key features:

- **Inbound Interactive Voice Response** – Callers can use an Automated Attendant to get routed to the most appropriate set of agents, with different routing options for business hours and non-business hours.
- **Automatic Call Distribution (ACD)** – Intelligent call distribution selects an available agent using a combination of the agent's line state, availability setting, and skill level, or a combination of the agent's line state, availability setting, and a call distribution algorithm (direct agent hunt, most idle hunt, simultaneous ringing, weighted distribution).
- **Queuing** – Calls are queued when all the agents are busy, with the associated entrance announcement, music, or video on hold, and periodic comfort messages played to the caller while they wait.
- **Queued Call Prioritization** – Calls in queue can be prioritized based on their time in the queue and the dialed number (DNIS).
- **Customized Audio and Video Greetings and Announcements** – Callers can receive custom greetings and announcements based on the dialed number (DNIS) when they reach a call center, when they are waiting in a queue, or when they are rerouted to alternate locations.
- **Customized Whisper Announcements** – Agents answering ACD calls can hear a custom whisper announcement before being connected to the caller. This allows customers to provide specific call instructions prior to the call based on the dialed number (DNIS).

- **Time and Schedule-based Routing** – Inbound calls are routed to alternate destinations during non-business hours and holidays.
- **Conditional Routing** – Calls are rerouted based on various conditions, such as bounced calls, stranded calls, calls that have waited too long, and calls that reach a call center with an excessive number of queued calls.
- **Temporary Forced Routing** – Calls can be automatically rerouted to alternate locations due to a temporary condition in the call center.
- **Outbound Calling** – Outbound calls from agents can be associated with a call center, to support outbound dialing campaigns.
- **Agent and Supervisor Clients** – Intuitive interface provides greater agent productivity and management oversight.
- **Dashboard** – Real-time monitoring of agents and queues tracks current state and current performance of agents and queues.
- **Reporting** – Real-time and historical reports track key performance indicators (KPIs). Users have capability to schedule reports and system providers have the ability to customize reports.

Call Center also supports the following features:

- **Extension Mobility using Clearspan Remote Office or Clearspan Anywhere** – Agents can receive or make calls from remote locations (home, alternate location) or their mobile device.
- **Shared Workstations using Clearspan Hoteling** – Agents can easily log in at a shared workstation and/or phone while maintaining their user settings.
- **Unified Messaging for Voice, Video, and Fax** – Clearspan Unified Messaging can be used with a call center supporting voice messages, video messages, and fax messages, with the message forwarding to an e-mail address or alias.
- **Conferencing** – Agents can quickly escalate calls to a supervisor or engage other subject matter experts within the organization using the integrated Clearspan Conferencing services.

3.2 CALL CENTER OFFERINGS

The Call Center solution has three license options designed to provide a cost-effective solution for a wide range of deployment environments.

The call center licenses are assigned at the user level. Therefore, there is no restriction in the number of call centers that can be created. Any user with an appropriate call center user license can be assigned to a call center.

When call center user licenses have been authorized to a group, the group administrator can create call centers in the group. The type of call centers that can be created matches the type of call center user licenses assigned to the group. For instance, if there are only Call Center – Basic licenses authorized to the group, the group administrator is only able to create Basic call centers.

After creating a call center, the administrator is able to assign users within the enterprise who have a call center user license that corresponds to the minimum requirements of that call center type.

- Basic call center:

  A Basic call center is designed to support a simple call distribution and queuing scenario, such as a front-office receptionist or a small work group. Inbound calls are distributed based on the agent's line state and "join" status. Callers receive appropriate entrance and queue messages, and calls can overflow to alternate locations if they wait too long in queue or if the queue is beyond capacity.

  Any user with a call center license can be assigned to a Basic call center.

  This type of call center does not support Agent ACD states, Clearspan Agent client, or Reporting.

- Standard call center:

  A Standard call center is designed to support a normal call center environment where flexible routing options are needed and the agent's workflow dictates the need for ACD states such as *Available, Unavailable,* and *Wrap-up*. In addition, Standard call centers are designed to support deployments that require clients such as the Clearspan Agent client and Reporting.

  Any user with a Standard or Premium call center license can be assigned to a Standard call center.

- Premium call center:

  A Premium call center is designed to provide the most advanced set of routing and call management options to support a formal call center environment. It supports such capabilities as multiple dialed number identification service (DNIS) numbers being assigned to a single call center, agent skill levels for directing calls to more skilled agents, additional unavailable codes for when agents are not able to take calls, and disposition codes to associate with ACD calls, outbound calling, and silent monitoring of agents.

  Only users with a Premium call center license can be assigned to a Premium call center.

  Best Practice

  Analyze the requirements of your organization to determine the proper mix of Basic, Standard, and Premium call centers that are required as well as the number of users that are required for each type of call center. A user with a Premium call center user license can be assigned to any call center type and a user can be assigned to an unlimited number of call centers.

3.3 CALL CENTER USER ROLES

The Call Center solution is designed to support the requirements of users who are performing a variety of roles including receptionists, general office employees, and call center agents and supervisors.

3.3.1 RECEPTIONIST

As previously mentioned, the Call Center application can be used with an individual user, where the user is the only person assigned to the call center. When the user is busy, calls are queued until they become free. This is well suited for a front-office employee such as a receptionist.

The Clearspan Receptionist Enterprise client can be used in conjunction with a call center, providing visibility to the receptionist of any calls in a queue as well as the ability to manipulate the queued calls. The receptionist can monitor multiple departments or groups by setting up a call center for each inbound number.

This scenario is also applicable to a pool of receptionists who support a larger organization or who share support for various groups, so that if the primary receptionist is busy, the call is routed to the backup receptionist, and if both are busy, the call is queued or forwarded to an alternate location.

3.3.2 OFFICE EMPLOYEES

The Call Center solution can be applied to any group of employees, to provide general call distribution (among the employees) and queuing in the event that the employees are all busy. This is a common scenario with a small business or a department within an enterprise, in which inbound calls ring all the members of the group and an available person in the group answers the call. By using the Clearspan Call Center, calls are only presented to employees who are available (or can simultaneously ring all employees) or the call is queued until someone is free. Calls can also be automatically rerouted to alternate locations or queues, based on wait times, business hours, and other criteria.

Employees can optionally set their availability using the web portal or Internet Protocol (IP) phone, depending on the device capabilities.

With a Standard call center, employees can also generate reports to track items such as the peak inbound call periods, staffing levels, and abandoned or overflowing call rates.

3.3.3 REMOTE AND MOBILE EMPLOYEES

A Clearspan Call Center routes calls to agents based on the call distribution method and the agent's availability. If the agent uses Clearspan Remote Office or Clearspan Anywhere, the device that is alerted may be the agent's home phone or mobile phone even though it is probably associated with another carrier's network. This is a powerful capability that provides enormous flexibility, because the user's line state is maintained by Clearspan throughout the

call. This means additional calls will not be routed to the user while they are involved on a call, and reports will reflect appropriate data on the duration of calls, call transfers, and unanswered calls, which are critical performance metrics for a Call Center.

3.3.3.1 Clearspan Remote Office

The Clearspan Remote Office feature, activated using the web portal, routes an inbound call directly to a specified alternate phone number, which includes inbound calls from a call center. Clearspan routes inbound call center calls based on the user's line state. With Remote Office, the line state is recognized on both inbound and outbound calls as long as the outbound calls are initiated using the toolbar or a Clearspan client.

Remote Office is typically used to support a temporary rerouting of calls to an alternate location such as when a user works from home during severe weather or works from an alternate branch location on a temporary basis. However, it can also support agents who have Clearspan as an overlay service and have assigned the Remote Office feature to a private branch exchange (PBX)-based phone as their primary device.

3.3.3.2 Clearspan Anywhere

The Clearspan Anywhere feature is typically used to integrate a user's mobile phone with the Clearspan service, allowing them to use their mobile phone to make and receive calls against their Clearspan number. Clearspan Anywhere is usually enabled as a default setting for all inbound calls, and outbound calls are activated on a call-by-call basis. Similar to Remote Office, an inbound call center call is routed to the user based on their line status, which is monitored in Clearspan.

Clearspan Anywhere can be used in a call center environment to support employees who are typically in the field, such as service technicians or real estate agents, such that even when they are out of the office, an inbound call can be directly routed to them. It can also be used by mobile receptionists, who use a mobile phone as their primary device, or for a complete "virtual" office, in which all the employees are remote and mobile, but want to present a "brick-and-mortar" appearance to callers.

3.3.4 CALL CENTER AGENT

The call center agent can range from a casual agent who periodically receives ACD-related calls along with direct inbound calls to a formal call center agent who handles a high volume of inbound ACD calls in addition to making outbound calls. The Clearspan Call Center solution is designed to support both types of users.

3.3.4.1 Casual Call Center Agents

For the casual call center agent, the most important objective is to ensure they know the incoming call is related to the call center so that they can provide the appropriate greeting to the caller. Clearspan provides the inbound call information using multiple tools.

- **IP Phone screen** – IP phones (depending on phone vendor) can provide incoming call information, including the call center name/number, calling party ID, call wait time, number of calls remaining in queue, and the longest wait time of a call in queue.
- **Incoming call notification** – The "toast" dialog box on the Clearspan Agent client also provides incoming call information, including the call center name/number, calling party ID, call wait time, number of calls remaining in queue, and the longest wait time of a call in queue.
- **Whisper message** – A whisper message can be configured on Premium call centers that play a recorded message to the agent immediately before connecting the call, typically stating the call center name (for example, parts department).
- **Distinctive ring pattern** – A distinctive ring pattern can be assigned to call centers, which provide an audible indication of the source of the call.

In most cases, the "casual" call center agent uses their desktop phone to manage their calls. The solution supports any type of phone device, including legacy analog phones, IP phones, soft phones, and mobile phones.

3.3.4.2 Formal Call Center Agents

Call center agents in a formal call center are focused on handling calls as quickly and efficiently as possible. This requires a combination of efficient call routing to ensure callers do not wait too long to reach an agent, and efficient call handling by agents, which means answering calls quickly and ensuring the caller's needs are met during the conversation.

In most cases, the agent uses the Clearspan Call Center Agent client to manage their calls. The client provides a rich set of features designed to support the needs of a call center agent.

- **Inbound Call Information** – Similar to what was described in the previous section on casual call center agents, when an inbound call arrives, the Clearspan Agent client has a *Global Message Bar* that includes information about the call.
- **Active Call Management** – The client provides intuitive buttons for all the common call handling functions, such as answer, hold, transfer, conference, and end, plus the ability to initiate outbound calls.
- **Set Availability States** – The client includes buttons and drop-down options to set availability states, including *Available, Unavailable, Unavailable Reasons* (lunch, training, break, and so on), *Wrap-up*, and *Sign-in/Sign-out*.
- **Online Directories with Click-To-Dial** – Online directories are available in the client, including the enterprise or group directory, personal directories, speed dials, and the user's Outlook directory (includes the ability to use Click-To-Dial to initiate an outbound call).
- **Call Escalation** – Agents can quickly escalate a call to a supervisor using the Escalate or Emergency Escalate buttons on the client. This is designed to quickly involve a supervisor on a customer call.
- **Auto-answer Options** – Agents with phone headsets can have inbound calls automatically answered (auto off-hook) using settings in Clearspan or on the client.
- **Enhanced Reporting** – The Clearspan Agent client provides a set of reports that shows the agent's activity over a specified period of time.

3.3.4.3 Agent using Shared Workspace

Call center agents often share workstations, particularly when the call center is active for 24 hours per day. The Clearspan solution supports a single login, using a phone or the Clearspan Agent client, which enables an agent to associate the phone device at the workspace with their user ID.

For more information, see section *4.10 Extension Mobility*.

3.3.5 SUPERVISOR

- A user who is assigned to be a supervisor for a Clearspan Call Center can have two roles, that of a team lead and that of a supervisor.
- In each case, the user is assigned to be a supervisor for a call center and is assigned to supervise a specific list of agents.
- Any user in the group or enterprise can be assigned to be a supervisor of a call center. No call center user license is required for a supervisor, except for the Clearspan Supervisor license (to use the Clearspan Supervisor client). However, it is recommended that supervisors have the equivalent of a Premium Enterprise feature set assigned to them.

3.3.5.1 Team Lead

A “team lead” is a supervisor who does not have a Clearspan Supervisor client, although they may have a Clearspan Agent client. In this role, the user shows up on an agent’s list of supervisors when they want to escalate a call, either through usual escalation or through emergency escalation.

The team lead cannot modify any call center settings or run any reports on the call center or agents, except for an Agent Activity Report on themselves.

3.3.5.2 Call Center Supervisor

- A call center supervisor has a Clearspan Supervisor client, which provides real-time monitoring of queues and agents, as well as the ability to generate on-demand reports on the key performance indicators for the queues and agents.
- The functions available to a supervisor include the following:
- View and change agent availability states
- Silently monitor or barge in on an active call
- Silently monitor next call to a queue or agent
- Manipulate calls that are in queue (reorder calls, transfer calls, retrieve calls)
- Monitor (real-time monitoring of) queues and agents.
- Reporting – The Clearspan Supervisor client provides a set of reports that shows the agent and queue activity over a specified period of time.

3.3.6 CALL CENTER ADMINISTRATOR

In this role, the primary task is to administer the call center configuration options and settings using the Clearspan administrator's web portal. In many cases, this function is restricted to a group administrator or the service provider but it can be performed by an employee or a supervisor within the call center by assigning the call center to a department and creating a department administrator.

The designated call center administrator can sign in to the web portal using the department administrator credentials, as opposed to their personal credentials. As a department administrator, the user can access and manage only the services that are within that department.

As an administrator, they can change all the call center settings, such as queue length, wait times, announcements, assigned agents, agent selection order, and access the web-based reports for the call center.

3.4 STATUS AND STATISTICS

Basic status and statistics that provide the most critical performance indicators are available via the web portal for less demanding environments. For more information, see the *Clearspan Call Center Statistics Guide* **Error! Reference source not found.**.

3.5 DASHBOARD

The Dashboard is a feature of the Clearspan Supervisor and Agent clients. It provides real-time monitoring capabilities that allow an agent to monitor their assigned queues, and supervisors to monitor agent and queue activity as well as key performance indicators.

The Supervisor Dashboard's statistics are designed to allow a supervisor to quickly understand how the call center and agents are performing so that quick decisions can be made to increase or reduce staff. The Dashboard may also be displayed on a large flat screen monitor and may be used as a wallboard for the call center. For more information, see sections *4.6 Agent Dashboard* and *4.7 Supervisor Dashboard*.

3.6 PRESENCE AND MESSAGING

The Clearspan Receptionist, Supervisor, and Agent clients provide Instant Messaging and Presence (IM&P) information, allowing users to set their presence status and exchange instant messages with each other from within the client application. Additionally, the Receptionist client provides calendar integration, enabling the sharing of calendar presence and availability for the Receptionist user and monitored contacts.

More information about these features is available in the Clearspan Hosted Thin Call Center User Guide and the Clearspan Hosted Thin Receptionist User Guide.

3.7 REPORTING

Reporting provides a comprehensive set of reports on the agent, the queue activity, and the key performance indicators. Reports can be generated in real time in the Clearspan Agent and Supervisor clients for various time frames and intervals. Reports that are required to be generated frequently may also be scheduled by administrators and supervisors and then delivered via e-mail at the appropriate time.

All reports only allow visibility to the data that the user has permission to see. Agents can only view reports on themselves and supervisors can only view reports on call centers or the agents they supervise. Administrators can run reports on all entities in the enterprise.

Reports are designed to provide supervisors with a clear understanding of how the call center and agents are functioning. There are over a dozen reports available as pre-created canned reports. Additional reports may be added by creating custom reports.

For more information, see section *4.8 Reporting*.

4 SOLUTION COMPONENTS

The Call Center solution is made up of various products and components that work together to provide the full solution.

4.1 TYPICAL CALL CENTER CALL FLOW MODEL

Following are the steps generally used when there are inbound calls to a call center:

1. A caller calls a main “pilot number” that reaches an Auto Attendant/interactive voice response (IVR).
2. The Auto Attendant provides a series of routing options to the caller, based on the time schedule/holiday schedule. Multiple tiers of Auto Attendant options can be provided to reach the correct group of agents. For example, the options start with “Press 1 for English, and 2 for Spanish”, followed by another Auto Attendant that offers “Service” or “Support”, followed by another Auto Attendant that offers support for specific products.
3. The caller selects an option and is immediately routed to a call center that handles the call according to the assigned policies (for example, Night Service, Holiday Service, Forced Forwarding).
4. A call received during normal business hours or received by a call center with no active special policies is queued in the call center to be processed by an available agent staffing the call center. While remaining queued, the caller hears various audio or video announcements, if enabled.

Note: Calls in a queue are typically ordered by wait time, with the longest waiting calls prioritized to the top of the queue. Calls can be reordered by a supervisor and calls that were offered to an agent and bounced are always prioritized to the top of the queue. In addition, a call may be transferred by a supervisor or an agent from one call center to another, in which case the wait time of a call can be preserved by policy.

5. The call center offers the call to an agent when the agent becomes available. A whisper message can be configured to be played to the agent prior to receiving the call to provide information regarding the call center from where the call is being sent. This helps the agent better serve the customer.

Best Practice

Callers within the call center call flow can escape from any service by using an escape digit.

Escape from Auto Attendant – A caller can escape from the Auto Attendant by pressing 0, at which point they are redirected to an operator, if configured.

Escape from Queue – A caller can escape from the queue by pressing a preconfigured digit, as long as they are not listening to the mandatory entrance message. Upon dialing the escape digit, they are rerouted based on the call center’s *Busy* treatment, which may be Call Forwarding Busy or Voice Messaging.

Escape from Voice Messaging – A caller can escape from Voice Messaging by pressing 0, at which point they are redirected to an operator, if configured.

4.2 AUTO ATTENDANT

The Auto Attendant service on Clearspan provides an IVR function for the Call Center solution. It provides the prompts and options that route calls from the initial number to various call center queues, agents, supervisors, voice messaging boxes, or other contact points in the organization. The Auto Attendant provides the following capabilities for use in the Call Center solution:

- Interactive voice response
- Forwarding of a call to the appropriate call center
- Time and holiday-based alternate routing options

4.3 CALL CENTER

The Call Center service is the primary component of the solution. It provides announcements, call distribution, and queuing capabilities as well as various policies for call handling and routing. For information on the various subcomponents of the call center, see the following subsections.

4.3.1 CALL DISTRIBUTION FEATURES

A call received by a call center can be distributed to the various agents staffing the queue using different algorithms.

Following are the different types of call distribution:

- **Regular call distribution** – Incoming calls hunt through agents in the order they appear on the list, starting from the top each time.
- **Circular call distribution** – Incoming calls hunt through agents in the order they appear on the list, starting with the agent who follows the agent who received the previous call. When the search reaches the end of the list, it loops back to the top and continues until it has tried all users.
- **Uniform call distribution** – Incoming calls hunt through all agents, starting with the agent who has been idle the longest and ending with the agent who most recently answered a call.
- **Simultaneous call distribution** – Incoming calls alert all agents at the same time. The first agent to answer handles the call.
- **Weighted call distribution** – Incoming calls are assigned to idle agents based on percentages assigned to the agents in the call center's profile. This feature supports an element of skills-based routing, since a higher percentage of calls can be routed to more highly skilled agents within the call center.

In addition to the call distribution methods described in this section, a Premium call center can be defined as "skill-based". In a skill-based call center, each agent is given a skill rating

for that call center, where a rating of 1 is the most skilled and a rating of 20 is the least skilled.

A call received by a skill-based call center is delivered to the available agent with the highest skill rating for that call center. In the event of a tie (multiple agents with the highest available skill level), the Regular, Circular, or Uniform distribution policy previously described is used to break the tie.

An example scenario follows:

Use case – Skill-based Routing

Two agents are staffing two queues of a group/enterprise:

- Technical support
- Customer service

The first agent has a skill level of 1 in technical support and a skill level of 10 in customer service.

The second agent has a skill level of 1 in customer service and a skill level of 20 in technical support.

Both agents are available. A call comes to technical support and is delivered to the first agent because he has the highest skill level for that queue. A second call comes to technical support and is delivered to the second agent because he has the highest skill level of available agents.

The first agent frees up and becomes available to take a new call. A call comes to customer service and is delivered to the first agent because he has the highest skill level of available agents.

Best Practice

There is no limit to the number of call centers an individual agent can be assigned to and an agent's selection criteria can vary in each call center. Therefore, an agent can be the first selection in the "English-speaking new car sales" call center and the last selection in the "Spanish-speaking used car sales" call center.

By the same logic, an agent can be a member of the primary "Sales" call center as well as an agent in the "Support-Overflow" call center that includes agents who act as backups for when the main "Support" call center is overloaded.

4.3.1.1 Directory Number Hunting Service

The Directory Number Hunting service provides:

- Ability for a caller to reach an agent directly by extension.
- Placement of a caller who directly called an agent in a call center for distribution to another agent, if the original agent was not available.

  This is typically performed by enabling the IVR to allow extension dialing or by providing an alternative method for reaching the agent (direct number, a different IVR, and so on).

  The Directory Number Hunting service that can be assigned to the call center provides the capability for calls to be redirected to a queue if unanswered. Agents can be assigned this service so that their unanswered calls are sent to the configured queue.

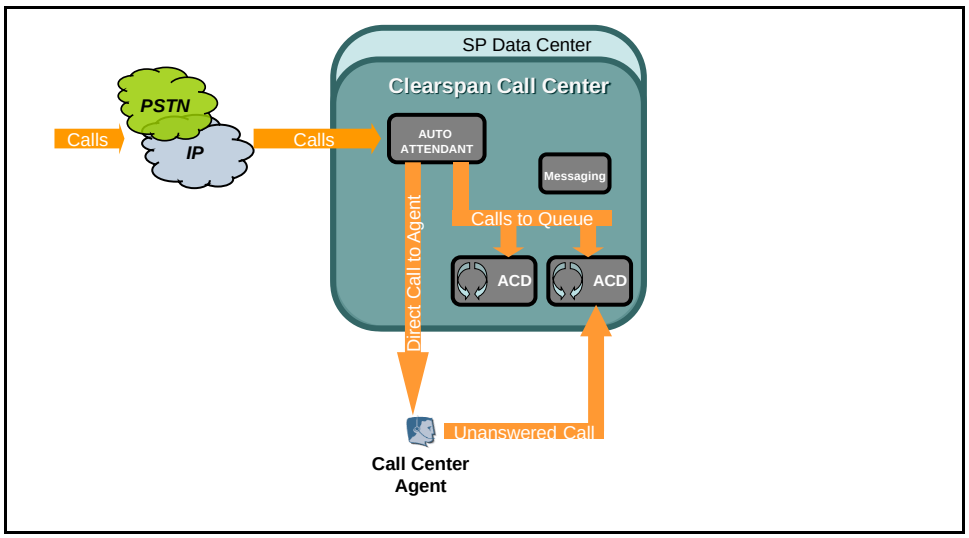

Figure 2 Direct Agent Access Overview

4.3.2 CALL CENTER ANNOUNCEMENTS

When a call is received by the call center, various audio and video announcements can be configured to be played to the caller. The Media Server is used to play media files to the caller when necessary. Default audio and video announcement files are provided for each announcement/treatment.

Service providers typically create custom announcements that can be loaded or retrieved by the following methods:

- **Load custom files** – These are *.wav* files that are loaded directly via the *Call Center* web page.
- **Uniform Resource Locator (URL)** – This is a pointer to a server that stores the announcement file. The file is retrieved and played back by the Media Server.
- **External source** – The Music-On-Hold and Video-On-Hold service supports the use of an external source for the media. This is the same as the group level external Music-On-Hold service on Clearspan.

Release 17.0 introduced the ability to load up to four custom announcement files for each announcement. This enables the use of announcement fragments that can be shared across multiple services.

Best Practice (a)

Create a set of common announcement files and reuse them across multiple call centers.

For example, the following announcement can be broken down into four different announcement files, with the first, third, and fourth fragments used across multiple call centers.

““Thank you for calling Acme Services. You have reached our sales department. All our associates are currently busy, but please hold for the next available agent. If you would like to speak to an operator, please press 0 now.”

Best Practice (b)

Emulate specific calling patterns using the announcement fragments.

For instance, to provide initial ringback to the caller, even though the call has been routed to the queue because all agents are busy, load a “ringback” audio file as the first fragment, followed by the standard entrance announcement. This gives the caller the comfort that their call attempted to reach an agent before going into the queue.

Best Practice (c)

Use the URL option for announcements that may be changed periodically or are used by multiple call centers.

All call center announcements can be configured at the call center level as well as at the DNIS level within a call center. Configuring announcements at the DNIS level provides more differentiation for the caller since the caller receives announcements specific to the DNIS number the caller has dialed.

The default announcements described in this section are always localized according to the language of the queue.

The following table describes the formats currently supported by the system.

MEDIA FILE FORMAT	STREAM	CHARACTERISTICS
.wav	Audio	u-Law/a-Law 8 kHz 8-bit mono

MEDIA FILE FORMAT	STREAM	CHARACTERISTICS
.wma	Audio	u-Law/a-Law 8 kHz 8-bit mono
.mov	Audio	AMR-NB 12.20 KBps/aLaw/uLaw
	Video	H.263: CIF (352 x 288) or QCIF (176 x 144) H.264: CIF (352 x 288), QVGA (320 x 240), or QCIF (176 x 144)
.3gp	Audio	AMR-NB 12.20 KBps/aLaw/uLaw
	Video	H.263: CIF (352 x 288) or QCIF (176 x 144) H.264: CIF (352 x 288), QVGA (320 x 240), or QCIF (176 x 144)

Preferred codecs can be configured against a call center. The configuration applies whenever the caller is connected to the Media Server for the playback of an announcement/treatment or whenever the caller is connected to an external music source. The administrator can configure a different preferred codec for internal calls as well as external calls.

4.3.2.1 *Comparison of Various Announcements by Call Center Type*

The following table contains a mapped listing of the various call center treatments and the type of call center supporting these treatments:

TREATMENT	BASIC	STANDARD	PREMIUM
Entrance	X	X	X
Estimated Wait Message	X	X	X
Comfort	X	X	X
Music On Hold (MOH)	X	X	X
Comfort Bypass			X
Whisper			X

4.3.2.2 *Entrance Message*

The entrance message is the first message played to the caller when the call reaches the call center. The entrance message is optional.

If the entrance message option is enabled, it is played under the following conditions:

- There are no agents available to accept the call
  -or-
- Agents are available, and the *Play ringing when offering call* option is not enabled

Once the entrance message has finished playing, Music On Hold and comfort messaging are provided to the caller, if enabled.

Best Practice

It is critical to design announcements that correspond to the flow of calls through the call center, including when calls route to overflow queues. Step though each call scenario, including calls that are directly routed to agents, calls that get queued, and calls that immediately overflow, to ensure the announcements provide the appropriate message to the caller.

4.3.2.2.1 Mandatory Entrance Message

An option is provided to force the playback of the entrance message on each inbound call.

When enabled, the entrance message is mandatory and is played to completion before any attempt is made to offer the call. The caller cannot escape out of the message using the escape digit and a supervisor cannot manipulate the call during the mandatory entrance message.

The message is played in its entirety before processing the call out of the queue by a Call Center policy, such as Stranded Calls, or Overflow based on time.

4.3.2.2.2 Estimated Wait Message

The Estimated Wait Message (EWM) provides queue information to the caller.

When a new call is added to the call queue, the EWM is played after the entrance message and before any other announcement. If the entrance message is disabled and the EWM is enabled, the EWM is played.

This announcement has two modes of operation:

- **Queue Position**: In this case, the caller is informed of their current position in the call queue (for example, “You are caller number 12 in the queue”).
- **Estimated Waiting Time**: In this case, the caller is given an estimated number of minutes before the call will be answered by an agent (for example, “Your estimated wait time is 5 minutes”).

The estimated wait message announcements are localized according to the language of the queue.

The EWM can be configured to recalculate and play at a specified interval. If the caller overflows to another queue, they hear a new EWM, if the message is enabled.

4.3.2.3 Comfort Messaging

4.3.2.3.1 Comfort and Music-On-Hold Messages

These messages are played to the caller after the entrance message (if configured to play).

The Music-On-Hold (MOH) message is played before the comfort message, when configured.

The administrator can specify the use of the default file, a custom file, a URL, or an external music source for the media.

The comfort and Music-On-Hold messages keep playing to the caller in a loop until the call is answered by an agent or until action is taken by a Call Center policy (for example, Overflow).

4.3.2.3.2 Comfort Message Bypass

An alternate comfort message can be enabled for calls that are expected to be answered quickly instead of the usual comfort/Music-On-Hold treatments. This policy applies after the entrance message has finished playing (if applicable).

The time threshold that triggers the comfort message bypass is configurable. When a new incoming call is received by the queue, if the longest waiting time for a call in the queue is less than or equal to this threshold, then the alternate Comfort Message service is triggered. The comfort message bypass options include playing ringback and/or playing a specific comfort message bypass announcement.

Best Practice

The comfort message bypass is designed to support periods of low call volume.

Call flows in call centers are designed to support an “expected” call volume and wait time for callers. Standard comfort messages are designed to support these wait times and provide periodic reassurance that the call has not been forgotten. This feature provides a trigger that automatically alters the default behavior when the wait time is short. This prevents a caller from hearing a short portion of the standard comfort message that abruptly ends when they are connected to an agent.

In a typical scenario, the *Play announcement after ringing X seconds* is enabled, which provides ringback to the caller, followed by a shorter comfort message if the call is not answered within a certain period of time.

The comfort message bypass is only configurable at the call center level and is not available to be configured at the DNIS level.

4.3.2.4 Call Whisper Message

The call whisper message is a message that is played to the agent immediately before the inbound call is connected. The calling party hears ringback, announcements, or Music On Hold during the whisper message.

The message typically announces which call center (especially important when using DNIS) the call is coming from. This allows the agent to identify which call center or DNIS the caller has dialed without the need to look at their phone or Clearspan Agent client. For instance, ten separate numbers can all be routing their inbound calls to a single call center. Each of the ten numbers can have their own customized call whisper message so the agent knows which number was dialed and can provide the appropriate greeting.

Best Practice

A different call whisper message can be configured for each DNIS number and can be any type of message.

Another use of the message is to prompt the agent about the day's special sales deal, such as "Leather jackets have 25% discounts". In this case, the message may change from day to day. Therefore, by using the URL method of loading, the message provides for easier message management. The default announcements are always localized according to the language of the agent.

4.3.3 CALL CENTER POLICIES

The call center has various policies that affect the processing of calls received by the call center. The following figure summarizes how these policies impact the flow of a call through a queue.

In general, the processing of an incoming call to a call center can be summarized as follows:

- An incoming call received by the call center is initially processed by the services that are assigned to the call center. In some cases, the services may prevent the call from proceeding to the queue. For example, the Call Forwarding Always service may be assigned and enabled for the call center, in which case all incoming calls are forwarded before entering the queue.
- The incoming call is then processed by call center policies such as the Holiday Service policy, Night Service policy, Forced Forwarding policy, and so on, before entering the queue. The call center policies are designed to provide the user with flexibility to handle calls under special circumstances such as holidays, emergencies, or after hours.
- The incoming call enters the queue, unless the call was handled by a service or call center policy. If the queue has reached its maximum capacity, then the call is processed according to the Overflow policy. Otherwise, the caller is presented with a call treatment and the call is offered to agents as they become available and according to the priority and wait time of the call.

- Calls are typically prioritized in a queue according to their respective wait time and the DNIS priority, unless the call was explicitly reordered by a supervisor or the call was offered to an agent already and bounced.
- A call can exit from the queue if there is a user action:
  - An agent is offered the call and answers.
  - The caller abandons the call by hanging up.
  - The caller abandons the call by dialing an escape digit.
  - The supervisor transfers the call out of the queue.
- A call can also exit from the queue based on the processing of a call center policy as follows:
  - The Stranded Calls policy allows the configuration of specific routing behavior for stranded calls.
  - The Stranded Calls – Unavailable policy allows the configuration of specific routing behavior for calls stranded in a staffed queue when all agents are unavailable.
  - The Bounced Calls policy allows the configuration of specific routing behavior if a call offered to an available agent is not answered.

  The Overflow policy allows the configuration of specific routing behavior if the call stays in the queue beyond a configurable time threshold or if the queue has reached its maximum capacity.

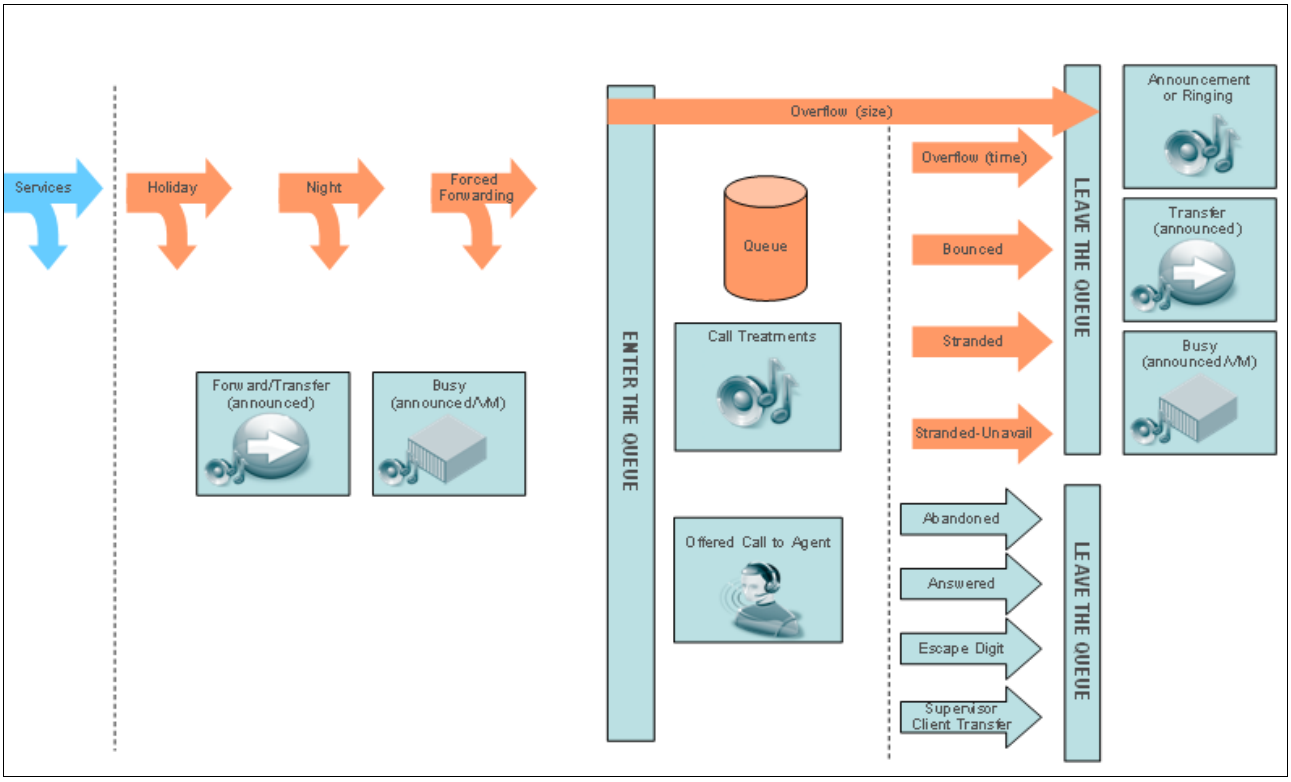

Figure 3 Call Center Processing Flow

The following table contains a mapping of the call center policies with their configurable actions.

POLICY	TYPE	PERFORM NO ACTION	BUSY	TRANSFER	NIGHT SERVICE	RINGING	ANNOUNCEMENT
Overflow	All		X	X		X	Once
Distinctive Ringing	All						
Stranded	Standard, Premium	X	X	X	X (Premium)	X (Premium)	Loop (Premium)
Stranded-Unavailable	Standard, Premium	X	X	X	X (Premium)	X (Premium)	Loop (Premium)
Bounced	Standard, Premium	X		X			
Holiday Service	Premium	X	X	X			Once
Night Service	Premium	X	X	X			Once
Forced Forwarding	Premium	X		X			Once

4.3.3.1 Overflow Policy

There are two types of overflow scenarios that can occur in a call center queue:

- Based on size – These overflow scenarios occur when an incoming call cannot be queued because the queue has reached the configured maximum quantity.
- Based on time – These overflow scenarios occur when a queued call is not handled (either by an agent or by another Queue policy) within a specified amount of time. The call is removed from the queue and handled according to the related Overflow policy actions.

Options are available to configure the threshold used to determine when a call overflows based on time as well as to determine the size of the queue.

The following actions may be performed on a call that has triggered overflow:

- Busy: Overflow calls are provided with the Busy treatment. If the queue is configured with the Call Forwarding Busy or the Voice Messaging service, then the call is handled accordingly.
- Transfer: Overflow calls are transferred to the configured destination.
- Ringing: Overflow calls are provided with ringing until the caller releases the call. The ringback tone played to the caller is localized according to the country code of the caller.

For the all types of actions, the policy can be configured to play an announcement prior to proceeding with the action. In this case, the announcement is played once to completion before the action is processed.

4.3.3.2 Distinctive Ringing

This policy provides a distinctive ring to an agent when the call is routed from a call center.

If the administrator configures the options to enable the Distinctive Ringing policy, the Application Server includes the Session Initiation Protocol (SIP) *Alert-Info* header within the SIP INVITE request when offering the call to an agent (with the configured ring pattern).

Best Practice

Distinctive ringing can be used with casual call center agents; such that they know that the call is an ACD-related call and not a direct dialed call. Different ring patterns allow them to distinguish between different call centers.

Auto-Answered calls – Agents with headsets that use auto-answer, such that their phone automatically goes off-hook when a call is received, can use a combination of distinctive ringing and a whisper message to alert them when a new call is about to be connected. A distinctive ring pattern can be associated with “Forced Delivery” calls.

4.3.3.3 Stranded Policy

This policy allows for the configuration of the processing of stranded calls.

A stranded call is a call that is being processed by a queue that has no agents currently staffed. (An agent is said to be staffing a queue if the agent has joined the queue and is not in the *Sign-out* state.) If the last agent staffing a queue “unjoins” the queue or signs out, then all calls in the queue become stranded and handled as described. If an incoming call is received by a queue with no agents staffing the call center, then the call is initially put in the queue. Once the queued call is ready to be offered to an agent, if there are no agents staffing the queue, then the call is processed as a stranded call. In particular, if the mandatory *Entrance Message* option is enabled, then the entrance message is played to completion before the call is handled as a stranded call.

There are multiple options for handling stranded calls. The following actions may be configured:

- None: Calls remain in the queue.
- Busy: Calls are removed from the queue and are provided with the Busy treatment. If the queue is configured with the Call Forwarding Busy or the Voice Messaging service, then the call is handled accordingly.
- Transfer: Calls are removed from the queue and are transferred to the configured destination.
- Night Service (*Premium* only): Calls are handled according to the Night Service configuration. If the Night Service action is set to “none”, then this is equivalent to this policy being set to “none” (that is, calls remain in the queue).

- Ringing (*Premium* only): Calls are removed from the queue and are provided with ringing until the caller releases the call. The ringback tone played to the caller is localized according to the country code of the caller.
- Announcement (*Premium* only): Calls are removed from the queue and are provided with an announcement that is played in a loop until the caller releases the call.

4.3.3.4 Stranded-Unavailable Policy

This policy allows for the configuration of the processing of calls that are in a staffed queue when all agents are unavailable. A "staffed" queue has one or more agents who are both joined to and signed in to the queue.

Two conditions trigger the configured policy action:

An incoming call is received by a queue where all staffed agents are unavailable. If the mandatory entrance message option is enabled, it is played to completion before the policy action is applied to the call.

One or more calls are waiting in a call center queue when it is determined that all staffed agents are unavailable. The policy action is applied to all calls in the queue.

There are multiple options for handling stranded-unavailable calls. The following actions may be configured:

- None: Calls remain in the queue.
- Busy: Calls are removed from the queue and are provided with Busy treatment. If the queue is configured with the Call Forwarding Busy or the Voice Messaging service, then the call is handled accordingly.
- Transfer: Calls are removed from the queue and are transferred to the configured destination.
- Night Service (*Premium* only): Calls are handled according to the Night Service configuration. If the Night Service action is set to "none", then this is equivalent to this policy being set to "none" (that is, calls remain in the queue).
- Ringing (*Premium* only): Calls are removed from the queue and are provided with ringing until the caller releases the call. The ringback tone played to the caller is localized according to the country code of the caller.
- Announcement (*Premium* only): Calls are removed from the queue and are provided with an announcement that is played in a loop until the caller releases the call.
- One configurable option is available that constrains triggering the action:
- This policy is performed when all agents are unavailable, and at least [1..1000] agents have unavailable code [select from existing unavailable codes].
- When this option is enabled and the condition is true, calls are not considered stranded and the action of the policy is not taken. This option is ignored and if unavailable codes are not provisioned for the call center.

4.3.3.5 Bounced Policy

This policy handles processing of bounced calls. A bounced call is a call that is being routed to the agent but for some reason (agent does not answer the call, they change to unavailable, their device is not registered, and so on) the call is not answered.

Options are configurable to flag a call as a bounced call if the agent fails to answer a call within the specified amount of time (as determined by the number of rings and the applicable ring cycle). A bounced call is treated with the highest importance and is placed ahead of the rest of the non-bounced queued calls in the queue.

An option is available to indicate whether a call should be flagged as a bounced call if the agent receiving the call changes to the *Unavailable* state while the call is being presented to them.

The call can be transferred to a new destination upon being bounced.

The Supervisor client application is also notified and shows a visual indicator that a queue entry is a bounced call.

An option is configurable to alert an agent if a call is kept on hold by the agent for a specified duration. In addition, an option is also provided to bounce the call back to the queue if the call is kept on hold for longer than a specified duration. When the held call center call is the only call present on the agent's device, then the Application Server triggers the hold reminder by sending an INVITE request with an *Alert-Info* header with the ring splash cadence.

4.3.3.6 Holiday Service Policy

This policy allows calls to be processed differently during holiday periods.

The Queue policy refers to a particular schedule and allows configuration of a specific routing action when a call is received during this schedule. The following actions may be configured:

- None: This is equivalent to not having a holiday schedule. The call is processed as if it was received during a non-holiday period.
- Busy: The incoming call is provided with Busy treatment. If the queue is configured with the Call Forwarding Busy or the Voice Messaging service, then the call is handled accordingly.
- Transfer: The incoming call is transferred to the configured destination.
- In the case of the *busy* and *transfer* actions, the policy can be configured to play an announcement prior to proceeding with the action. In this case, the announcement is played once to completion before the action is processed.

4.3.3.7 Night Service Policy

This policy allows calls to be processed differently during non-business hours.

Business hours are defined as a time schedule at the group level. The Queue policy refers to this and allows the configuration of a specific routing action when a call is received outside of business hours. By default, an "Every Day, All Day" business hour schedule is defined for the queue. The following actions can be configured:

- None: This is equivalent to having an "Every Day, All Day" business hour schedule.
- Busy: The incoming call is provided with Busy treatment. If the queue is configured with the Call Forwarding Busy or the Voice Messaging service, then the call is handled accordingly.
- Transfer: The incoming call is transferred to the configured destination.

For the *busy* and *transfer* actions, the policy can be configured to play an announcement prior to proceeding with the action. In this case, the announcement is played once to completion before the action is processed.

This policy allows the supervisor or administrator to override the time schedule and manually initiate Night Service for the queue. This manual override can be activated by an administrator on the web portal or by the supervisor using the Clearspan Supervisor client or the phone interface. A specific announcement can be configured for the Night Service manual override.

Manual Night Service can be used for times when the call center closes earlier than usual due to a holiday, special event, or an operational problem. The alternate "Manual Override" Night Service announcement allows the usual announcement to remain unchanged.

4.3.3.8 Forced Forwarding Policy

This policy allows calls to be temporarily diverted to a configured destination.

This policy can be activated and configured by an administrator on the web portal or by a supervisor using the Clearspan Supervisor client or the phone interface.

- If the option is enabled, then incoming calls to the queue are forwarded to the configured destination. Calls that are already in the queue remain queued.

The policy can be configured to play an announcement prior to proceeding with the forward. In this case, the announcement is played once to completion before the action is processed.

Best Practice

The Forced Forwarding policy is useful in scenarios where there is an emergency or no agents are available to staff a call center. In such a situation, the administrator or supervisor can temporarily redirect all new calls to an alternate call center until the situation is resolved.

4.3.4 AGENT STATE MANAGEMENT

- The Call Center application is designed to present calls to an available agent from a list of agents. The agent's availability is based on a combination of whether they are joined to the

call center, their ACD state, and their line state (off-hook, on-hook, Do Not Disturb [DND], ringing, and so on), in that specific order.

- **Join/Unjoin**– The most fundamental agent state is the *Join/Unjoin* state. An agent must be "Joined" to a call center to receive calls from the call center.

  An agent can join or "unjoin" call centers from the web portal or from the Clearspan Agent client. Administrators can configure whether an agent is allowed to change their *Join* status by using the *Allow Agents to Join Call Centers* option on the *Call Center Profile* screen.

- **Agent ACD states** – Agents in Standard and Premium call centers can set additional states that apply to call centers to which they are "Joined".
  - *Available* – Indicates they are available to accept new calls or are on active calls.
  - *Unavailable* and *unavailable sub codes* – Indicates they are not available to accept new calls.
  - *Wrap-up* – Indicates they are performing post-call work, such as paperwork. They may or may not be available to accept calls when in this state.
  - *Sign-in/Sign-out* – Indicates whether the agent is "in the office/out of the office". The *Sign-in* state only means they are present. Calls are not routed to an agent that is in *Sign-in* state. *Sign-out* means they have left for the day.

  An agent is considered to be staffing a call center when this agent has been assigned to a call center, has joined the call center, and is not in the *Sign-out* state. Agents staffing call centers may be in different states to indicate their availability to take or place calls.

  The following table summarizes when agents receive calls based on their selected states as well as the status of current phone calls:

USER ACD JOIN STATUS	USER ACD STATE	PHONE STATUS OF USER	USER'S CALL WAITING SETTING	ACD CALL	DIRECT CALL
Not Joined	N/A	Off Hook	Off	Not Offered	Not Offered
Joined	Sign In	N/A	N/A	Not Offered	Offered
Joined	Available	On Hook	N/A	Offered	Offered
Joined	Available	Off Hook	Off	Not Offered	Not Offered
Joined	Available	Off Hook	On	Not Offered	Offered
Joined	Available	Off Hook	On	Not Offered	Offered
Joined	Unavailable	Off Hook	Off	Not Offered	Not Offered
Joined	Unavailable	On Hook	N/A	Not Offered	Offered
Joined	Wrap-Up	On Hook	N/A	Not Offered	Offered
Joined	Wrap-Up	Off Hook	Off	Not Offered	Not Offered
Joined	Wrap-Up	Off Hook	On	Not Offered	Offered
Joined	Sign Out	On Hook	N/A	Not Offered	Offered
Not Joined	N/A	Off Hook	On	Not Offered	Offered

Best Practice

Activation of Call Waiting is not encouraged for any agents except casual call center agents.

Activation of Do Not Disturb is not encouraged for any agents except those in Basic call centers. Setting an ACD state of Unavailable is most appropriate for agents in Standard and Premium call centers.

4.3.5 CALL CENTER DIALED NUMBER IDENTIFICATION SERVICE (DNIS)

Call centers of type *Premium* have the capability to be associated with multiple DNIS numbers. DNIS allows a single queue to be used to distribute calls to agents and also to prioritize these calls so that more important calls are distributed first. DNIS also allows calls to be tagged so that an agent knows what number the caller called. This allows a single queue to support multiple companies without the caller knowing that they have been combined into a larger group.

In addition to the primary number, 63 different phone numbers are assignable to a call center. These numbers are taken from the inventory of phone numbers of the Application Server similar to the primary phone number. Some DNIS attributes are configurable at the queue level while some are configurable according to the DNIS.

The priority is attached to an incoming call based on the DNIS number on which it is received and to a wait time if the call is transferred from another call center. The calls are distributed to the agents staffing the queue based on this priority with calls of the highest priority being exhausted before calls in the next priority group. Clearspan provides the ability to promote calls from a lower priority to a higher priority if the calls have been waiting long enough. The supervisor can also promote calls using the Clearspan Supervisor client. This prevents the lower priority calls from being stranded in the queue during periods of high traffic.

All the treatments available to a queue can be customized based on the DNIS number. This provides more differentiation for the caller and also provides the agent with additional information such as whispering the DNIS on which the call was received.

Best Practice

Use multiple DNIS numbers with a call center when the Agents and Routing policy apply to all the DNIS numbers.

For example, when a single pool of agents handles calls for multiple inbound numbers, the calling party receives custom greetings associated with each DNIS number, and the agent sees the DNIS number when the call is offered, allowing them to provide the appropriate greeting.

4.3.6 CALL DISPOSITION CODES

Disposition codes are an enhancement to the Premium call center. They provide agents with the possibility to enter disposition codes for a call center call. The purpose of these codes is to associate a given call center call with a marketing promotion or other elements. The disposition codes contain two elements: an identification value and a description.

When Call Center – Premium service is authorized, disposition codes can be created at the enterprise for the enterprise model, at group for service provider model, and at the call center level for Premium call centers. Premium call centers can also use the enterprise or group-level codes.

Disposition codes may be entered by the call center agent while the call center call is in progress or once the call has been finished and the call center agent is in *Wrap-up* state.

When the agent enters the disposition code while the call is in progress, the agent selects the call identification as well as the disposition code. The agent may be involved in several ongoing calls and therefore the call identification is required to ensure that the entered disposition code is associated with the appropriate call center call.

When the agent enters a disposition code while in *Wrap-up* state, the agent provides only the disposition code. The remaining information is retrieved from the Application Server.

Best Practice

Disposition codes can be used to address multiple scenarios, for example, capturing the result of the call (“Requires Follow-Up”, “Issue Resolved”, “Contacted Sales Rep”), capturing customer comments (“Angry”, “Happy”, “Called Multiple Times”), or capturing marketing campaign feedback (“Print Advertisement”, “Web Site”, “Direct Mailing”).

4.3.7 AGENT UNAVAILABLE CODES

Agent unavailable codes are configurable attributes that are applied when an agent becomes unavailable. Agents may select a reason for changing their agent (ACD) states to *Unavailable* (for example, on lunch, in the bathroom, taking a coffee break or a personal break). Call center managers can use this data to better understand the performance of their agents.

Each company may define many agent unavailable codes to track the performance of agents. These codes are usable by all the queues in the company.

Unavailable codes are also known as *Reason Codes* or *Walk-away* codes.

The agent unavailable code creates additional attributes that are applied when a call center agent goes to the *Unavailable* state. There are many reasons why agents change their states to *Unavailable*. With the new attributes, call center supervisors have more information to monitor the performance of their agents. The agent unavailable codes contain two elements: an identification value and a description.

4.3.8 CALL CENTER OUTBOUND CALLS

Agents can initiate outbound calls while staffing a call center. This option allows the agent to make a call using a DNIS number configured for their call centers.

Outbound calling campaigns are a common capability in call centers, and can range from casual outbound dialing by agents to complex predictive dialing, using a central database for the called numbers and a “dialer” platform that initiates the call and presents it to an agent when the called party answers.

The Clearspan service for outbound call center calls provides the following functionality:

- Configures a call center DNIS number for outgoing calls
- Includes outbound DNIS number in call detail records (CDRs)
- Presents the outbound DNIS number as the calling line ID (CLID) when the agent makes an outbound call center call
- Enables feature access codes (FAC) and Clearspan Agent client options for agents to make personal or outbound call center calls

Options are configurable so that the agent can make an outgoing call either as the call center or as a personal call.

The agent can override the configuration to make a personal call or an outbound call for any DNIS of an ACD that the agent is staffing.

Best Practice

Outbound calling campaigns can be a complex undertaking, requiring the use of third-party dialer platforms. Talk to your customer to ensure you understand their requirements, including whether they want to use a preview, progressive, or predictive dialing process.

4.3.9 CALL PROCESSING

Calls received by the call center are received and placed in the queue based on the call’s priority and the wait time. The wait time of a call in a queue corresponds to the time elapsed from the moment that the call enters a queue to the moment that the call exits the queue.

- For a new call coming into the queue, the wait time is not set.
- For a call that is transferred to the queue from another queue within the group/enterprise or an agent, the wait time accumulated by the call prior to being transferred is preserved (if the option to preserve the wait time is enabled) and the call is queued accordingly.

Various actions can be taken to manage a call present in a queue such as reordering a call to the front of the queue, promoting a lower priority call to a higher priority, transferring a call, and so on.

In addition, calls are routed to agents staffing the call center as and when they are available. Calls can be routed to an available agent based on various routing policies.

The following subsections provide more information on queue management and routing policies.

4.3.9.1 Queue Management

4.3.9.1.1 Bounced Calls

If a call offered to an agent is not answered by the agent, the call is returned back to the queue and is flagged as “bounced”. This call is prioritized ahead of other non-bounced calls in the queue. A bounced call always remains at the top of the queue. If there are multiple bounced calls in the queue, then they are prioritized based on the original time at which the call was offered to an agent. The bounced call flag is only relevant within the queue in which the call has bounced. If the bounced call is transferred to another queue, then the flag is cleared and the call is prioritized as a regular call.

4.3.9.1.2 Reordering Calls

Calls present in a call center queue, can be reordered by the supervisor. Reordering can be performed only on calls at the highest priority. Calls in lower priority buckets cannot be reordered. This is to ensure accurate promotion of calls to the next priority.

4.3.9.1.3 Transferring Calls

Calls can be transferred from one call center to another. The supervisor can transfer a call using the Clearspan Supervisor client.

4.3.9.1.4 Promoting Calls

To avoid lower priority calls from being stranded, options are available to promote lower priority calls present in the queue for a long duration to higher priority.

4.3.9.1.5 Offering Calls to Agent

A queued call is offered to an agent upon one of the following triggers:

- Upon entry in the queue, at least one agent is available to answer the call. In this case, the queued call is offered to an available agent according to the Call Distribution policy configured for that queue.
- An agent becomes available to handle a new call and the queued call is prioritized as the next call to be offered. In this case, the call is first offered to the agent who becomes available. If the call bounces or the agent becomes unavailable again before the call can be offered, then the call is offered according to the Call Distribution policy configured for that queue.

4.3.9.2 Routing Policies

4.3.9.2.1 Priority Routing

This activity introduces a policy that allows the determination of which call is to be delivered in priority when an agent becomes available.

The Priority Routing policy has two settings:

- **Longest Waiting Priority**: If this setting is selected, then the wait times of the next call in line from each queue that the agent is staffing are compared. The longest waiting call is selected and delivered to the agent.
- **Fixed Queue Priority**: If this setting is selected, then a list of precedence is configured among the queues of the group/enterprise. The call from the highest precedence queue that the agent is staffing is selected and delivered to the agent.

For both settings, bounced calls always have priority over non-bounced calls. If there is more than one bounced call, then they are prioritized based on the original time at which the call was offered to an agent.

This ensures that in a scenario in which an agent is staffing more than one queue and becomes available to take a new call, all queues do not trigger and attempt to "de-queue" and send a call to the agent at the same time.

This policy is configured at the group/enterprise level.

4.3.9.2.2 Skill-Based Routing

In Premium call centers, skill-based routing may be provisioned at the call center level. Agents in these call centers are assigned a skill level (1-20, with 1 the highest) to indicate their ability to handle calls in that call center.

If one or more call centers in a group/enterprise is skill-based, the routing policy for the group/enterprise is also said to be "skill-based". In this case, call centers that are not explicitly defined as skill-based are considered to have all assigned agents at skill level 1 (the highest). Therefore, if an agent belongs to both skill-based and non-skill-based queues, his skill level is assumed to be 1 (highest) in the non-skill-based queues.

Like priority-based queues, if calls are queued on multiple call centers and an agent becomes available, bounced calls take precedence. If no bounced calls are queued, the agent's skill level in each queue is examined; a call from the queue where the agent is most skilled is delivered. If the agent is equally skilled in more than one call center, the priority routing policy is applied. For more information, see section *4.3.9.2.1 Priority Routing*.

4.3.9.2.3 Routing Policy Use Cases

Following are some use cases that clarify how calls from two queues are presented to an available agent staffing both queues.

Use case 1 – Priority Routing – Precedence

Two agents are staffing two queues of a group/enterprise:

- Technical support

- Customer service

  The customer service is configured with the highest precedence and both queues have a single call waiting to be handled by an agent. The call in the technical support queue has been waiting the longest.

  The first agent frees up and becomes available to take a new call. Because the customer service queue has the highest precedence, the call from that queue is delivered to the agent.

  The second agent frees up and becomes available to take a new call. The customer service queue is empty, so the call from the technical support queue is delivered to the agent.

  Use case 2 – Priority Routing – Longest Waiting Time

  Two agents are staffing two queues of a group/enterprise:

- Technical support
- Customer service

  Both queues have a single call waiting to be handled by an agent and the call in the technical support queue has been waiting the longest.

  The first agent frees up and becomes available to take a new call. Because the call from the technical support queue has been waiting the longest, the call from that queue is delivered to the agent.

  The second agent frees up and becomes available to take a new call. The technical support queue is empty and the call from the customer service queue is delivered to the agent.

  Use case 3 – Priority Routing – Bounced Calls

  Two agents are staffing two queues of a group/enterprise:

- Technical support
- Customer service

  Both queues have a single call waiting to be handled by an agent and the call in the technical support queue has been waiting the longest. However, the call in the customer service queue was offered once to an agent and then bounced back to the queue.

  The first agent frees up and becomes available to take a new call. Because the call from the customer service queue was offered to an agent and bounced already, the call from that queue is delivered to the agent.

  Use case 4 – Mix of Skill-based and Priority-based Routing

An agent is staffing two queues of a group/enterprise:

- Technical support – Skill-based
- Customer service – Priority-based

The agent's skill level in technical support is 5.

The agent is on a call. Calls are queued on both call centers.

The agent frees up and becomes available to take a new call. Because an agent's implied skill level is 1 for priority-based queues, the call from customer service is delivered to the agent.

4.4 CALL CENTER AGENT

Agents are Clearspan users who have been assigned to Clearspan Call Centers. A Call Center User service is assigned to a Clearspan user to enable them to be assigned to a call center and receive/make calls associated with the call center.

There are three types of call center user licenses – Basic, Standard, and Premium.

- An agent assigned the Call Center – Basic license can only be assigned to a call center of type Basic.
- An agent assigned the Call Center – Standard license can be assigned to call centers of type Basic and Standard.
- An agent assigned the Call Center – Premium license can be assigned to all types of call centers.

Call center agents must also have an underlying feature license/service pack (Standard Enterprise, Premium Enterprise, and so on) for their voice services.

The Agent functionality can be split into three main types: call control functions, agent availability functions, and call tagging functions.

The following list provides more detail.

- **Call control functions** – These are the functions for answering, initiating, or managing calls. They include the ability to answer/auto answer, hold, transfer, conference, dial, initiate customer originated trace (COT), and escalate calls to supervisors.
  - **Answer/Auto Answer** – Inbound calls and outbound click-to-dial calls alert the agent's device. They can answer the call using the phone, the Clearspan Agent client, or the call can be automatically answered, meaning their device goes off-hook automatically after alerting.
  - **Hold** – Active calls can be placed on hold. The calling party hears the group Music On Hold (not the Call Center Music On Hold), if configured.

- **Transfer** – Calls can be transferred to other individuals or to alternate call centers. The transfers can be either consultative or blind.
- **Conference** – Agents can bridge additional parties into active calls using either a consultative or blind conference method.
- **Dial** – Agents can initiate outbound calls using their phone, the toolbar, their Clearspan Agent client using Click To Dial from the online directories, or the Dial button. Outbound call center calls can be initiated from their phone, using an FAC, or from the Clearspan Agent client, using drop-down menus.
- **Customer Originated Trace (COT)** – Agents can initiate a call trace on an active call or previous call using a button on the Clearspan Agent client.
- **Escalate calls to supervisors** – Agents can escalate a call to their supervisors using a button on the Clearspan Agent client. This places the original calling party on hold while calling the supervisor. The call can be made to a selected supervisor or Clearspan can automatically select an available supervisor based on the supervisor's line and DND status.
- **Emergency escalation of calls to supervisors** – Agents can escalate a call to their supervisors using the Emergency Escalation button on the Clearspan Agent client. This initiates an immediate bridging of the original calling party, the agent, and the supervisor in a conference. The call can be made to a selected supervisor or Clearspan can automatically select an available supervisor based on the supervisor's line and DND status.
- Other Clearspan Call Control services are available, such as Call Park and Camp on.

- **Agent Availability functions** – These are functions used by the agent to manage their availability to receive inbound calls from the call centers. They include Join/"Unjoin", Sign-in, Sign-out, Available, Unavailable, Unavailable codes, and Wrap-up.
- **Join/Unjoin Agent ACD States** – Agents in Standard and Premium call centers can set additional states that apply to call centers to which they are "Joined".
- **Available** – Indicates they are available to accept new calls or are on active calls.
  - **Unavailable and unavailable codes** – Indicates they are not available to accept new calls.
  - **Wrap-up** – Indicates they are performing post-call work, such as paperwork. They may or may not be available to accept calls when in this state.
- Call tagging functions – This is the agent's ability to tag call center calls with a disposition code, either during or immediately after a call is completed. The disposition code is a custom tag created by the enterprise customer.

Agents also have access to real-time metrics (see section 4.6 Agent Dashboard) as well as real-time and historical reports about themselves. For more information on real-time and historical reports, see section *4.8 Reporting*.

4.5 CALL CENTER SUPERVISOR

Supervisors are Clearspan users who are responsible for call centers and agents who service those call centers. They can (optionally) act as agents as well. Each supervisor may be assigned the Clearspan Supervisor client that provides the necessary capabilities to perform the supervisor role.

The Supervisor functionality can be divided into three main types: queue profile management functions, queue monitoring functions, and agent monitoring functions.

The following list provides more detail:

- **Queue Profile Management functions** – These are the functions for managing the profile of a queue, for example, modifying policy settings, enabling the Night Service override mode, enabling forced forwarding, or managing agent assignments.
- **Queue Monitoring functions** – These are the functions for monitoring queues.
  - **Retrieve a Call** – Supervisors can choose to retrieve calls from the queue and answer the calls themselves. This effectively transfers the call out of the queue to the supervisor.
  - **Transfer a Call** – A call can be transferred from one call center queue to the other by the supervisor. In scenarios in which a particular call center is swamped with calls and calls coming into the queue are not serviced effectively, the supervisor can transfer calls from the busy call center to another call center or any other destination to ensure calls are serviced in an effective manner.
  - **Promote a Call** – The supervisor has the ability to promote a lower priority call to a higher priority. For example, the supervisor may recognize a caller within the number and may promote the call to a higher priority to ensure the call is answered more quickly. For more information related to call priorities in a queue, see section *4.3.5 Call Center Dialed Number Identification Service (DNIS)*.
  - **Reorder a Call** – The supervisor has the ability to reorder calls in a queue. Calls toward the end of the queue can be moved to the front of the queue and vice versa. This is useful in scenarios in which an important call is received by a call center and is placed at the very end of the queue. The supervisor can make a decision to move this important call to the front of the queue so that the call is serviced more quickly.
  - **Monitor Next Call** – The supervisor can monitor the next call received by a call center or a particular DNIS in a call center. When the next call is received by the call center or DNIS, the supervisor is connected to the call in a silent monitoring mode and the supervisor remains connected when the call is offered and answered by an agent.
- **Agent Monitoring functions** – These are the functions for monitoring agents.
  - **Barge-in** – Supervisors may barge in to calls being handled by agents they are monitoring. An optional tone allows agents to recognize when the supervisor has barged in.
  - **Silent Monitoring** – Supervisors may listen into calls being handled by agents they are monitoring. An optional tone allows agents to recognize that they are being monitored. Agents must have the Call Center – Premium license assigned. At any time during the call, the supervisor may escalate to a full barge-in.

Supervisors also have access to real-time metrics (see section *4.7 Supervisor Dashboard*) as well as real-time and historical reports (see section *4.8 Reporting*) regarding the agents and queues that they supervise.

4.6 AGENT DASHBOARD

The Agent Dashboard is used by an agent to view real-time status of their assigned queues. It displays the name of each assigned queue as well as the number of agents currently

staffing each queue. In addition, the following statistics information is provided via the Agent Dashboard pane for each assigned queue:

Current number of calls in queue

Longest wait time

Expected wait time

Average handling time

Average speed of answer

Warning thresholds can be provisioned for each of the above items. When a “Yellow” or “Red” threshold value is crossed, the Agent Dashboard provides a color-coded indication of the crossing. For more information about provisioning these queue thresholds, see *8.6.1 Create Agent Threshold Profiles (optional)*.

For more information regarding these performance indicators, see the *Clearspan Hosted Thin Call Center Agent/Supervisor User Guide*.

4.7 SUPERVISOR DASHBOARD

The Supervisor Dashboard is used by the supervisor to view the real-time status and performance of agents and queues they are supervising.

The following information is provided via the Dashboard feature of the Clearspan Supervisor client.

- Queue
  - Current number of calls in queue
  - Longest wait time
  - Expected wait time
  - Average handling time
  - Average speed of answer
  - Number of agents staffing the queue
  - Number of agents idle
  - Number of agents unavailable
- Agent
  - Sign-in time and duration
  - Agent state and duration
  - Call state and duration

- Average busy time on ACD calls
- Average busy time on outbound ACD calls
- Average wrap-up time

Additionally, warning thresholds can be provisioned for the following items:

- Queue
  - Current number of calls in queue
  - Longest wait time
  - Expected wait time
  - Average handling time
  - Average speed of answer
- Agent
  - Agent unavailable time
  - Call state idle time
  - Call state on-call time
  - Average busy time on ACD calls
  - Average busy time on outbound ACD calls
  - Average wrap-up time

When a “Yellow” or “Red” threshold value is crossed, the Supervisor Dashboard provides a color-coded indication of the crossing. For more information about provisioning these queue thresholds, *8.4.6.6 Configure Call Center Thresholds*.

For more information regarding these performance indicators, see the *Clearspan Hosted Thin Call Center Agent/Supervisor User Guide*.

4.8 REPORTING

Agents, supervisors, and administrators use reports to obtain the key performance indicators of agents and call centers.

The key characteristics of reporting are described in this section.

- Support for historical and real-time reports:
  - Real-time reports can provide performance data up to the current time. In these cases, the user selects the start time of the interval and optionally provides the end time of the interval. When not provided, the end time is assumed to be the current time (that is, the time at which the report request is executed).
  - Historical reports provide data up to a specified time that occurs in the past. In these cases, the user must select the start time and the end time of the report time interval.

- Variety of sampling periods – Some reports allow the data to be summarized by sampling periods to allow the agent or supervisor to identify trends in the agent or queue activity. The following sampling periods are supported:
  - 15 minute
  - 30 minute
  - 60 minute
  - Daily
  - Weekly
  - Monthly
- On-demand and scheduled execution – Reports can be requested on demand or they can be scheduled for a one-time or recurring execution.
  - On-demand reports are initiated by agents or supervisors using the Clearspan Agent or Clearspan Supervisor client. For more information regarding the client application and the report generation interface, see the *Clearspan Hosted Thin Call Center Agent/Supervisor User Guide*.
  - Scheduled reports are initiated by agents or supervisors using the Clearspan Agent or Clearspan Supervisor client or by administrator using the web portal. These reports are initiated for one-time or recurring execution and they are delivered to up to nine e-mail recipients.
  - The user configures the date and time at which the report is to be executed or for recurring schedules, indicates the start date and the time of day at which the report is to be executed. The following lists the allowed recurring patterns:
  - Daily
  - Weekly
  - Monthly
  - Yearly
  - For scheduled reports, the report time frame is always relative to the time at which the report is scheduled to be run. The following time frames can be specified:
  - Previous hour or last n hours
  - Previous day or last n days
  - Previous week or last n weeks
  - Previous month or last n month
  - Previous year or last n years
- Canned and custom reports – In addition to a complete set of canned reports (see section *4.8.1 Canned Reports*), the Call Center solution provides customization capabilities. Customization is achieved in one of the following ways:
  - The headers and footers of reports may be branded allowing the system provider and/or each enterprise using the enhanced reports to include their own logos and/or copyright notices. For information on this process, see section 9 *Customization of Report Header and Footer*.
  - A new report can be created and uploaded to Clearspan. There are two typical uses of the custom report capability:
  - A brand new report can be created with its own contents and presentation.

- An existing report can be customized (for example, renaming some of the labels).

- External interfaces – Call Center solution provides the following interfaces to the reporting database:
  - Database views – Database views allow integration with other reporting tools such as Crystal Reports.
  - Call Center Public Reporting Interface (CCPRI) – This interface allows integration with third-party client applications. This interface is also used by the Clearspan Call Center client.
  - Computer Telephony Integration (CTI) Interface – The Computer Telephony Integration (CTI) interface can be used by third-party reporting solutions to receive call events, agent events, and call center events. For more information on the CTI interface, see the *Clearspan CTI Interface Specification*.

4.8.1 CANNED REPORTS

The following table summarizes the list of canned reports that can be run by agents and/or supervisors.

For information regarding each canned report, see the *Clearspan Call Center Reports Guide*.

REPORT NAME	REPORT TYPE	SCOPE	SUMMARY
Agent Activity Detail Report	Historical	Agents and Supervisors	This provides details about an agent(s) ACD state changes, disposition code usage, and calls.
Agent Call Detail Report	Historical	Agents and Supervisors	This is a detailed list of all calls made or received by the agent.
Agent Call Report	Real-Time	Agents and Supervisors	This allows you to view what types of calls were received or made by an agent (ACD, inbound, outbound, and so on).
Agent Calls by Skill Report	Real-Time	Agents and Supervisors	This provides a view of how many ACD calls were received per skill level by one or more agents.
Agent Duration Report	Real-Time	Agents and Supervisors	This allows you to view how long an agent spends on different types of calls. This shows the total duration during the time period.
Agent Duration by Skill Report	Real-Time	Agents and Supervisors	This captures the time agent(s) have spent on ACD calls answered at each skill level.
Agent Activity Report	Real-Time	Agents and Supervisors	This allows you to view how agents used their time. It shows how much time they spend in different line/ACD states.
Agent Sign-In Sign-Out Report	Historical	Agents and Supervisors	These are time-stamped entries to reflect working time.
Agent Summary Report	Historical	Supervisors	This allows you to view and compare agent performance. They report on average durations and maximum durations during the time period.

REPORT NAME	REPORT TYPE	SCOPE	SUMMARY
Agent Unavailability Report	Historical	Supervisors	This allows you to monitor an agent's "non-working" time.
Agent Disposition Code Report	Historical	Supervisors	This allows you to monitor an agent's use of disposition codes.
Call Center Call Detail Report	Historical	Supervisors	This contains a detailed list of all calls handled by the call center.
Call Center Incoming Calls Report	Real-Time	Supervisors	This allows you to view what is happening to calls that arrive at the call center, for example, are they being deflected, are they arriving due to overflow?
Call Center Report (Real-Time) Call Center Presented Calls Report	Real-Time	Supervisors	This allows you to view what is happening to calls that enter the queue, for example, how many were received, abandoned, escaped, and so on.
Abandoned Call Report	Real-Time	Supervisors	This allows you to view the number of calls queued and abandoned. Then you can adjust staffing to create the proper balance.
Call Center Summary Report	Historical	Supervisors	This allows you to monitor the trends for queued calls, for example, the average wait time, average speed of answer, average abandonment.
Service Level Report	Historical	Supervisors	This allows you to monitor the compliance with service levels (up to five). Then you can adjust staffing to meet contract obligations and customer satisfaction.
Call Center Disposition Code Report	Historical	Supervisors	This allows you to monitor the use of disposition codes for calls handled from a call center.
Call Center Overflow Matrix	Historical	Supervisors	This allows you to monitor whether calls are overflowing according to expectations. Then you can adjust staffing to create proper balance.

4.8.2 DATABASE VIEWS

Read-only database views are provided to allow integration with other reporting tools such as Crystal Reports.

The database views expose the same statistics as the data templates, which are used for the creation of custom report templates. For more information, see the *Clearspan Call Center Reports Customization Guide*.

Database views are versioned and supported for two major releases. Schema changes introduced in a release are reflected in the corresponding database view version.

4.8.3 CALL CENTER PUBLIC REPORTING INTERFACE

The Public Reporting Interface provides the following functionality:

- Retrieves the list of report templates that can be used to run or schedule reports.
- Lists input parameters for a report, that is the input parameters associated with a given report template. Each input parameter along with its given name and type is clearly identified as being mandatory or optional.
- Processes on-demand report request.
- Provides a mechanism for viewing, creating, modifying, and deleting scheduled reports.

4.9 DEVICE INTEGRATION

Any type of device can be associated with a call center agent or supervisor; however, many features supported by the Clearspan Call Center solution require the use of SIP phones to fully leverage the functionality.

4.9.1 AGENT

Calls can be delivered and distributed to any device associated with an agent in a call center, including analog phones, mobile phones, soft phones, and IP phones.

Agents supporting more sophisticated call center environments are best served using a SIP-based device with Advanced Call Control (ACC) and Device Key Synchronization (DKS) support. To determine whether a device supports ACC or DKS, refer to the relevant Partner Configuration Guide.

Extensions required by the agent can be split into two categories:

- SIP Protocol extensions
- FAC extensions

4.9.1.1 SIP Protocol Extensions

SIP EXTENSION	DESCRIPTION	FUNCTIONAL SUMMARY
Hoteling Event Package	Interface needed by the SIP phone, which supports the **x-Clearspan-hoteling** event package.	The Hoteling Host service is integrated with the Clearspan Call Center solution to provide “hot desking” for call center agents.
Service Control URI for Emergency Escalation	The SIP phone should send the URI **emergency-escalation@as-address** in the INFO. The *supervisor* parameter indicates the specific supervisor to whom the call needs to be escalated. This is optional. If the service is invoked in-dialog and the parameter is not specified, then the Application	During an ACD call, the call center agent presses a key to perform an emergency escalation to a supervisor. The media session with the caller is not interrupted and the Application Server invites the supervisor to barge in to the call.

SIP EXTENSION	DESCRIPTION	FUNCTIONAL SUMMARY
	Server selects any available supervisor and proceeds with the emergency escalation request.	
Service Control URI for Customer Originated Trace	The SIP phone should send the URI **customer-originated-trace@as-address** in an INFO/INVITE.	During a call, the call center agent presses a key and triggers a customer originated trace on the Application Server. The media session with the caller is not interrupted.
Service Control URI for Disposition Codes	The SIP phone should send the URI **cc-disposition-code@as-address** in an INFO/INVITE. The code is the URI parameter that indicates the disposition code to be applied to the current ACD call or the last ACD call if the call center agent is still in the *Wrap-up* ACD state.	During or after an ACD call, the call center agent presses a key and enters a disposition code using the numeric keypad. When invoked during an ACD call, the media session with the caller is not interrupted.
Network-Initiated Hold Reminder	The Application Server triggers the hold reminder by sending an INVITE request with an ***Alert-Info*** header	The call center agent may handle multiple calls at once, in which case incoming ACD calls may be placed on hold. If an ACD call remains on hold and the call center agent is not busy on other calls, then the Application Server sends a hold reminder to the SIP phone.
AS-Feature-Event Package Private Data Extension	The phone user must have a SIP phone that supports the **as-feature-event** package. When the ACD status is changed through the web portal or a client application, Clearspan sends a NOTIFY request with message body to the SIP phone to indicate the ACD status change. In addition, the call center agent can initiate a status change from the SIP phone by using soft keys. In this case, the SIP phone sends a SUBSCRIBE request with message body.	The call center agent uses a key on the SIP phone to set the ACD state. If the ACD state is set to "unavailable", then the call center agent enters an unavailability code.
Call Center MIME Type	Clearspan sends additional ACD call information related to the ACD call when an ACD call is sent to the agent. The information is displayed to the call center agent on the SIP phone and can include the wait time, call center user ID, call center name, number of calls in queue, and longest wait time. The ACD call information is included in the initial INVITE request in a body of type **application/x-Clearspan-call-center**, containing an extensible markup language (xml) message.	The call center agent receives an ACD call and the display of the SIP phone indicates the key indicators received from the Application Server.

SIP EXTENSION	DESCRIPTION	FUNCTIONAL SUMMARY
Call Center Status Event Package	The phone user must have a SIP phone that supports the **x-Clearspan-call-center** event package.	Call center agents use SIP phones to handle call from call centers. The status of these call centers is sent to the SIP phones to allow the agents to modify their call handling behavior as the level of calls in the call centers go up and down.

4.9.1.2 FAC Extensions

EXTENSION	DEFAULT FEATURE ACCESS CODE	DESCRIPTION
Place a call as a call center.	#80	An agent can place an outgoing call as the call center.
Place a personal call.	#81	An agent can place an outgoing personal call.
Place a call to a supervisor.	#83	An agent can escalate the call to the supervisor using this FAC code.
Place a customer originated trace.	*57	An agent can request a customer originated trace for the last call received.

4.9.2 SUPERVISOR

4.9.2.1 Supervisor-specific Speed Dial Extensions

- Monitor an Agent – The phone uses an FAC that can be mapped to a speed dial key on the customer premises equipment (CPE) to perform this function.
- Monitor Next Call of an Agent/Call Center – The phone uses an FAC that can be mapped to speed dial key on the CPE to perform this function.
- Barge-In to a Call – The phone uses an FAC that can be mapped to a speed dial key on the CPE to perform this function.
- Activate/Deactivate Night Service Manual Override – The phone uses an FAC that can be mapped to a speed dial key on the CPE to perform this function.
- Activate/Deactivate Forced Forwarding of Calls – The phone uses an FAC that can be mapped to a speed dial key on the CPE to perform this function.

4.9.2.2 Feature Access Code Summary

Feature access codes (FAC) can be used by phones that do not provide support for SIP extensions.

EXTENSION	DEFAULT FEATURE ACCESS CODE	DESCRIPTION
Monitor an Agent	#82	Supervisor can silently monitor a call that is active with an agent.

Monitor Next Call	#84	Supervisor can silently monitor the next call that is presented to an agent.
Barge-In to a Call	*33	Supervisor can barge in on a call that is active with an agent.
Activate Night Service Manual Override	#70	Supervisor can manually activate Night Service treatment.
Deactivate Night Service Manual Override	#71	Supervisor can manually deactivate Night Service treatment.
Activate Forced Forwarding	#72	Supervisor can manually activate Forced Forwarding treatment.
Deactivate Forced Forwarding	#73	Supervisor can manually deactivate Forced Forwarding treatment.

4.10 EXTENSION MOBILITY

An important element of the Clearspan Call Center solution is the flexibility for an agent to receive calls regardless of their location. This is generally referred to as *Extension Mobility*, and includes some standard features such as shared workstations, and more innovative features such as Remote Office and Clearspan Anywhere.

4.10.1 SHARED WORKSTATION WITH HOTELING

Shared workstations are a common setup in around-the-clock call centers, where users on different shifts share a single computer and phone. The Clearspan Call Center solution supports a single login by agents, using either the Clearspan Agent client, web portal, voice portal, or phone to associate themselves with the shared device and begin to perform their role.

The function is accomplished using the Clearspan Hoteling Host/Guest service has been enhanced to extend the methods by which an agent (Hoteling Guest) can associate with a shared device (Hoteling Host).

The hoteling event package provides a mechanism for the host device to synchronize with the Application Server when the host device's association status is modified. It also allows the agent to use keys on a SIP phone as an alternative to using the Clearspan Voice Portal.

The synchronization protocol is based on the SIP-events framework. To use this capability, the phone user must have a SIP phone that supports the *x-Clearspan-hoteling* event package.

There are a few different use cases for associating the call center agent with the device; however, in each case they sign in using their user ID and password, after which the device

acts as the agent's primary device, which means that it receives inbound calls and supports outbound calls according to the agent's user profile.

4.10.1.1 Configure Hoteling Host

In all cases, the device at the shared workstation must be configured as a Hoteling Host device in Clearspan. This is accomplished using the Clearspan Web Portal or the Voice Portal.

The following figure illustrates the enabling of a host using the web portal.

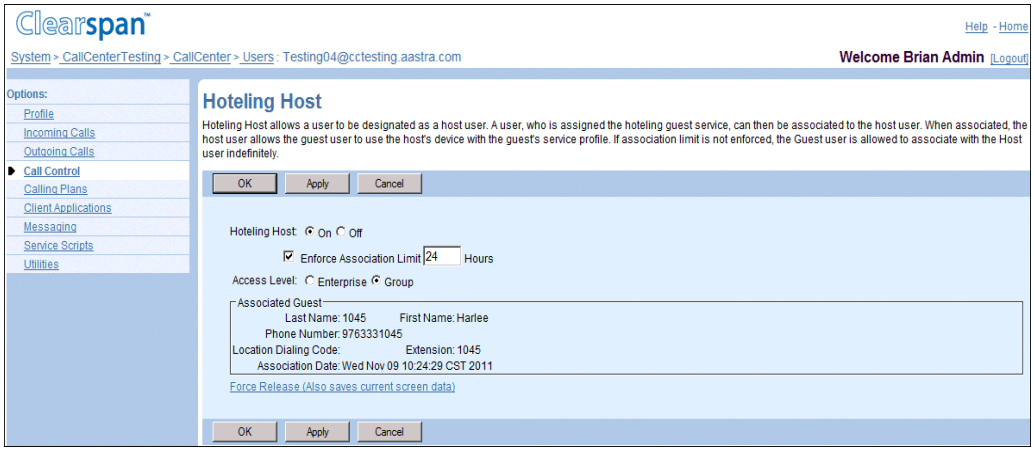

Figure 4 Hoteling Host Configuration

4.10.1.2 Configure Hoteling Guest using Phone

To log in, the phone either provides a sign-in screen (based on phone implementation) for the agent to enter their ID and password or the agent can dial into the Clearspan Voice Portal and follow dual-tone multi-frequency (DTMF) prompts to associate themselves with a Hoteling Host device.

Information from the phone sign-in screen is sent to Clearspan, which associates the phone with the agent. If the Logout button on the phone is pressed, the phone is disassociated from the agent.

Using the voice portal, the agent can select the appropriate DTMF options to associate themselves with the phone. Referring to the following figure, an agent would dial into the voice portal, press **1** to access the *Hoteling* options, and press **9** to associate with the host device.

The agent can disassociate themselves from the host using a key on the phone (based on phone implementation) or via the voice portal.

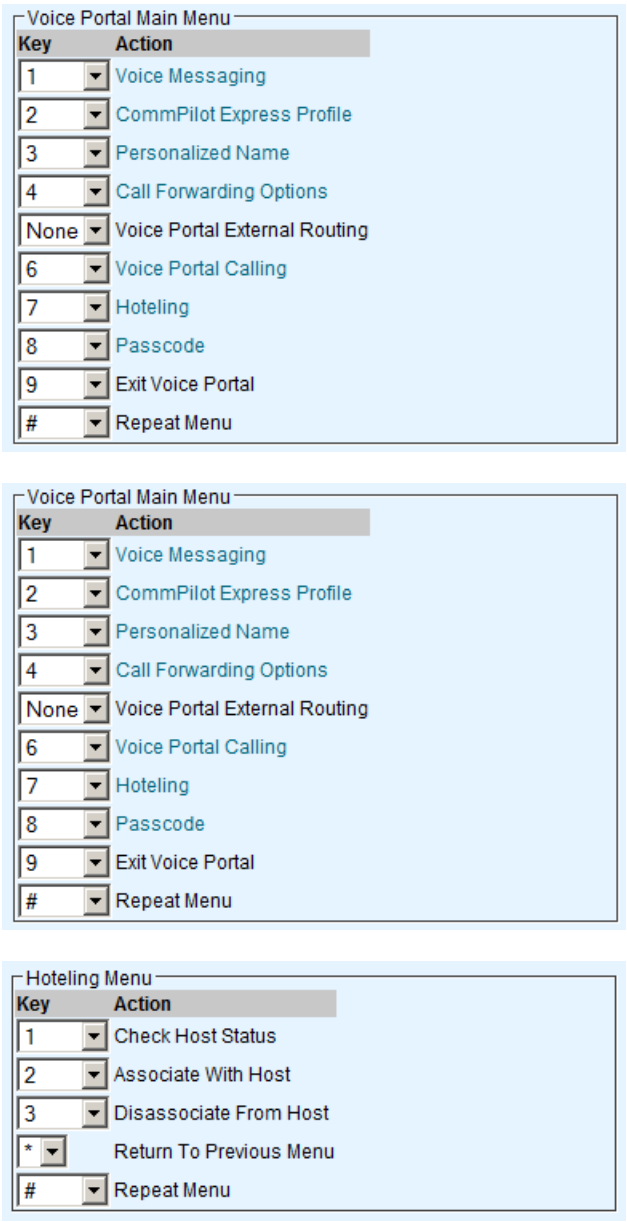

Figure 5 Hoteling Host/Guest via Voice Portal (DTMF Digits May Vary)

4.10.1.3 Configure Hoteling Guest using Clearspan Web Portal

To log in, the agent accesses the Clearspan Web Portal and associates themselves with the host device using the Hoteling Guest service. The agent can select to associate with any configured Hoteling Host within the enterprise or group, depending on the scope selected by the host.

The agent can disassociate themselves from the host using a configured time-out period or manually using the web portal or phone.

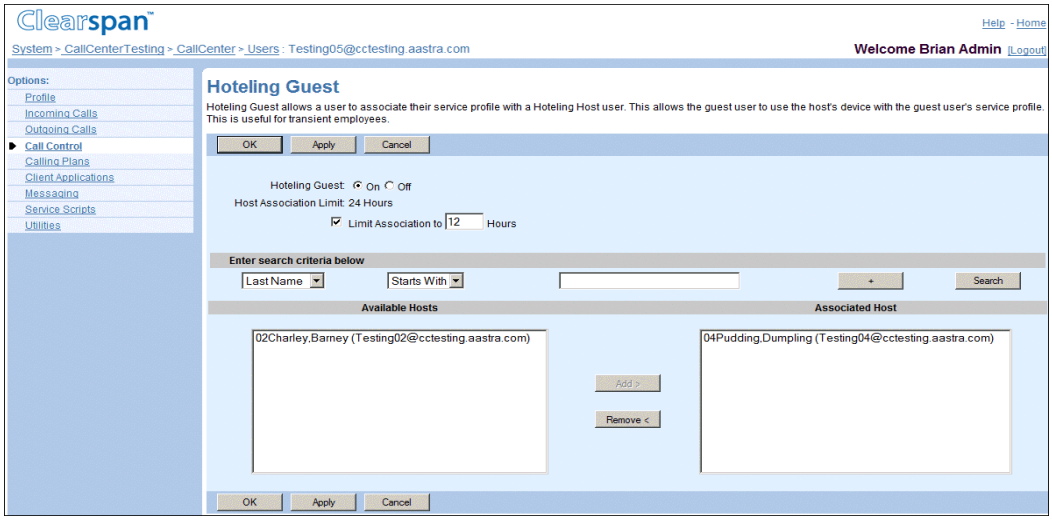

Figure 6 Hoteling Guest Configuration

4.10.1.4 Configure Hoteling Guest using Clearspan Agent Client

The agent signs in using the Clearspan Agent client, following the usual process. The client provides a *Hotel Host* option on the sign-in screen. In most cases, the configured host address does not change since the device and computer are always located at the same workspace.

The agent can disassociate themselves from the phone by signing out of the client.

For more information regarding the Clearspan Agent client and the *Hotel Host* option, see the *Clearspan Hosted Thin Call Center Agent/Supervisor User Guide*.

4.10.2 CLEARSPAN ANYWHERE

The Clearspan Anywhere service is typically used to allow a Clearspan subscriber to associate a mobile device with their user profile. The benefit of Clearspan Anywhere is that both inbound and outbound calls from a subscriber can be routed through Clearspan. This provides significant value in a call center environment, since an agent's line state and availability is visible on Clearspan, even when they are on a call using their mobile device, which often operates on a different carrier's network.

- Inbound calls to a call center are not routed to an agent who is active on a call using their Clearspan Anywhere-enabled mobile device.
- Outbound calls by an agent reflect the CLID of the call center or the user's Clearspan CLID, and the user's line state is visible to Clearspan.
- Call Center Reports correctly reflect the call activity of an agent, even though they receive a call using their Clearspan Anywhere-enabled mobile device.

When activated, all inbound calls ring the Clearspan Anywhere device as well as an agent's primary desk phone (if one is configured). Outbound calls are initiated through the Clearspan Anywhere portal.

Configuration and activation of the Clearspan Anywhere service can be accomplished using the Clearspan Web Portal.

4.10.3 CLEARSPAN REMOTE OFFICE

The Clearspan Remote Office service is typically used to allow a Clearspan subscriber to associate some alternate device with their user profile, on a temporary basis. For example, a user can configure their home phone as a Remote Office device, which results in all incoming calls to their Clearspan number being routed to their home phone. This feature does not have to use a temporary location. It can also be used with devices that are the primary device of the user.

As with the Clearspan Anywhere service, the call state is maintained within Clearspan, and as a result, the same benefits apply.

For outbound calls, the user uses the Clearspan Agent client to initiate the call. This acts as a Click To Dial service, so that when they dial the destination number, Clearspan initially calls back their remote office number and then alerts the dialed destination.

5 SYSTEM REQUIREMENTS

The following figure shows the network elements and applications that are required for the Call Center solution and the interfaces between each element or application.

Some of the components that are only required for Enhanced Reporting are highlighted in the figure.

For a complete description of server port configuration, see *2745nn CS Server Security Guide*.

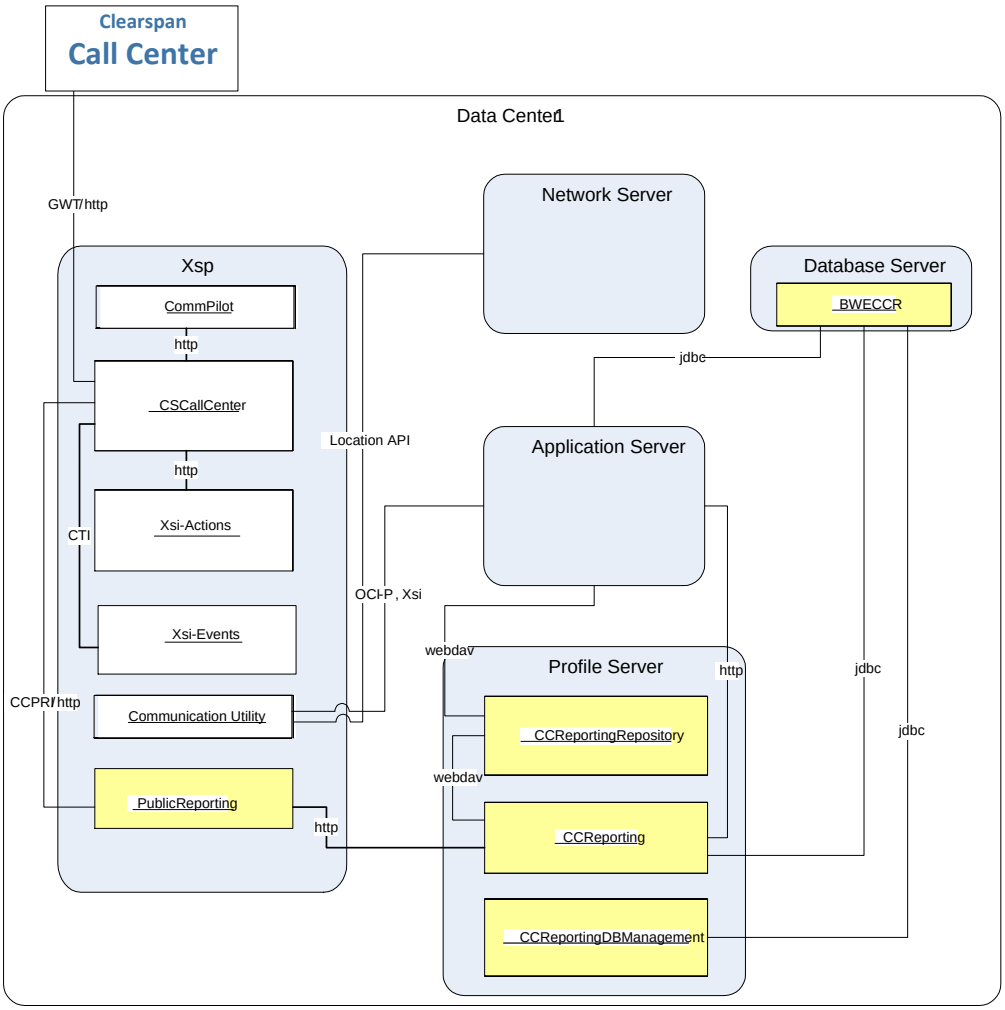

Figure 7 Network Elements, Applications Required for Call Center Solution, and Interfaces

The network elements and applications required for the Receptionist solution are similar, except that Enhanced Reporting components are not applicable.

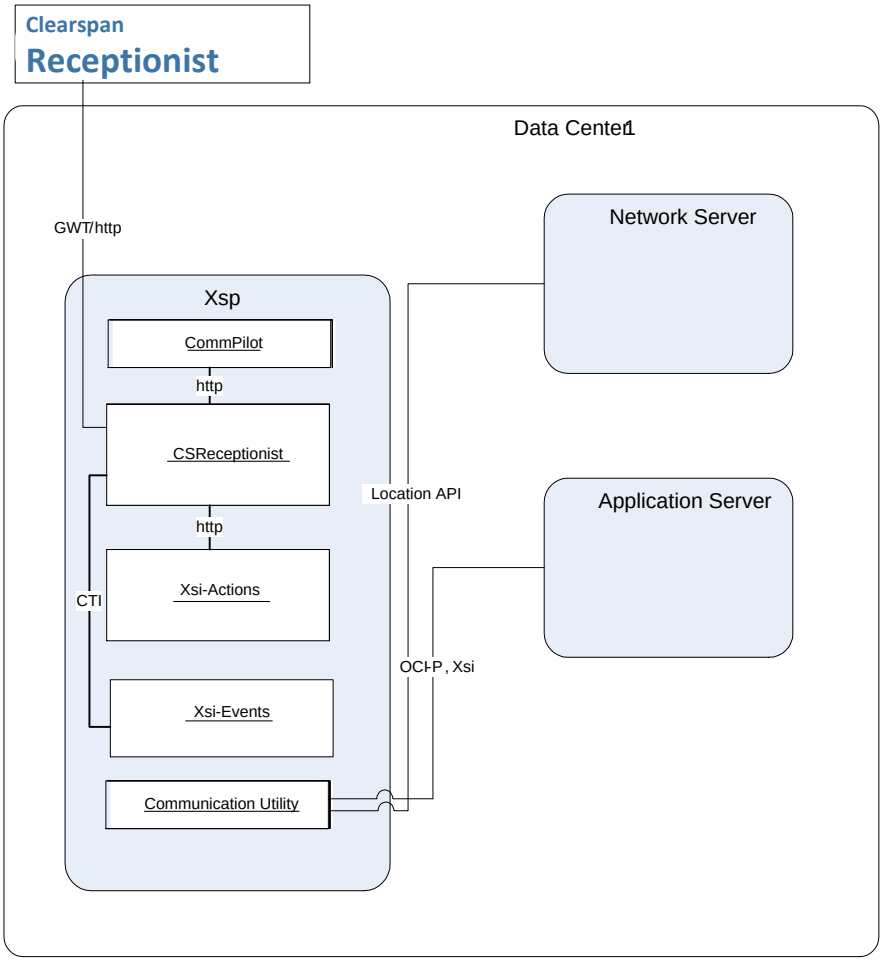

Figure 8 Network Elements, Applications Required for Receptionist Solution

- **Database Server** – The Database Server provides redundant and centralized data storage for Clearspan applications. Specifically, the Enhanced Call Center Reporting datastore (BWECCR schema) contains the data that is required for the generation of reports.
- **Profile Server** – The Profile Server provides the file repository function of Clearspan and it also hosts the applications that access the centralized database. The following applications are deployed on the Profile Server in the context of Call Center Reporting:
  - *CCReportingDBManagement application* – This application manages the Enhanced Call Center Reporting datastore (BWECCR schema) on the Database Server. The BWECCR schema is created when the application is deployed on the Profile Server. The application is patched through the standard patching process for Clearspan applications. Any required database patch is applied through a patch on this application.
  - *CCReporting web application* – This web application implements the reporting engine, which retrieves data from the centralized database and generates the report.
  - *CCReportingRepository* web application – This web application provides a file repository interface that is used for storing or retrieving the reporting templates, which are required for the generation of reports. The interface is also used to store generated reports for audit purposes.

- **Xtended Services Platform (Xsp)** – The Xtended Services Platform resides in the demilitarized zone (DMZ) and hosts the following web applications:
  - *CommPilot* web application – This web application provides the CommPilot web portal for the Clearspan Application Server. It can be used to launch the Clearspan Call Center and Receptionist clients.
  - *PublicReporting* web application – This web application provides a public interface for Call Center Reporting. It is responsible for authentication and scopes control of users using the interface.
  - *BWCallCenter* web application – This web application has two components:
  - A client JavaScript component that is downloaded and run in a browser when the web application is first accessed. This provides the graphical user interface (GUI) and client-side functionality.
  - A server component that provides the back-end logic for the Clearspan Agent and Clearspan Supervisor clients. The client component communicates to the server component using the Google Widget Toolkit (GWT) Remote Procedure Call (RPC) Protocol. This is a Remote Procedure Protocol over HTTP(S).
  - *BWReceptionist* web application – This web application has two components:
  - A client JavaScript component that is downloaded and run in a browser when the web application is first accessed. This provides the GUI and client-side functionality.
  - A server component that provides the back-end logic for the Clearspan Receptionist client. The client component communicates to the server component using the Google Widget Toolkit (GWT) Remote Procedure Call (RPC) Protocol. This is a Remote Procedure Protocol over HTTP(S). For more information regarding this web application, see the *Clearspan Hosted Thin Receptionist Configuration and Administration Guide*.
- **Application Server** – The Application Server processes the calls made or received by call centers and agents and populates the centralized database with the call center statistics. The Application Server also manages the reporting.
- **Network Server** – The Network Server provides the location application programming interface (API). It is used by the Call Center Public Reporting interface web application to locate the appropriate Application Server node for the user using the interface.

5.1 PREREQUISITES

Servers:

This solution requires the following Clearspan network elements and applications.

Note: Enhanced Reporting requires the use of the Clearspan Agent or Clearspan Supervisor client.

- Application Server (AS)
- Xtended Services Platform Server (Xsp)
  - BWCallCenter web application
    (only required for Clearspan Agent or Clearspan Supervisor clients)
  - BWReceptionist web application
    (only required for Clearspan Receptionist client)

  - PublicReporting web application
    (only required for Enhanced Reporting)
  - CommPilot web application

- Profile Server (PS)
  (only required for Enhanced Reporting)
  - *CCReporting* web application
  - CCReportingDBManagement application
  - CCReportingRepository web application
- Database Server (DBS)
  (only required for Enhanced Reporting)

Clients – This solution offers both the Clearspan Call Center and Clearspan Receptionist clients. The clients are deployed via the Clearspan applications listed above.

Phones/customer premise equipment – This solution works with any customer premises equipment (CPE). However, a device with Advanced Call Control (ACC) and Device Key Synchronization (DKS) support is preferred. To determine whether the device supports ACC or DKS, consult the relevant Partner Configuration Guide.

Network architecture – Call Center is supported in all network architectures. For more information, contact your Aastra representative.

5.2 LICENSING

The licenses in the following subsections are required or recommended to deploy the Call Center solution as described in this document.

5.2.1 LICENSES FOR AGENTS

These are the licenses for subscribers/users acting in an agent capacity. If the agent is also a supervisor, see section *5.2.2 Licenses for Supervisors*.

5.2.1.1 Required

The following user licenses are required for agents to perform the functions defined in the solution:

- Call Center License – All agents are required to have one of the three levels of call center licenses to perform the role:
  - Call Center – Basic (user license) – This provides the user assigned with the ability to join a Basic call center.
  - Call Center – Standard (user license) – This provides the user assigned with the ability to join a Standard or Basic call center.
  - Call Center – Premium (user license) – This provides the user assigned with the ability to join a Basic, Standard, or Premium call center.

- Call Transfer – This is required for transferring calls into queues, to other agents, or to supervisors.
- Three-Way/N-Way Call – This is required for escalating or performing an emergency call to a supervisor as well as other common agent tasks.

5.2.1.2 Optional

The following user licenses are optional for agents to perform the functions defined in the solution:

- Clearspan Agent (user license) – This provides the user assigned with the ability to use the Clearspan Agent client.
- Directory Number Hunting (user license) – When assigned to an agent, this provides the ability to route calls to a user's direct number directly into the call center, leveraging all the agents in the call center.

5.2.2 LICENSES FOR SUPERVISORS

5.2.2.1 Required

- Call Transfer – This is required for transferring calls into queues, to other agents, or to supervisors.
- Silent Monitoring – This is required for performing silent monitoring of an agent or call center call.
- Call Pickup with Barge-in – This is required to perform a barge-in to an agent call as well as emergency calls from agents.
- Three-Way/N-Way Call – This is required for silent monitoring and barge-in.

5.2.2.2 Optional

The following user licenses are required for agents to perform the functions defined in the solution:

- Call center license – This is required if the supervisor acts as an agent to receive calls from call centers.
  - Call Center – Basic (user license) – This provides the user assigned with the ability to join a Basic call center.
  - Call Center – Standard (user license) – This provides the user assigned with the ability to join a Standard or Basic call center.
  - Call Center – Premium (user license) – This provides the user assigned with the ability to join a Basic, Standard or Premium call center.
- Clearspan Supervisor (user license) – This provides the user assigned with the ability to use the Clearspan Supervisor client.
- Directory Number Hunting (user license) – When assigned to a supervisor, this provides the ability to route calls to a user's direct number directly into the call center in an agent capacity, leveraging all the agents in the call center.

5.2.3 LICENSES FOR CALL CENTER

The following licenses can be assigned to a call center to enable enhanced behavior:

- Voice Messaging/Voice Messaging-Video (user license) – When assigned to a call center, this provides the ability to route calls to a voice messaging mailbox directly associated with the call center.
- Fax Messaging (user license) – When assigned to a call center, this provides for the receipt of fax messages by the call center. Fax messages are not included in the queue, nor are they routed to agents.
- Call Logs (user license) – When assigned to a call center, this provides a list of calls received by the call center.
- Call Notify (user license) – When assigned to a call center, an e-mail is sent out whenever a call received by the call center matches configured criteria, based on a time schedule, holiday schedule, and specific calling party numbers/ranges/types.
- Call Forwarding Busy (user license) – When assigned to a call center, calls to the call center can be redirected to this location when a caller uses the *0-out* option to escape from the queue or configures Busy treatment for Overflow, Stranded, Holiday, or Night Service.

The following licenses can be assigned to a call center (Basic or Standard) to provide additional capabilities. Although they may also be assigned to a Premium call center, the Premium call center has the following capabilities (and there are more in a more integrated policy).

- Call Forwarding Always (user license) – When assigned to a call center, calls to the call center are immediately redirected to an alternate location. An alternate feature in Premium call centers is Forced Forwarding.
- Call Forwarding Selective (user license) – When assigned to a call center, calls to the call center are redirected during the time or holiday schedule configured for this service. The service can also be configuring to be triggered on specific calling party numbers/ranges/types. An alternate feature in Premium call centers is Night and Holiday service.
- Do Not Disturb (user license) – When assigned to a call center, calls to the call center are immediately subject to the configured Busy treatment, which could be Call Forwarding Busy or Voice Messaging. An alternate feature in Premium call centers is Forced Forwarding.
- Alternate Numbers (user license) – When assigned to a call center, this provides the ability to associate multiple directory numbers with the call center. This allows for local phone numbers that all direct into the call center. The agent only sees the call center ID when a call is presented. An alternate feature in Premium call centers is the DNIS functionality.

5.2.4 ADDITIONAL LICENSES FOR SOLUTION

- Auto Attendant/Auto Attendant-Video (group license) – This provides the front-end IVR function, allowing callers to select the appropriate call center group.
- Clearspan Receptionist – Enterprise (user license) – This provides the user assigned with the ability to use the Clearspan Receptionist - Enterprise client.

- PublicReporting (server license) – This is required to deploy the *PublicReporting* web application on the Xtended Services Platform (Xsp).
- CCReporting (server license) – This is required to deploy the *CCReporting* web application on the Profile Server.
- CCReportingDBManagement (server license) – This is required to deploy the *CCReportingDBManagement* application on the Profile Server.
- CCReportingRepository (server license) – This is required to deploy the *CCReportingRepository* web application on the Profile Server.

6 SYSTEM CONFIGURATION

This section provides information on the system configuration required to enable the Call Center solution.

6.1 DEPLOY ENHANCED REPORTING

6.1.1 CREATE BWECCR SCHEMA

The *CCReportingDBManagement* application resides on the Profile Server and manages the BWECCR schema on the Database Server (DBS). The BWECCR schema is created on the Database Server when the *CCReportingDBManagement* application is deployed for the first time on the Profile Server.

Notes: It is assumed that the Database Server has been installed and configured. For information about the configuration of the Database Server, see the *Clearspan Database Server Configuration Guide.*

Attempting to deploy the *CCReportingDBManagement* application without configuring the centralized database results in an error. The *CCReportingDBManagement* application must be configured prior to deployment.

The *CCReportingDBManagement* application manages the installation and upgrade of the schema on the Database Server (DBS). It is recommended to install this application on a single Profile Server.

1. Activate the *CCReportingDBManagement* application on the Profile Server.

Example:

```
PS_CLI/Maintenance/ManagedObjects> activate application CCReportingDBManagement
22.0_1.150
…Done
```

2. Configure the centralized database by adding the sites and associating the BWECCR schema with the centralized database.

    a. Add the centralized database entry. The required password represents the password of the Oracle SYS account that was created as part of the Database Server installation. The Database Server installation sets the SYS password to *bwadmin* by default. The SYS account password set during the Database Server installation can be changed at the *DBS_CLI/Applications/DbManagement/SystemAdmin* level on the Database Server. For more information about the configuration of the Database Server, see the *Clearspan Database Server Configuration Guide.*

Example:

```
PS_CLI/Applications/CCReportingDBManagement/Database/Databases> add
bwCentralizedDb
Password:
Re-type Password:
…Done
```

b. Add the primary and secondary sites of the Database Server.

Example:

```
PS_CLI/Applications/CCReportingDBManagement/Database/Databases/Sites> add
bwCentralizedDb site1.db.broadsoft.net 8521 true
Done…

PS_CLI/Applications/CCReportingDBManagement/Database/Databases/Sites> add
bwCentralizedDb site2.db.broadsoft.net 8521 false
…Done
```

c. Validate the configuration of the sites and the connection to the Database Server.

Example:

```
PS_CLI/Applications/CCReportingDBManagement/Database/Databases/Sites> validate
                Hostname         Database  Status
================================================
 site1.db.broadsoft.net bwCentralizedDb Primary
 site2.db.broadsoft.net bwCentralizedDb Standby

2 entries found.
```

Note: For site status description and for troubleshooting information, refer to section *Troubeshooting*.

d. Associate the “bweccr” schema with the centralized database added and select a password for the call center reporting datastore.

Notes: When the *CCReportingDBManagement* application is deployed a first time, the “bweccr” schema password is set to the value configured here. For any subsequent deployment, it is important to ensure that the password is set prior to deploying the application. Otherwise, the application fails to connect to the “bweccr” schema and may cause the schema to be locked on the Database Server. For help on resolving schema password issues, see section *9 Troubeshooting*.
The *CCReporting* web application and the Application Server also connect to the “bweccr” schema, and need to be configured with the same password. This is described in sections *Install Reporting Engine* and *Configure Enhanced Reporting on Application Server*, respectively.

Example:

```
PS_CLI/Applications/CCReportingDBManagement/Database/Schemas/Instances> set
bweccr bweccr database bwCentralizedDb
…Done

PS_CLI/Applications/CCReportingDBManagement/Database/Schemas/Instances> set
bweccr bweccr password
Password:
Re-type Password:
…Done
```

3. Deploy the *CCReportingDBManagement* application on the Profile Server.

Example:

```
PS_CLI/Maintenance/ManagedObjects> deploy application CCReportingDBManagement
…Done
```

4. Start the *CCReportingDBManagement* application on the Profile Server.

Example:

```
PS_CLI/Maintenance/ManagedObjects> start application CCReportingDBManagement
…Done
```

6.1.2 CREATE REPORTING REPOSITORY

The *CCReportingRepository* application manages the Enhanced Reporting repository. The repository consists of:

- Canned report templates
- Custom report templates
- Report archive
- Data archive

Canned report templates are created on the repository when the *CCReportingRepository* application is activated on the Profile Server.

The *CCReportingRepository* application is deployed to allow other Clearspan applications to store or retrieve files to or from the repository. In general, a deployment would have two or more Profile Servers. The following steps should be repeated on each Profile Server involved in the Call Center solution deployment.

1. Activate the *CCReportingRepository* application on the Profile Server.

Example:

```
PS_CLI/Maintenance/ManagedObjects> activate application CCReportingRepository
22.0_1.150 /CCReportingRepository
…Done
```

2. Deploy the *CCReportingRepository* application on the Profile Server. Example:

```
PS_CLI/Maintenance/ManagedObjects> deploy application /CCReportingRepository
…Done
```

6.1.3 ENABLE DATA ARCHIVING

The number of days that data is retained in the Database Server before being purged and archived is configurable on the Profile Server. The time at which the purge task runs is configurable on the Profile Server as well. The purged data is archived on the Profile Server in the Call Center Reporting repository. In the following example, the *ReportingRepositoryAddress* should be set to the url of the Profile Server hosting the CCReportingRepository application.

Example:

```
PS_CLI/Applications/CCReportingDBManagement/DataRetention> get
QuarterHourIntervalDataRetention = 90
HalfHourIntervalDataRetention = 90
HourlyIntervalDataRetention = 397
DetailDataRetention = 30
SignInOutDataRetention = 90
ReportingRepositoryAddress = null
PurgeExecutionTime = 02:05:00

PS_CLI/Applications/CCReportingDBManagement/DataRetention> set
ReportingRepositoryAddress http://ps-repository.domain.net/CCReportingRepository
```

After the data stored in the Database Server reaches the provisioned data retention maximum number of days, the data in the Database Server is purged and archived in comma-separated values (csv) files. These files are saved on the Profile Server(s) running the CCReportingRepository application. There is one csv file per Database table. During the purging and archiving process, which occurs nightly, the csv files are zipped together and stored in the CCReportingRepository in the <root>/DataArchive directory with the date included in the zip file name.

Example:

```
PS_CLI/Applications/CCReportingRepository/GeneralSettings> get
  rootDirectory = /var/broadworks/ccreportingrepository/
```

The zip files are retained for a configurable amount of time before being deleted. This retention time is configurable on the Profile Server.

Example:

```
PS_CLI/Applications/CCReportingRepository/Cleanup/Subdirectories> set
/DataArchive deletionDelay 60
...Done

PS_CLI/Applications/CCReportingRepository/Cleanup/Subdirectories> get
  SubDirectory Name  Deletion Delay  Compression Delay
=======================================================
     /ReportArchive              90                 10
       /DataArchive              60                 10

2 entries found.
```

For more information about the data archiving process and the format of the csv and zip files, see section *10 Archiving Reporting Data*.

6.1.4 INSTALL REPORTING ENGINE

The reporting engine runs on the Profile Server in the context of the *CCReporting* web application. The *CCReporting* web application connects to the centralized database to retrieve the reporting data and generate the reports. In general, a deployment would have two or more Profile Servers. The following steps should be repeated on each Profile Server involved in the Call Center solution deployment.

1. Activate the *CCReporting* web application on the Profile Server.

Example:

```
PS_CLI/Maintenance/ManagedObjects> activate application CCReporting 22.0_1.150
/CCReporting
…Done
```

2. Configure the centralized database by adding the sites and associating the “bweccr” schema with the centralized database.

Add the centralized database entry. The required password represents the password of the Oracle SYS account that was created as part of the Database Server installation. The Database Server installation sets the SYS password to *bwadmin* by default.

Example:

```
PS_CLI/Applications/CCReporting/Database/Databases> add bwCentralizedDb
Password:
Re-type Password:
…Done
```

Add the primary and secondary sites of the Database Server.

Example:

```
PS_CLI/Applications/CCReporting/Database/Databases/Sites> add
bwCentralizedDb site1.db.yourcorp.net 8521 true
Done…

PS_CLI/Applications/CCReporting/Database/Databases/Sites> add
bwCentralizedDb site2.db.yourcorp.net 8521 false
…Done
```

Validate the configuration of the sites and the connection to the Database Server.

Example

```
PS_CLI/Applications/CCReporting/Database/Databases/Sites> validate
               Hostname        Database  Status
=================================================
 site1.db.broadsoft.net bwCentralizedDb Primary
 site2.db.broadsoft.net bwCentralizedDb Standby

2 entries found.
```

Note: For site status description and for troubleshooting information, see section *Troubleshooting* or to the online help for the CLI validate command.

Associate the “bweccr” schema with the centralized database added. Optionally, if the default “bweccr” schema password was changed as part of the initial *CCReportingDBManagement* application deployment or post schema deployment, the “bweccr” schema needs to be reset.

Note: It is important to ensure that the password is set prior to deploying the application. Otherwise, the web application fails to connect to the “bweccr” schema and may cause the schema to be locked on the Database Server. For help on resolving schema password issues, see section 10 *Troubleshooting*.

Example:

```
PS_CLI/Applications/CCReporting/Database/Schemas/Instances> set bweccr bweccr
database bwCentralizedDb
…Done
PS_CLI/Applications/CCReporting/Database/Schemas/Instances> set bweccr bweccr
password
Password:
Re-type Password:
…Done
```

3. Verify that the number of worker threads for the application is set to the number of CPUs on the server.

   Example:

```
PS_CLI/Applications/CCReporting/GeneralSettings> get
MaxIntervalBasedQuerySize = 10000
MaxNonIntervalBasedQuerySize = 10000
NumWorkerThreads = 16
…Done
```

4. Deploy the *CCReporting* web application on the Profile Server.

Example:

```
PS_CLI/Maintenance/ManagedObjects> deploy application /CCReporting
…Done
```

6.1.5 INSTALL PUBLIC REPORT INTERFACE

The Public Reporting interface runs on the Xtended Services Platform Server in the context of the *PublicReporting* web application. The web application provides a RESTful application programming interface (API) for all reporting services (that is for on-demand and scheduled reports). In general, a deployment would have two or more Xtended Services Platforms. The following steps should be repeated on each Xtended Services Platform involved in the Call Center solution deployment.

1. Activate the *PublicReporting* web application on the Xtended Services Platform.

Example:

```
XSP_CLI/Maintenance/ManagedObjects> activate application PublicReporting
21.0_1.654 /com.yourcorp.ccpri
…Done
```

2. Deploy the *PublicReporting* web application on the Xtended Services Platform.

Example:

```
XSP_CLI/Maintenance/ManagedObjects> deploy application /com.yourcorp.ccpri
…Done
```

6.1.6 CONFIGURE ACCESS CONTROL LISTS

The following table summarizes the access control lists that must be enabled for Enhanced Reporting.

WEB APPLICATION	ACCESS
CCReporting	• Add the addresses of the Xtended Services Platform running the PublicReporting web applications. • Add the addresses of the Application Servers.
CCReportingRepository	• Add the addresses the Profile Servers running the CCReporting web applications. • Add the addresses the Profile Servers running the CCReportingDB Management applications. • Add the addresses of the Application Servers.

6.1.6.1 CCReporting Access Control List

1. Add the IP addresses of the Xtended Services Platform Server farm running the *PublicReporting* web application.

Example:

```
PS_CLI/Applications/CCReporting/NetworkAccessList> add <xsp-ip-address>
...Done
```

2. Add the IP address of the Application Servers.

Example:

```
PS_CLI/Applications/CCReporting/NetworkAccessList> add <as-ip-address>
...Done
```

6.1.6.2 *CCReportingRepository Access Control List*

1. Add the IP address of the Application Servers.

Example:

```
PS_CLI/Applications/CCReportingRepository/NetworkAccessLists/WebDav> add <as-ip-address>
...Done
```

2. Add the IP addresses of the Profile Server farm running the *CCReporting* web application.

Example:

```
PS_CLI/Applications/CCReportingRepository/NetworkAccessLists/WebDav> add <ps-ip-address>
...Done
```

3. Add the IP addresses of the Profile Server farm running the *CCReportingDB-Management* web application.

Note: For environments where the *CCReportingDBManagement* application and the *CCReporting* web application are deployed on the same Profile Server, the IP address of the Profile Server only needs to be entered once.

Example:

```
PS_CLI/Applications/CCReportingRepository/NetworkAccessLists/WebDav> add <ps-ip-address>
...Done
```

6.1.7 CONFIGURE NETWORK TIME PROTOCOL

The Network Time Protocol (NTP) must be set so that statistics are reflected accurately, (independent of the geographic location of the Clearspan network elements). The Profile Server, Application Server, and Database Server should use the same NTP server.

6.1.8 CONFIGURE ENHANCED REPORTING ON APPLICATION SERVER

The following system configuration is required on the Application Server.

- **Database Server sites for the BWECCR schema** – The Application Server processes the call and state events and writes to the centralized database.
- **Database connection timeout** – This is the database connection monitoring ping timeout.
- **Reporting engine URI** – The Uniform Resource Identifier (URI) of the *CCReporting* web application is stored on the Application Server. The Application Server serves the URI for all interfaces that require it to route report requests to the *CCReporting* web application.
- **Reporting repository** – The URI of the *CCReportingRepository* web application is stored on the Application Server. The Application Server serves the URI for the purpose of report generation and archiving. It is also used by the Application Server for the uploading of report templates.
- **Report archiving** – The system provider may elect to retain a copy of all scheduled reports generated by the reporting engine for the purpose of auditing.
- **E-mail delivery for scheduled reports** – The system provider must configure the SMTP addresses for e-mail delivery and the default SMTP "MAIL-FROM" address.

1. Configure the centralized database by adding the sites and associating the "bweccr" schema with the centralized database.

Notes: Centralized database configuration is not replicated across Application Server cluster members and must be manually configured on both cluster members.
All Application Server clusters should point to a single centralized database and single schema instance.

Add the centralized database entry. The required password represents the password of the Oracle SYS account that was created as part of the Database Server installation. The Database Server installation sets the SYS password to *bwadmin* by default.

Example:

```
AS_CLI/Applications/ExecutionAndProvisioning/XS/Database/Databases> add
bwCentralizedDb
New Password:
Re-type Password:
…Done
```

Add the primary and secondary sites of the Database Server.

Example:

```
AS_CLI/Applications/ExecutionAndProvisioning/XS/Database/Databases/Sites>
add bwCentralizedDb site1.db.yourcorp.net 8521 true
Done…

AS_CLI/Applications/ExecutionAndProvisioning/XS/Database/Databases/Sites>
add bwCentralizedDb site2.db.yourcorp.net 8521 false
…Done
```

Validate the configuration of the sites and the connection to the Database Server.

Example

```
AS_CLI/Applications/ExecutionAndProvisioning/XS/Database/Databases/Sites>validat
e
                Hostname         Database   Status
================================================
 site1.db.broadsoft.net bwCentralizedDb Primary
 site2.db.broadsoft.net bwCentralizedDb Standby
```

Note: For site status description and for troubleshooting information, see section *Troubleshooting* or to the online help for the CLI validate command.

Associate the "bweccr" schema with the centralized database added. Optionally, if the default "bweccr" schema password was changed as part of the initial *CCReportingDBManagement* application deployment or post schema deployment, the "bweccr" schema needs to be reset.

Note: It is important to ensure that the password is set prior to associating the "bweccr" schema with the database. As soon as the association is done, the application (if running) attempts to connect to the "bweccr" schema. If the password is not set to the appropriate value, then the Application Server fails to connect to the "bweccr" schema and may cause the schema to be locked on the Database Server. For help on resolving schema password issues, see section *Troubleshooting*.

Example:

```
AS_CLI/Applications/ExecutionAndProvisioning/XS/Database/Schemas/Instances> set
bweccr bweccr password
Password:
Re-type Password:
…Done
AS_CLI/Applications/ExecutionAndProvisioning/XS/Database/Schemas/Instances> set
bweccr bweccr database bwCentralizedDb
…Done
```

2. Set the database connection timeout. The recommended value is 7500 milliseconds.

Example:

```
AS_CLI/Maintenance/ContainerOptions> add provisioning oracle.pingsite.timeout
7500
*** Warning: Clearspan needs to be restarted for the changes to take effect ***

AS_CLI/Maintenance/ContainerOptions> get
Container Name Value
=========================================
provisioning oracle.pingsite.timeout 7500
1 entry found.
```

3. Configure the reporting engine URL.

Example:

```
AS_CLI/System/Device/EnhancedReportingServer> set reportApplicationURL
http://ps-reporting.domain.net/CCReporting
...Done
```

4. Configure the reporting repository URL.

Example:

```
AS_CLI/System/Device/EnhancedReportingServer> set
templateRepositoryApplicationURL http://ps-reporting-
repository.domain.net/CCReportingRepository
...Done
```

5. Enable report archiving.

Example:

```
AS_CLI/System/Device/EnhancedReportingServer> set archiveReports true
...Done
```

6. Configure e-mail delivery for scheduled reports.

Note: The “defaultFromAddress” is used in the SMTP “MAIL FROM” command. This parameter must be set to a value that is acceptable by the SMTP server used for the delivery of reports. The generation of the reports is actually performed by the Profile Server(s) on which the *CCReporting* web application is deployed, and if necessary, the IP addresses of the Profile Server(s) must be added to the network access list of the SMTP server(s).

Example:

```
AS_CLI/Interface/Mail> set primarySMTPServer <smtp1-ip-address>
...Done

AS_CLI/Interface/Mail> set secondarySMTPServer <smtp2-ip-address>
...Done

AS_CLI/Service/CallCenter> set defaultFromAddress
CallCenterStats@systemprovider.com
...Done
```

6.2 DEPLOY CALL CENTER AND RECEPTIONIST WEB APPLICATION COMPONENTS

The following sections describe the minimum installation and configuration required run the Call Center and Receptionist web applications.

When deploying the Call Center and Receptionist Thin Client solution, the Call Center and Receptionist web applications must be installed on the Xtended Services Platform (Xsp). For more information, see section *7.3 Xtended Services Platform Deployment Models*.

For detailed information regarding the configuration of the *Xsi-Actions* and *Xsi-Events* web applications, see the *Clearspan Xtended Services Interface Configuration Guide*.

6.2.1 XTENDED SERVICES PLATFORM CONFIGURATION

6.2.1.1 Communication Utility

The communication utility's sample settings are shown in the following example. The userTransactionLimit and transactionLimitPeriodSecs are not relevant to the Call Center and Receptionist Web Applications, as they do not use Xsi-Actions or Xsi-Events.

```
XSP_CLI/System/CommunicationUtility/DefaultSettings> get
NS:
  nsSeedClusterAddress=ns.eng.yourcorp.com
  asOCIPort=2220
  asOCISecurePort=2320
  asOCICPort=2221
  asOCICSecurePort=2321
provisionOnSecondary=false
reconnectionTimerSecs=30
responseTimeoutSecs=10
userTransactionLimit=100
transactionLimitPeriodSecs=10
useSecureBCCT=false
```

6.2.1.2 Call Center

The Call Center web application must be installed, activated, signed, and deployed on the Xtended Services Platform. Before deploying the new version, the file signature must be set to ensure that the downloaded components by the web application are signed. The following example shows signing with the Clearspan certificate. If a custom certificate is needed, see the *Clearspan Hosted Thin Call Center Agent/Supervisor Configuration and Administration Guide* for instructions on how to install a custom certificate.

```
XSP_CLI/Maintenance/ManagedObjects> install application
/bw/install/BWCallCenter_22.0.9.war
BroadWorks SW Manager installing BWCallCenter_21.0.9.war...
   - Performing basic validation
      . Valid application structure
      . Name       : BWCallCenter
      . Description: BroadWorks Call Center Client
      . Version    : 22.0.9
...Done
XSP_CLI/Maintenance/ManagedObjects> activate application BWCallCenter 21.0.9
/callcenter
BroadWorks SW Manager activating...BWCallCenter version 22.0.9
...Done

XSP_CLI/Applications/BWCallCenter_22.0.12/Certificate> set fileSignature
BroadSoft

+++ WARNING +++ WARNING +++ WARNING +++
Setting the new file signature will cause the web application to be
unresponsive.
Currently connected end-users applications will be disconnected. Continue?

Please confirm (Yes, Y, No, N): y
This may take several minutes, please wait...
...Done

XSP_CLI/Maintenance/ManagedObjects> deploy application /callcenter
BroadWorks SW Manager deploying /callcenter...
...Done
```

The *defaultDomain* **must** be set to match the system default domain. If this is not set, then login problems can occur because fetching information for users and virtual users on the default domain fails. The system default domain can be found on the Application Server at the *AS_CLI/System/Domain>* level.

The *XspClusterFQDN* should be set to the cluster fully qualified domain name (FQDN) of the Xtended Services Platform when deploying in a redundant configuration. This **must** be set if deploying in a redundant configuration. For more information, see section *6.2.1.4 Redundant Xtended Services Platform Configuration for Call Center and Receptionist.*

```
XSP_CLI/Applications/BWCallCenter_21.0.9/General> get
DefaultDomain=tier3support.us
ProfileCacheDir=<not defined, webapp using internal default>
CookieTimeOut=<not defined, webapp using internal default>
pollingTimeout=<not defined, webapp using internal default>
pollingDelay=<not defined, webapp using internal default>
sessionTimeout=<not defined, webapp using internal default>
xspClusterFQDN=xsp.yourcorp.com
redirectionURL=<not defined, webapp using internal default>
applicationLoadTimeout=<not defined, webapp using internal default>
showHotelingFlexibleSeatingTextBox=<not defined, webapp using internal default>
httpSocketTimeout=<not defined, webapp using internal default>
maxHttpConnection=<not defined, webapp using internal default>
httpConnectionPerRoute=<not defined, webapp using internal default>
enforceSubscriptionsPerSecondLimit=<not defined, webapp using internal default>
subscriptionsPerSecond=<not defined, webapp using internal default>
serverResponseTimeout=<not defined, webapp using internal default>
channelExpiryPeriod=<not defined, webapp using internal default>
subscriptionExpiryPeriod=<not defined, webapp using internal default>
subscriptionUpdatePeriod=<not defined, webapp using internal default>
channelUpdatePeriod=<not defined, webapp using internal default>
cometConnectionExpiryThreadPeriod=<not defined, webapp using internal default>
hideRedirectionDialog==<not defined, webapp using internal default>
```

The Public Reporting web interface (PRWI) must be configured. The context should be set to the deployed context for the *com.yourcorp.ccpri* Public Reporting web application shown in the following example.

```
XSP_CLI/Applications/BWCallCenter_21.0.9/PRWI/CCPRI> set context
com.yourcorp.ccpri
...Done
XSP_CLI/Applications/BWCallCenter_21.0.9/PRWI/CCPRI> get
Context=com.yourcorp.ccpri

XSP_CLI/Application/BWCallCenter_21.0.9/PRWI/CCPRI/http> set host
ccpri.xsp.yourcorp.net
…Done

XSP_CLI/Application/BWCallCenter_21.0.9/PRWI/CCPRI/http> set port 80
…Done

XSP_CLI/Application/BWCallCenter_21.0.9/PRWI/CCPRI/http> set scheme http
…Done
```

6.2.1.2.1 Installing a Newer Version of Call Center

New versions of the Hosted Thin Call Center client can be downloaded from Clearspan Xchange. The latest released version for the Xtended Services Platform (Xsp) should be installed.

To use a newer version of the client, store the downloaded client war file in the */bw/install* directory on the Xsp and then undeploy, deactivate and uninstall the older version.

```
XSP_CLI/Maintenance/ManagedObjects> undeploy application /callcenter
Clearspan SW Manager un-deploying /callcenter...
...Done
XSP_CLI/Maintenance/ManagedObjects> deactivate application BWCallCenter
Clearspan SW Manager deactivating...BWCallCenter version 22.0.9
...Done
XSP_CLI/Maintenance/ManagedObjects> uninstall application BWCallCenter 20.0.15
Clearspan SW Manager un-installing BWCallCenter version 22.0.9...
...Done
```

6.2.1.2.2 Multiple Version Support for Call Center

Multiple versions of Hosted Thin Call Center can be deployed on the same system. The latest version is always used as the current (default) version and is deployed under two context paths (current and version-specific), whereas older versions are available only under one context path (version-specific).

The following rules must be respected when deploying Call Center.

- The recommended current context path for Call Center is */callcenter*.
- The version-specific context path must be set to "<current context path>_<Call Center version number>". For example, if the current context path is */callcenter* and the version being deployed is "22.0.9", then the version-specific context path for that release must be */callcenter_22.0.9*.
- Since there can only be one current version of Call Center in the system, when a newer version is deployed, it replaces the previous version under the current context path. For example, if the latest release of the Call Center is 22.0.10, it should be deployed under */callcenter* and */callcenter_22.0.10* contexts, whereas Release 22.0.9 of Call Center should only be available under the */callcenter_22.0.9* context (assuming that */callcenter* is the current context path).
- When deploying Hosted Thin Call Center on the system where another version of Hosted Thin Call Center is already present, you must first un-deploy and deactivate the current version from the current context path (it may continue to exist under the version-specific context path) and then deploy the new version under the current and version-specific context paths.
- All versions of Call Center that you want to make available must be deployed on all the Xtended Services Platforms in the cluster.

In addition, clients use the call control application ID for call control-related communication.

The default call control application ID of the Call Center client is as follows:

- Hosted Thin Call Center: *com.broadsoft.callcenter*

  To support the deployment of multiple versions of a thin client on the same Xtended Services Platform, each version of a thin client must have a unique call control application ID.

  The call control application ID of a thin client version is configured through the Xtended Services Platform CLI under the context of that client's version, using the command in the following example.

  XSP_CLI/Application/<ApplicationName>_<Version>/BWIntegration> set applicationID <application_ID

  The call control application ID must also be configured in all Application Server clusters.

  The following additional provisioning steps must be performed for the thin clients on the Application Servers:

- Add the call control application ID of the thin client under the Call Control interface of all Application Server clusters.

```
AS_CLI/Interface/OCI/CallControl> add com.broadsoft.callcenter true  8  8
"call control application ID for Call Center"
```

- Register the Xtended Services Platform host of the thin client against the call control application ID under the call control application access control list (ACL) of all Application Server clusters.

```
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> add
com.broadsoft.callcenter 10.59.20.128 "Xsp host of Call Center"
```

6.2.1.3 Receptionist

The Receptionist web application must be installed, activated, signed, and deployed on the Xtended Services Platform. Before deploying the new version, the file signature must be set to ensure that the downloaded components by the web application are signed. The following example shows signing with the Clearspan certificate. If a custom certificate is needed, see the *Clearspan Hosted Thin Receptionist Configuration and Administration Guide* for instructions on how to install a custom certificate.

```
XSP_CLI/Maintenance/ManagedObjects> install application /bw/install/
BWReceptionist_21.0.9.war
BroadWorks SW Manager installing BWReceptionist_21.0.9.war...
   - Performing basic validation
      . Valid application structure
      . Name       : BWReceptionist
      . Description: BroadWorks Receptionist
      . Version    : 21.0.9
...Done

XSP_CLI/Maintenance/ManagedObjects> activate application BWReceptionist 21.0.9
/receptionist
BroadWorks SW Manager activating... BWReceptionist version 21.0.9
...Done

XSP_CLI/Applications/BWReceptionist_21.0.9/Certificate> set fileSignature
BroadSoft

+++ WARNING +++ WARNING +++ WARNING +++
Setting the new file signature will cause the web application to be
unresponsive.
Currently connected end-users applications will be disconnected. Continue?

Please confirm (Yes, Y, No, N): y
This may take several minutes, please wait...
...Done


XSP_CLI/Maintenance/ManagedObjects> deploy application /receptionist
BroadWorks SW Manager deploying /receptionist...
...Done
```

The *defaultDomain* **must** be set to match the system default domain. If this is not set, then login problems can occur because fetching information for users and virtual users on the default domain fails. The system default domain can be found on the Application Server in the *AS_CLI/System/Domain>* level.

The *XspClusterFQDN* should be set to the cluster FQDN of the Xtended Services Platform when deployed in a redundant configuration. This **must** be set if deployed in a redundant configuration. This is described further in section *6.2.1.4 Redundant Xtended Services Platform Configuration for Call Center and Receptionist*.

```
XSP_CLI/Applications/BWRecepionist_20.0.17/General> get
DefaultDomain=tier3support.us
ProfileCacheDir=<not defined, webapp using internal default>
CookieTimeOut=<not defined, webapp using internal default>
```

```
pollingTimeout=<not defined, webapp using internal default>
pollingDelay=<not defined, webapp using internal default>
sessionTimeout=<not defined, webapp using internal default>
xspClusterFQDN=xsp.yourcorp.com
redirectionURL=<not defined, webapp using internal default>
applicationLoadTimeout=<not defined, webapp using internal default>
httpSocketTimeout=<not defined, webapp using internal default>
maxHttpConnection=<not defined, webapp using internal default>
httpConnectionPerRoute=<not defined, webapp using internal default>
enforceSubscriptionsPerSecondLimit=<not defined, webapp using internal default>
subscriptionsPerSecond=<not defined, webapp using internal default>
serverResponseTimeout=<not defined, webapp using internal default>
channelExpiryPeriod=<not defined, webapp using internal default>
subscriptionExpiryPeriod=<not defined, webapp using internal default>
subscriptionUpdatePeriod=<not defined, webapp using internal default>
channelUpdatePeriod=<not defined, webapp using internal default>
cometConnectionExpiryThreadPeriod=<not defined, webapp using internal default>
hideRedirectionDialog=<not defined, webapp using internal default>
```

6.2.1.3.1 Installing a newer version of Receptionist

New versions of the Hosted Thin Receptionist can be downloaded from Clearspan Xchange. The latest released version for the Xtended Services Platform should be installed. To use a newer version, store the downloaded war file in the */bw/install* directory on the Xsp and then undeploy, deactivate and uninstall the older version.

```
XSP_CLI/Maintenance/ManagedObjects> undeploy application /receptionist
Clearspan SW Manager un-deploying /receptionist...
...Done
XSP_CLI/Maintenance/ManagedObjects> deactivate application BWReceptionist
Clearspan SW Manager deactivating... BWReceptionist version 22.0.9
...Done
XSP_CLI/Maintenance/ManagedObjects> uninstall application BWReceptionist 21.0.9
Clearspan SW Manager un-installing BWReceptionist version 22.0.9...
...Done
```

Use the downloaded war file to install, deploy, sign, and activate the new version.

6.2.1.3.2 Multiple Version Support for Receptionist

Multiple versions of Hosted Thin Receptionist can be deployed on the same system. The latest version is always used as the current (default) version and is deployed under two context paths (current and version-specific), whereas older versions are available only under one context path (version-specific).

The following rules must be respected when deploying Receptionist.

- The suggested current context path for Receptionist is */receptionist*, but can be different if required.
- The version-specific context path must be set to "<current context path>_<Receptionist version number>". For example, if the current context path is */receptionist* and the version being deployed is "22.0.9", then the version-specific context path for that release must be */receptionist_22.0.9*.
- Since there can only be one current version of Receptionist in the system, when a newer version is deployed, it replaces the previous version under the current context path. For example, if the latest release of the Receptionist is 22.0.10, it should be deployed under */receptionist* and */receptionist _22.0.10* contexts, whereas Release 21.0.9 of Receptionist should only be available under the */receptionist _22.0.9* context (assuming that */receptionist* is the current context path).
- When deploying Hosted Thin Receptionist on the system where another version of Hosted Thin Receptionist is already present, you must first un-deploy and deactivate the current version from the current context path (it may continue to exist under the version-specific context path) and then deploy the new version under the current and version-specific context paths.
- All versions of Receptionist that you want to make available must be deployed on all the Xtended Services Platforms in the cluster.

In addition, the clients use the call control application ID for call control-related communication.

The default call control application ID of the Receptionist client is as follows:

- Hosted Thin Receptionist: *com.broadsoft.receptionis*t

To support the deployment of multiple versions of a Thin Client on the same Xtended Services Platform, each version of a thin client must have a unique call control application ID.

The call control application ID of a Thin Client version is configured through the Xtended Services Platform CLI under the context of that client's version, using the command in the following example:

```
XSP_CLI/Application/<ApplicationName>_<Version>/BWIntegration> set
applicationID <application_ID
```

The call control application ID must also be configured in all Application Server clusters.

The following additional provisioning steps must be performed for the thin clients on the Application Servers:

- Add the call control application ID of the thin client under the Call Control interface of all Application Server clusters.

```
AS_CLI/Interface/OCI/CallControl> add com.broadsoft.receptionist true  8
8 "call control application ID for Receptionist"
```

- Register the Xtended Services Platform host of the thin client against the call control application ID under the call control application ACL of all Application Server clusters.

```
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> add
com.broadsoft.receptionist 10.59.20.128 "Xsp host of Receptionist"
```

6.2.1.4 Redundant Xtended Services Platform Configuration for Call Center and Receptionist

To achieve a redundant and scalable deployment model, multiple instances of the Xtended Services Platform should be configured with the Call Center and Receptionist web applications. The Thin Client application should be accessed via a cluster FQDN that resolves to all of the Xtended Services Platforms in the cluster. Following is a sample configuration for Call Center with two Xtended Services Platforms, though more can be added as required. The Receptionist Redundant Deployment model is similar, except that there is no Public Reporting web application.

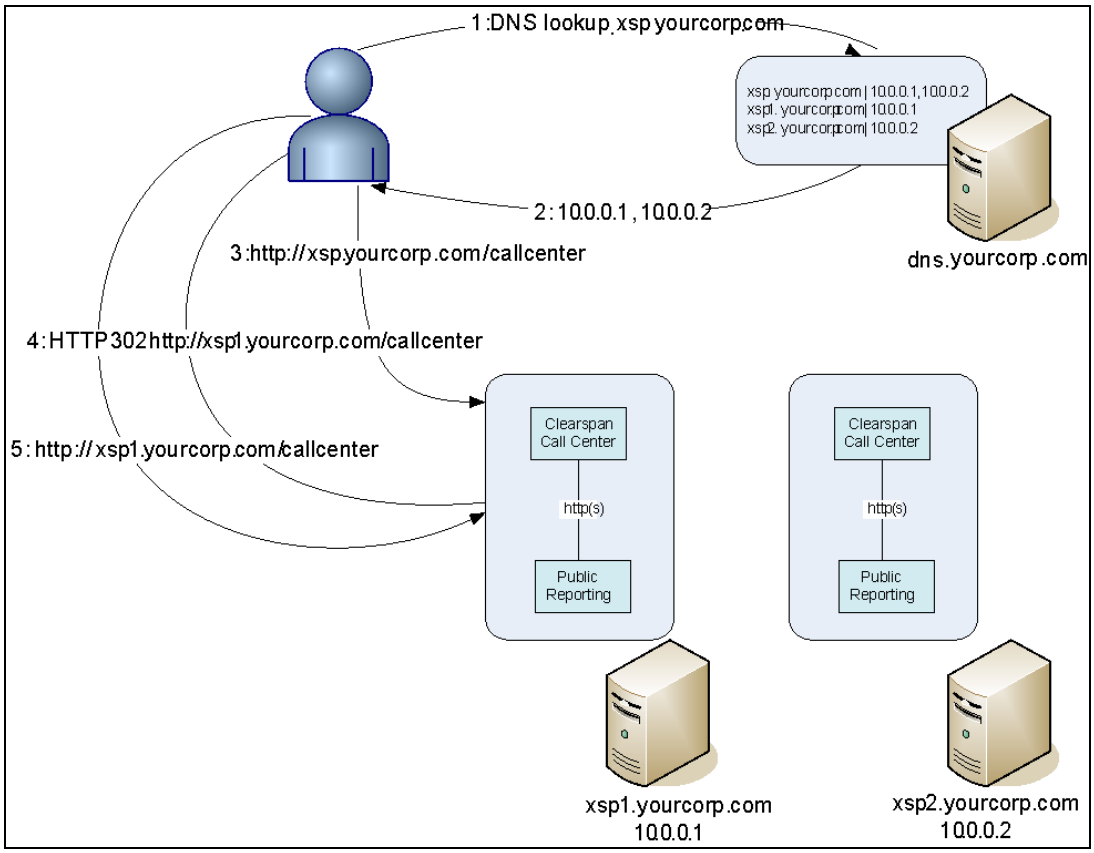

Figure 9 Redundant Configuration

In the preceding example, when the user enters the URL for the Call Center web application in the browser, that is, http://xsp.yourcorp.com/callcenter, the following occurs:

1. A DNS lookup is done on *xsp.yourcorp.com*.
2. The lookup resolves to xsp1.yourcorp.com and xsp2.yourcorp.com.
3. The browser accesses the application on one of the returned hosts for the cluster, which is in this example, *xsp1.yourcorp.com.*
4. The host is configured to redirect the user to its specific host name when accessed via its cluster FQDN, which is in this example, *xsp1.yourcorp.com*.
5. All subsequent requests are made to the specific host in the cluster.

The following CLI configurations must be set on the Xtended Services Platform for redundancy.

The Hypertext Transfer Protocol (HTTP) server interface on each Xtended Services Platform in the cluster should be configured so that any request to it on the cluster FQDN is redirected to its host name.

```
XSP_CLI/Interface/Http/HttpServer> get
    Interface  Port                  Name  Secure         Cluster FQDN
=========================================================================
  10.0.0.1     80   xsp1.yourcorp.com   false     xsp.yourcorp.com
```

The cluster FQDN must be configured in the Call Center web application.

```
XSP_CLI/Applications/BWCallCenter_21.0.15/General> g
defaultDomain=tier3support.us
profileCacheDir=<not defined, webapp using internal default>
cookieTimeOut=<not defined, webapp using internal default>
pollingTimeout=<not defined, webapp using internal default>
pollingDelay=<not defined, webapp using internal default>
sessionTimeout=<not defined, webapp using internal default>
xspClusterFQDN=xsp.yourcorp.com
redirectionURL=<not defined, webapp using internal default>
applicationLoadTimeout=<not defined, webapp using internal default>
showHotelingFlexibleSeatingTextBox=<not defined, webapp using internal default>
httpSocketTimeout=<not defined, webapp using internal default>
maxHttpConnection=<not defined, webapp using internal default>
httpConnectionPerRoute=<not defined, webapp using internal default>
enforceSubscriptionsPerSecondLimit=<not defined, webapp using internal default>
subscriptionsPerSecond=<not defined, webapp using internal default>
serverResponseTimeout=<not defined, webapp using internal default>
channelExpiryPeriod=<not defined, webapp using internal default>
subscriptionExpiryPeriod=<not defined, webapp using internal default>
subscriptionUpdatePeriod=<not defined, webapp using internal default>
channelUpdatePeriod=<not defined, webapp using internal default>
cometConnectionExpiryThreadPeriod=<not defined, webapp using internal default>
hideRedirectionDialog=<not defined, webapp using internal default>
```

In the event of an Xtended Services Platform failure, the user is notified that a failure occurred via an error dialog. The dialog contains a link to the *Application Login* page. When the link is accessed, the user is redirected to the next available Xtended Services Platform for login.

6.2.1.5 CommPilot

Configure the link to the Thin Client web application from the CommPilot web portal. This enables the web portal to launch the Thin Client. In addition to this setting, there is an Application Server setting that is required to enable the successful launch of the Thin Client from the web portal. For more information on this, see section *6.2.2.3 Launch Profile Link*.

```
XSP_CLI/Applications/CommPilot/ClientApplicationLaunchUrls> set callcenter
http://xsp.yourcorp.com/callcenter
XSP_CLI/Applications/CommPilot/ClientApplicationLaunchUrls> set receptionist
http://xsp.yourcorp.com/receptionist
```

6.2.2 APPLICATION SERVER CONFIGURATION

6.2.2.1 Interface Configuration

Add the Call Center and Receptionist web applications to the Open Client Interface (OCI) Call Control Interface. The application ID **must** match the deployed context for Call Center and Receptionist.

```
AS_CLI/Interface/OCI/CallControl> add com.yourcorp.xsi-actions true 8 8
...Done
AS_CLI/Interface/OCI/CallControl> add com.yourcorp.xsi-events true 8 8
...Done
AS_CLI/Interface/OCI/CallControl> get
             Application Id  Enabled System Wide            Description
Notification Timeout Seconds  Max Event Channels Per Set

================================================================================
================================================
  com.yourcorp.xsi-actions                 true                          30
8
   com.yourcorp.xsi-events                 true                           30
8
  2 entries found.
```

6.2.2.2 Network Access Lists

1. Add the Xtended Services Platform(s) hosting the Call Center web application to the network access list for external authentication. This ensures that the requests from these Xtended Services Platform(s) are not challenged.

```
AS_CLI/System/NetworkAccessLists/ExtAuth> add 10.2.66.233 xsp1
...Done
AS_CLI/System/NetworkAccessLists/ExtAuth> add 10.2.66.237 xsp2
...Done
AS_CLI/System/NetworkAccessLists/ExtAuth> get
   Net Address      Description
  ============================
  10.2.66.233     xsp1
  10.2.66.237     xsp2
  2 entries found.
```

2. Add the Xtended Services Platform(s) hosting the Call Center web application to the network access list OCI call control list.

```
AS_CLI/System/NetworkAccessLists/OCI/CallControl> add 10.2.66.233 xsp1
...Done
AS_CLI/System/NetworkAccessLists/OCI/CallControl > add 10.2.66.237 xsp2
...Done
AS_CLI/System/NetworkAccessLists/OCI/CallControl> get
      Address  Description
  ========================
  10.2.66.233     xsp1
  10.2.66.237     xsp2
  2 entries found.
```

3. Add the Xtended Services Platform(s) for the Xsi-Actions and Xsi-Events applications to OCI Call Control applications. The application ID's **must** match the deployed context on the Xtended Services Platform for the Xsi-Actions/Xsi-Events application.

```
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> add
com.yourcorp.xsi-actions 10.2.66.233
...Done
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> add
com.yourcorp.xsi-actions 10.2.66.237
...Done
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> get
com.yourcorp.xsi-actions
      Address  Description
  ========================
  10.2.66.233    xsp1
  10.2.66.237    xsp2
  2 entries found.
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> add
com.yourcorp.xsi-events 10.2.66.233
...Done
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> add
com.yourcorp.xsi-events 10.2.66.237
...Done
AS_CLI/System/NetworkAccessLists/OCI/CallControl/Application> get
com.yourcorp.xsi-events
      Address  Description
  ========================
  10.2.66.233                                          xsp1
  10.2.66.237                                          xsp2
  2 entries found.
```

4. Add the Xtended Services Platform(s) hosting the Call Center web application to the OCI Provisioning Server list.

```
AS_CLI/System/NetworkAccessLists/OCI/Provisioning> add 10.2.66.233 xsp1
...Done
AS_CLI/System/NetworkAccessLists/OCI/Provisioning> add 10.2.66.237 xsp2
...Done
AS_CLI/System/NetworkAccessLists/OCI/Provisioning> get
        Address         Description
  ==================================
     10.2.66.233        xsp1
     10.2.66.237        xps2
```

6.2.2.3 Launch Profile Link

Set the launch profile to use the Thin Client. This controls the launch of the Call Center and Receptionist client applications from the CommPilot web portal.

- If *Use Version* is set to “current”, the latest version of the Thin Client is launched on the Xtended Services Platform.

The launch profile can be set at the system level, service provider level, group level, or user level. If set at the service provider level, then the setting is applicable for all users in the service provider. If set at the group level, the setting is applicable for all users in the group. Following are examples showing the setting of the launch profile at different levels.

Configuring the launch profile for a single user with a custom version

```
AS_CLI/SubscriberMgmt/User/ClientApplicationLaunchProfiles> add user@domain
callcenter true custom 21.0.11
...Done
AS_CLI/SubscriberMgmt/User/ClientApplicationLaunchProfiles> add user@domain
receptionist true custom 21.0.11
...Done

AS_CLI/SubscriberMgmt/User/ClientApplicationLaunchProfiles> get user@domain
  Client Application  Enabled  Use Version  Version
  ================================================
          callcenter     true      custom   22.0.11
      receptionist      true      custom   22.0.8
2 entries found.
```

Configuring the launch profile for a group

```
AS_CLI/SubscriberMgmt/Group/ClientApplicationLaunchProfiles> add MyEnterpriseId
MyGroupId callcenter true current
...Done
AS_CLI/SubscriberMgmt/Group/ClientApplicationLaunchProfiles> add MyEnterpriseId
MyGroupId receptionist true current
...Done

AS_CLI/SubscriberMgmt/Group/ClientApplicationLaunchProfiles> get MyEnterpriseId
MyGroupId
  Client Application  Enabled  Use Version  Version
  ================================================
          callcenter     true      current
        receptionist     true    current

2 entries found.
```

Configuring the launch profile for an enterprise with a custom version

```
AS_CLI/SubscriberMgmt/ServiceProvider/ClientApplicationLaunchProfiles> add
MyEnterpriseId callcenter true custom 21.0.11
...Done
AS_CLI/SubscriberMgmt/ServiceProvider/ClientApplicationLaunchProfiles> add
MyEnterpriseId receptionist true custom 21.0.8
...Done

AS_CLI/SubscriberMgmt/ServiceProvider/ClientApplicationLaunchProfiles> get
MyEnterpriseId
  Client Application  Enabled  Use Version  Version
  ================================================
          callcenter     true      custom    22.0.11
        receptionist     true    custom    22.0.8

  2 entries found.
```

Configuring the launch profile at the system level

```
AS_CLI/SubscriberMgmt/ClientApplicationLaunchProfiles> set callcenter useVersion
current
...Done
AS_CLI/SubscriberMgmt/ClientApplicationLaunchProfiles> set receptionist
useVersion current
...Done


AS_CLI/SubscriberMgmt/ClientApplicationLaunchProfiles> get
  Client Application  Enabled  Use Version  Version
  ================================================
          callcenter     true      current
        receptionist     true      current

  2 entries found.
```

6.3 ADDITIONAL CONFIGURATION TASKS

6.3.1 DEVICE MANAGEMENT CONFIGURATION

The following table contains a list of system-defined Device Management tags that correspond to various FAC codes.

FEATURE ACCESS CODE	DEVICE CONFIGURATION TAG
Forced Forwarding Activation	%BWFAC-FORCED-FORWARDING-ACTIVATE-x%
Forced Forwarding Deactivation	%BWFAC-FORCED-FORWARDING-DEACTIVATE-x%
Night Service Activation Manual Override	%BWFAC-NIGHT-SERVICE-ACTIVATE-MANUAL- OVERRIDE-x%
Night Service Deactivation Manual Override	%BWFAC-NIGHT-SERVICE-DEACTIVATE-MANUAL- OVERRIDE -x%
Make Call Center Call	%BWFAC-MAKE-CALLCENTER_CALL-x%
Make Personal Call	%BWFAC-MAKE-PERSONAL-CALL-x%
Agent Escalation	%BWFAC-CALLCENTER-AGENT-ESCALATION-x%
Silent Monitoring	%BWFAC-CALLCENTER-SILENT-MONITORING-x%

6.3.2 MISCELLANEOUS SYSTEM PARAMETERS

The following are miscellaneous system parameters.

- Hunt group name prefix

  The value of the *removeHuntGroupNameFromCLID* system parameter (AS_CLI/Service/HuntGroup) has an impact on call centers. When this parameter is disabled, the name of the call center is prefixed with the calling name when the call is presented to the agent. If the parameter is enabled, the name of the call center is not prefixed to the calling name when presenting the call to the agent.

If either one of the *displayDNISNumber* and *displayDNISName* options is enabled, the value of the *removeHuntGroupNameFromCLID* system parameter has no effect. When either one of the DNIS display options is enabled, the name of the call center is not prefixed with the calling name when the call is presented to the agent regardless of the value of the *removeHuntGroupNameFromCLID* parameter.

- Emergency CLID prefix

  To indicate to the supervisor that the supervisor is receiving an emergency call, the CLID information sent to the supervisor contains a special CLD prefix. The prefix *callCenterEmergencyCallCLIDPrefix* (AS_CLI/Service/CallCenter) is a configurable system-level parameter.

  The default prefix is *EMY-*. For instance, if the name of the agent requesting an emergency call is *CC Bob*, the CLID received by the supervisor is EMY-CC Bob.

7 SCALABILITY AND REDUNDANCY

7.1 CENTRALIZED DATABASE DEPLOYMENT MODELS AND SCALING

The Call Center Reporting schema resides on a centralized Database Server. All Application Server clusters in the network write to the same schema instance. All Profile Servers in the network read from the same centralized database and database schema instance.

The Call Center Reporting schema is deployed on a standard Clearspan Database Server (DBS) platform using one of the supported deployment modes.

7.1.1 CALL CENTER REPORTING DATABASE SCALING

For deployments using servers with internal disks, two supported hardware configurations have been validated:

- **Small**: Support for up to 5,000 agents with a per-agent Erlang of 0.4 and an average call hold time of 240 seconds
- **Medium**: Support for up to 10,000 agents with a per-agent Erlang of 0.4 and an average call hold time of 240 seconds

The *Clearspan System Capacity Planner* spreadsheet can be used to define the customer-specific call center model, which can then be used by the customer for hardware selection.

7.2 PROFILE SERVER DEPLOYMENT MODELS

The Profile Server hosts the *CCReporting* web application (reporting engine), the *CCReportingRepository* web application (reporting repository), and the *CCReportingDBManagement* application.

For smaller configurations with lower reporting capacity requirements, all three applications can be deployed on a two-server cluster (one server per site for geographical redundancy). File replication must be enabled between the two servers for the reporting repository.

For larger configurations with higher reporting capacity requirements, the *CCReporting* web application can be deployed on a dedicated n+1 configuration (one per site for geographical redundancy). The *CCReportingRepository* and the *CCReportingDBManagement* application can still be deployed on the same two-server cluster (one server per site for geographical redundancy).

It should be noted that the reporting engine requires read-write access to the database server. A manual failover of the Database Server may be required to ensure that the *CCReporting* web application accesses the Database Server on the local site for the purpose of report generation. For example, a preferred site failure triggers failover to the alternate

site, in which case report generation and read-write access to the Database Server is now available from the alternate site. Once the preferred site failure is resolved, report generation may resume on the preferred site. However, the Database Server does not automatically roll back to the preferred site. A manual failover is required to ensure that read-write access is available from the preferred site for the reporting engine.

7.3 XTENDED SERVICES PLATFORM DEPLOYMENT MODELS

For small configurations, a single Xtended Services Platform can be used with CommPilot installed on the Xtended Services Platform.

For medium and large configurations, clusters of Xtended Services Platforms should be used with CommPilot installed on separate Xtended Services Platforms.

8 ACTIVATION WORKFLOW AND SERVICE CONFIGURATION

8.1 REQUIRED PRE-CONFIGURATION

The following workflow assumes that the enterprise or business group is already created. Enterprises with multiple sites (or groups) can have the call center created in any site; however, if the call center supports multiple sites, it is suggested that it be part of the “Front-Office” site for better management.

In addition, it is assumed that the users have been created with the minimum service set as stated in the user types. Users can use any device for this solution; however, one that has Advanced Call Control (ACC) provides the best usability.

8.2 CREATE AUTO ATTENDANT/IVR ENTRY POINT

The Clearspan Auto Attendant (AA) is the entry point to the call center and provides an automated IVR that allows users to choose options that can direct them to the correct ACD. A three-step process is used to create an Auto Attendant:

1. Create the Auto Attendant.
2. Configure the Business Hour menu.
3. Configure the After Hour menu.

Typically, it is the Auto Attendant that provides the Night Service function for ACDs although there are Night Service capabilities that can be configured on individual ACDs.

Since the configuration of the Auto Attendant is done for other business purposes, the details of configuration are not included in this document.

8.3 CREATE AGENTS AND SUPERVISORS

Agents are users in Clearspan. The agents are required to have the services assigned, as indicated in section *4.4 Call Center Agent*.

Supervisors are also Clearspan users in the system. The supervisors are required to have the services assigned, as indicated in section *4.5 Call Center Supervisor*.

8.4 CREATE CALL CENTER

A customer can have one or many call centers that distribute the calls to the agents. The expected workflow for the three different call center offerings is shown in the following figure.

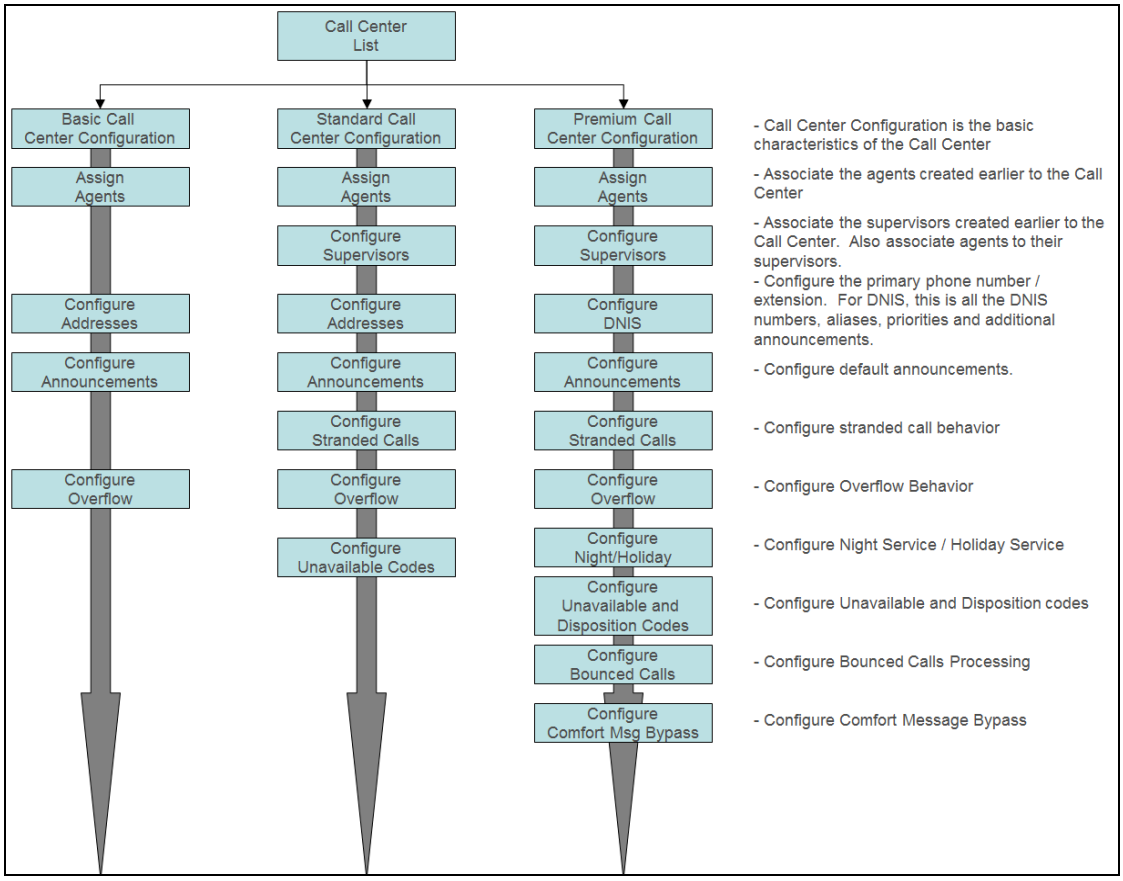

Figure 10 Queue Workflow

The steps involved in the creation of a call center are shown in the following section using the Call Center Creation Wizard. All steps can also be performed via the web portal by accessing the call center's configuration page.

8.4.1 STEP 1 – CONFIGURE CALL CENTER PROFILE

The call center is the queue that distributes calls to the agents. This section describes the attributes that should be set for the solution to perform correctly.

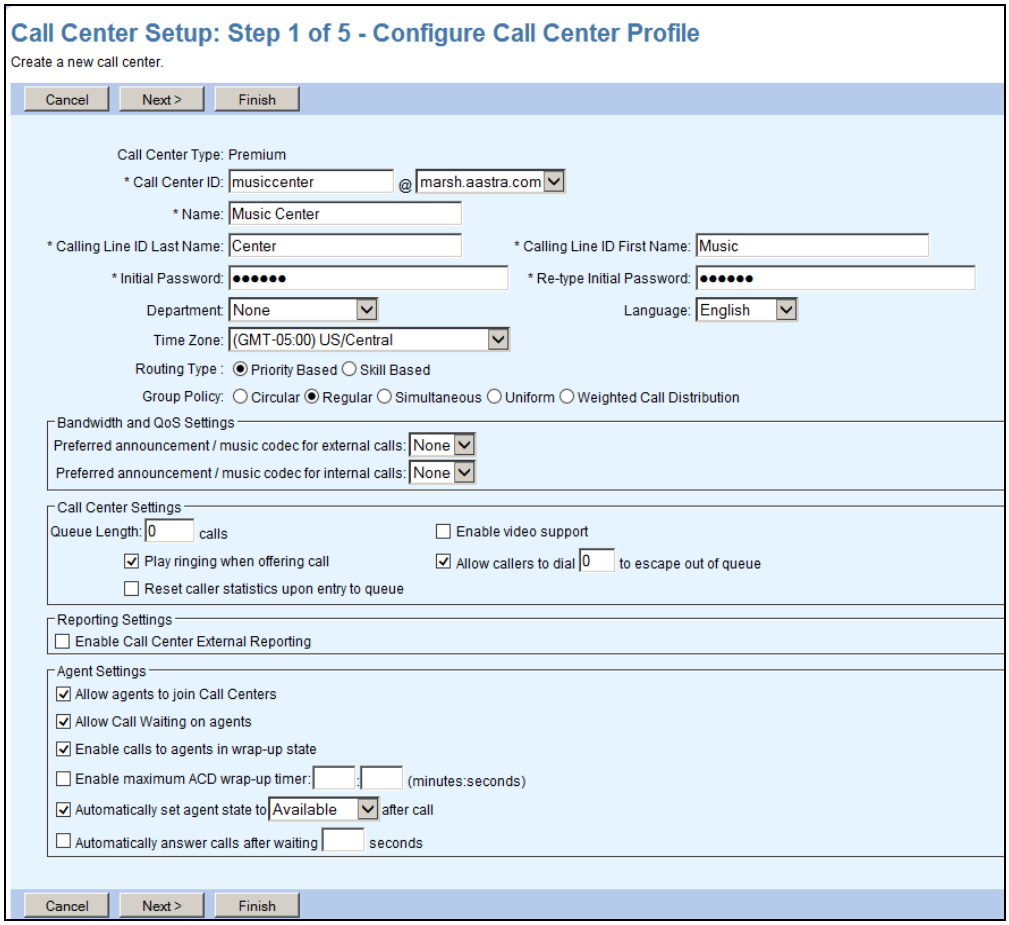

Figure 11 Call Center Profile for Premium Call Center

ATTRIBUTE	CONFIGURATION	TYPE
Routing policy	This policy determines if the queue should consider Agent skill levels when routing incoming calls to agents in the group.	Premium
Call Distribution policy	This policy determines how the system routes incoming calls to agents in the group. If Routing policy is Skill-based, only the first three options are available.	All
Bandwidth and quality of service (QOS) settings	This determines the preferred codec to be used for call center announcements and Music On Hold.	All
Queue length	The value is set to the number of callers to allow in queue before it overflows.	All

ATTRIBUTE	CONFIGURATION	TYPE
Enable Video Support	This needs to be set to “true” if the call center supports video for announcements and Music On Hold.	All
Allow callers to dial digit to escape out of the queue	This needs to be set to “true” if the caller is permitted to dial a digit to escape out of the queue while hearing announcements/Music On Hold.	All
Play ringing when offering call	This needs to be set to “true” if ringing should be played to the caller when a call is offered to the agent.	All
Reset caller statistics upon entry to queue	This needs to be set to “true” if the preserved wait time of the call is to be reset when a call is transferred from one call center queue to the other.	All
Allow agents to join call centers	This needs to be set to “true” for agents to log in to the queue to receive calls.	All
Allow Call Waiting on agents	The value is set to: “False” – For standard call centers “True” – For high-volume call centers	All
Enable calls to agents in wrap-up state	Agents receive calls from the queue even in *Wrap-up* state when this option is enabled.	Standard Premium
Enable maximum ACD wrap-up timer	This sets the value for the wrap-up timer.	Standard Premium
Automatically set agent state to “x” after call	This enables and sets the agent state after a call from a drop-down list. If *Unavailable* state is chosen, the unavailable code can also be chosen from the drop-down list.	All
Automatically answer calls after waiting for “x” seconds	For calls to be automatically answered by an agent, enable this option and choose the value in seconds.	Premium
Enable Call Center External Reporting	To enable Enhanced Reporting for the call center, enable this option.	Standard Premium

8.4.2 STEP 2 – CONFIGURE ADDRESSES AND/OR DNIS PARAMETERS

For Basic or Standard call centers, a single phone number and extension are configured.

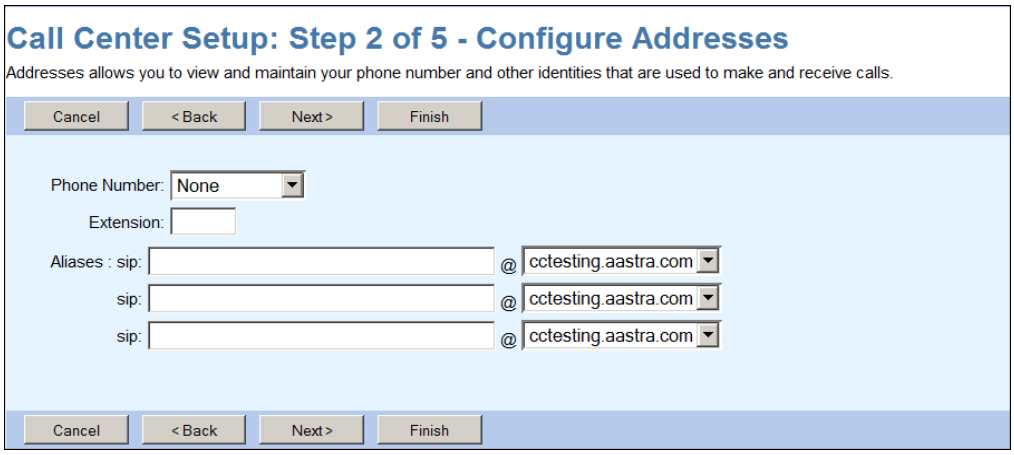

Figure 12 Configure Addresses for Basic/Standard Call Centers

For Premium call centers, up to 64 DNISs can be configured. DNIS display and priority settings are configured for the call center, while some DNIS attributes can be customized for a given DNIS.

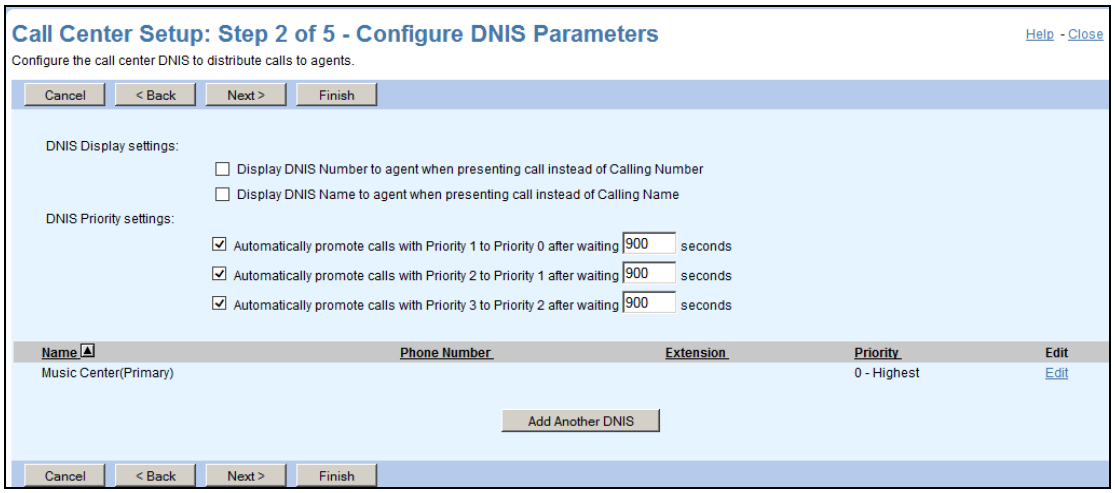

Figure 13 Configuring DNIS Parameters for Premium Call Center

ATTRIBUTE	CONFIGURATION	TYPE
DNIS Display Settings	Use these settings to indicate whether the DNIS name and/or number should be displayed to the agent when a call is presented to the agent.	Premium
DNIS Priority Settings	Determine the thresholds for promoting calls from one DNIS priority to another. These settings are used to prevent starvation, where a call could remain queued for a long time if there are always calls coming into the queue with higher priority.	Premium

Once the DNIS parameters are set for a call center, the DNISs are added to the call center. A primary DNIS is always pre-populated in the call center, and can be modified to set the phone number, extension, and other attributes. Additional DNISs are also added in this step.

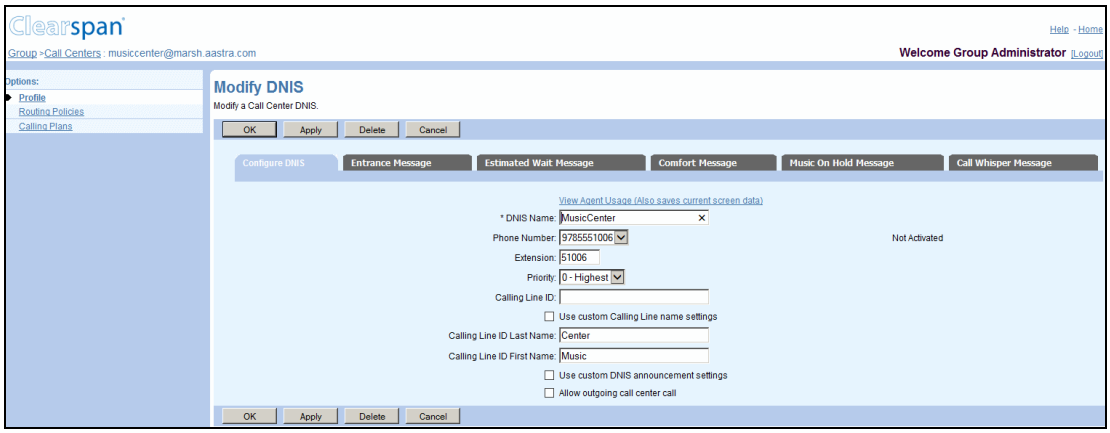

Figure 14 Modify DNIS

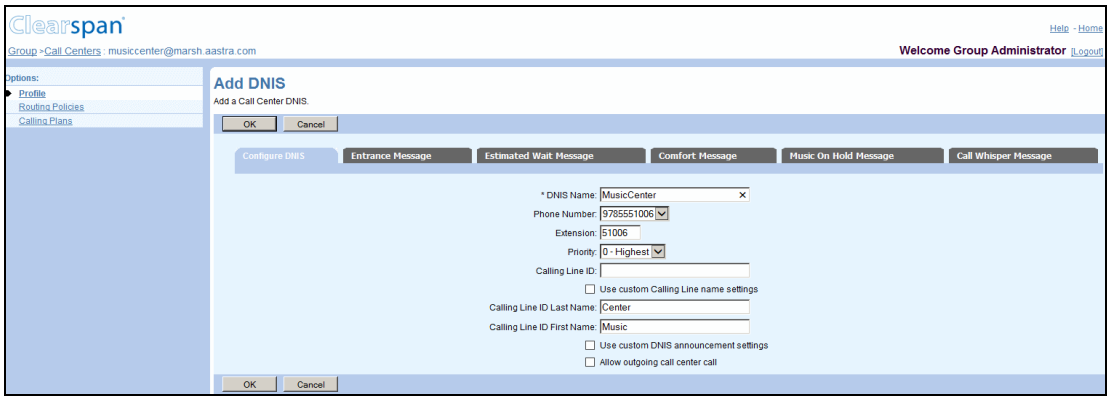

Figure 15 Add DNIS

In addition to the phone number and extension, the attributes in the following table are configured for each DNIS.

ATTRIBUTE	CONFIGURATION	TYPE
Priority	Select the priority of the DNIS from the following options: *Highest, High, Medium*, and *Low*.	Premium
Calling Line ID	Optionally, provide a display phone number. This number is used instead of the DNIS phone number for display purposes.	Premium
Use Custom Calling Name Settings	Select this option if a custom calling name should be used for display purposes.	Premium
Allow Outgoing Call Center Call	Select this option if agents staffing this call center are allowed to initiate outbound call campaigns for this DNIS.	Premium

8.4.3 STEP 3 – ASSIGN AGENTS

Agents who have the appropriate call center license appear on the list of agents who can be assigned to the call center.

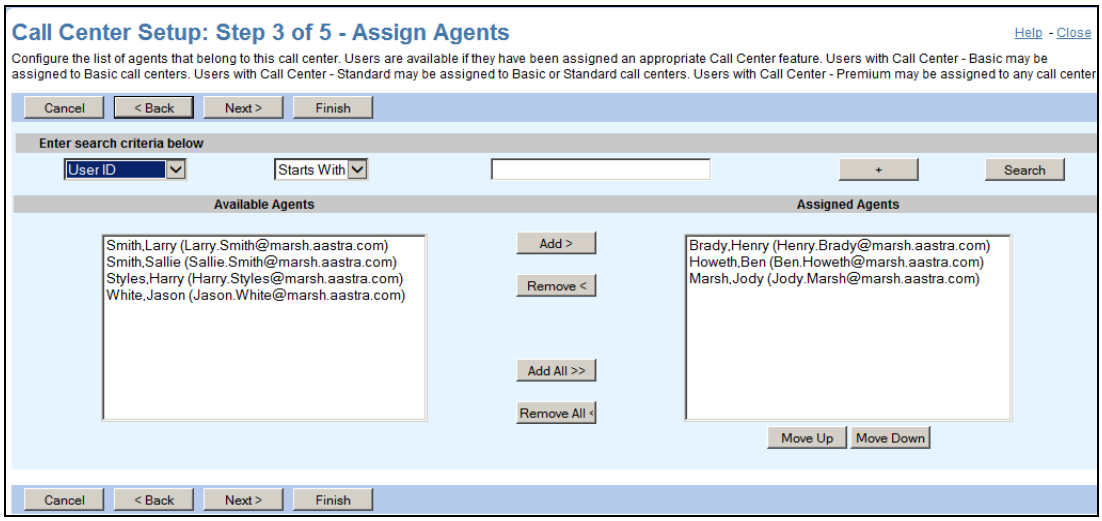

Figure 16 Assign Agents to Call Center

For Premium call centers where skill-based routing was chosen in Step 1 – Configure Call Center Profile, agents must be assigned a skill level when they are assigned to the call center.

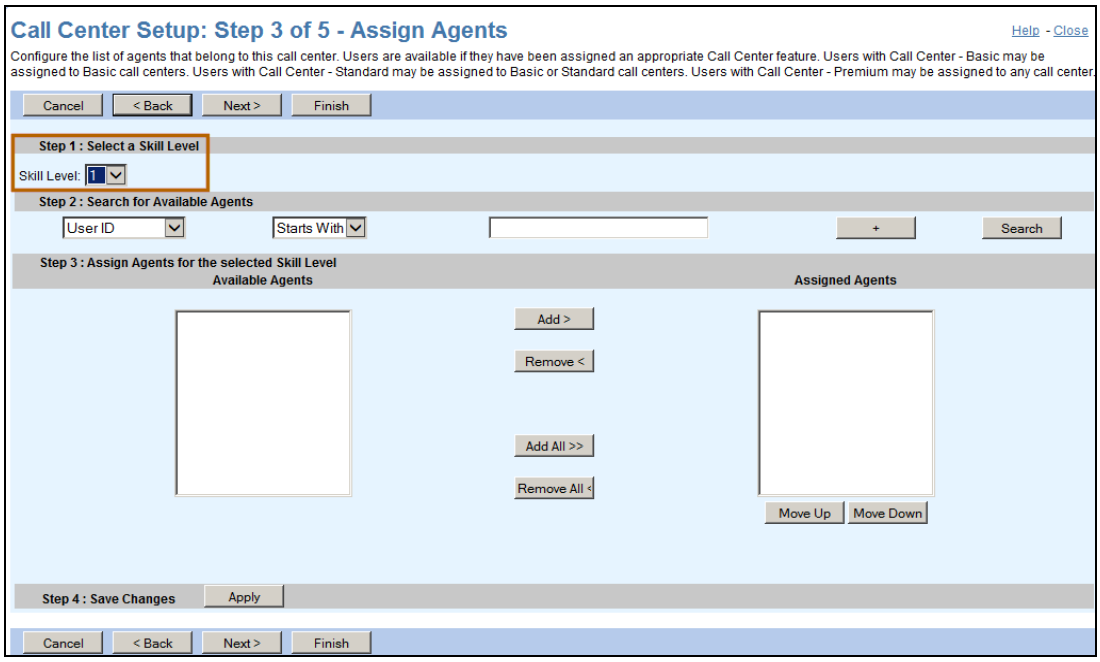

Figure 17 Assign Agents to Call Center – Premium with Skill- based Routing Selected

8.4.4 STEP 4 – ASSIGN SUPERVISORS

Any Clearspan user in the company appears on the list of supervisors who can be assigned to a call center. There are no specific user license requirements for a user to be assigned to a call center. However, for an improved monitoring experience, supervisors are expected to use the Clearspan Supervisor client and be assigned the Clearspan Supervisor license.

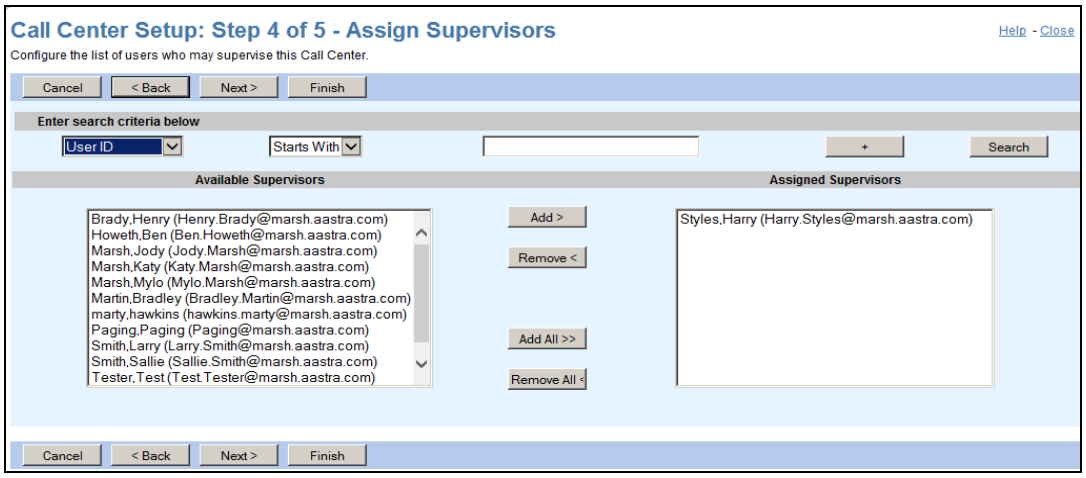

Figure 18 Assign Supervisors to Call Center

8.4.5 STEP 5 – ASSIGN AGENTS TO SUPERVISORS

Agents may be assigned to multiple supervisors.

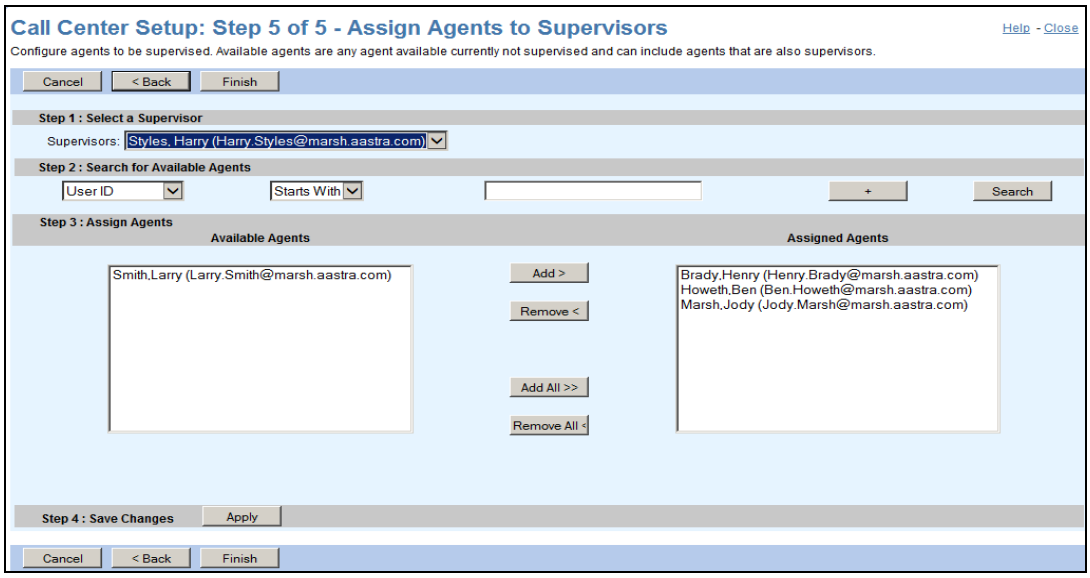

Figure 19 Assign Agents to Supervisor for Call Center

8.4.6 ADDITIONAL STEPS

8.4.6.1 Assign Services to Call Center

The Voice Messaging User service is required to be assigned to the call center.

The Voice Messaging User service allows the call center to have a voice messaging box for overflow. Note that this assumes that Voice Mail is implemented within the group and that External Voice Messaging is not being used.

In addition, if this call center is to receive calls that are unanswered in the Direct Agent Access Overlay functionality, the Directory Number Hunting service must also be assigned.

8.4.6.2 Configure Voice Messaging

Voice Messaging for the call center has a configuration that is similar to other users on the system and is not detailed in this document. For more information, see the *Clearspan Voice Messaging Solutions Guide*.

8.4.6.3 Configure Directory Number Hunting (Optional)

This should only be configured if you are enabling the Direct Access to Agent functionality. The Directory Number Hunting service directs unanswered calls to agents (to the configured queue). Each agent to receive this functionality should be selected in one ACD in the call center. An agent can only be in the Directory Number Hunting group.

8.4.6.4 Configure Routing Policies

Various routing policies such as the Stranded Calls, Stranded – Unavailable Calls, Bounced Calls, Overflow Handling, Holiday Service, and Night Service policies are configurable according to the call center.

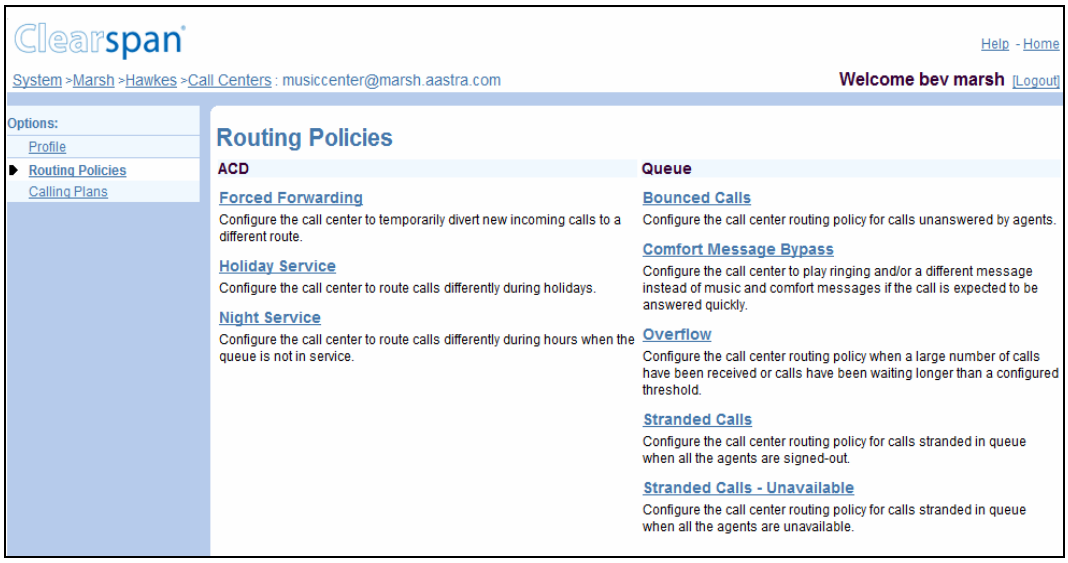

Figure 20 Call Center Routing Policies

The following subsections provide more information on these policies.

8.4.6.4.1 Holiday Service

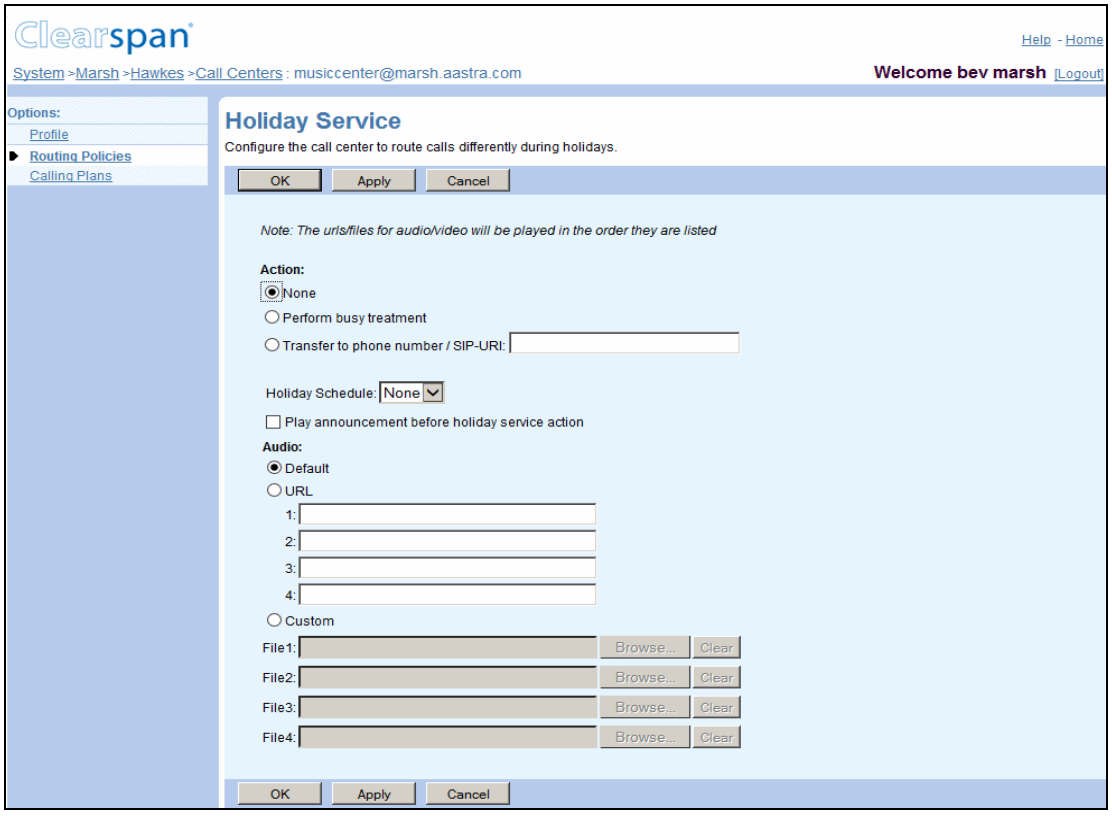

Figure 21 Holiday Service

The following table contains the various attributes for the Holiday Service policy.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Action	Specify the action to apply to calls during the holiday schedule. The following actions are configurable: • None • Perform Busy treatment • Transfer to phone number/SIP-URI	Premium
Holiday Schedule	This is the schedule to be followed for the Holiday Service policy.	Premium
Play announcement before holiday service action	Set to “true” if an announcement is to be played prior to holiday service action.	Premium
Announcements	Select the audio or video files to play in the announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	Premium

8.4.6.4.2 Night Service

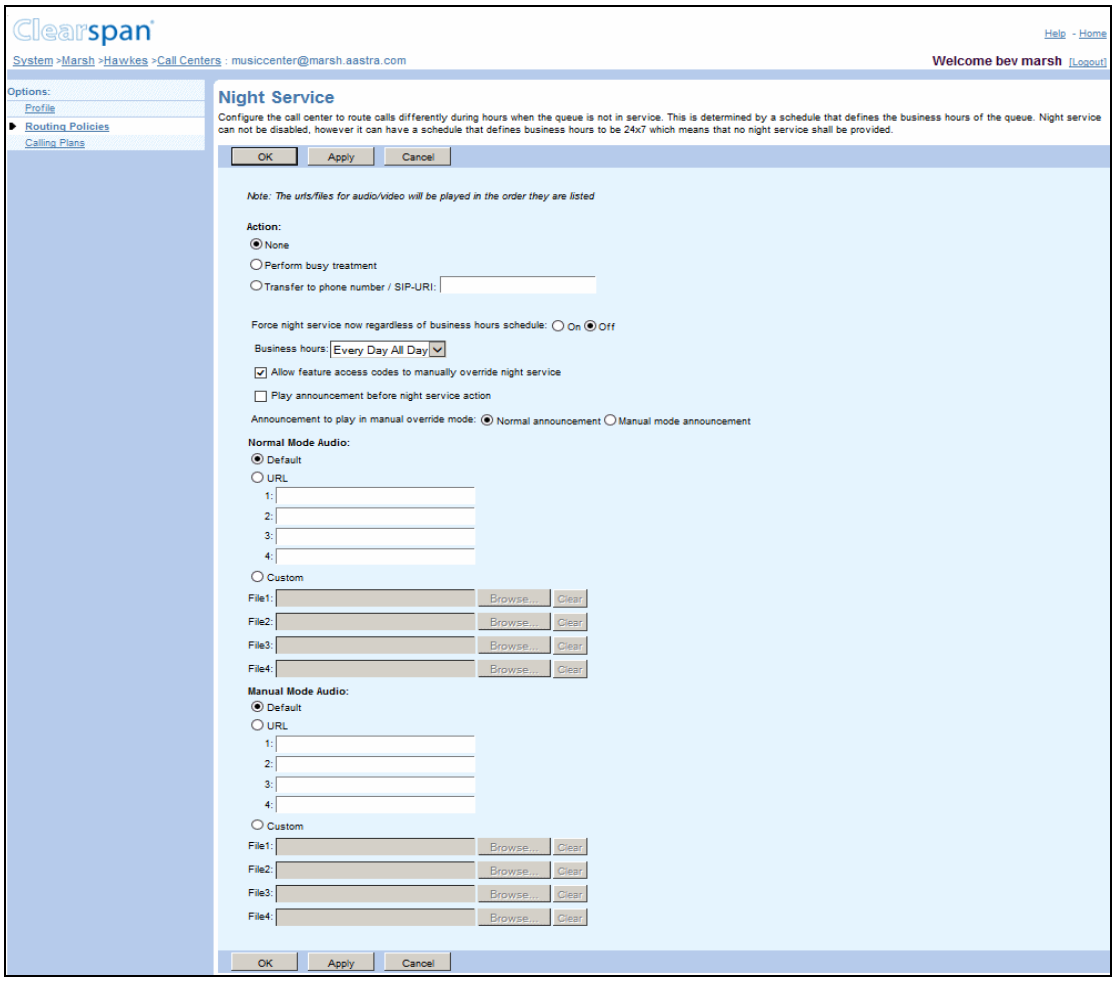

Figure 22 Night Service

The following table contains the various attributes for the Night Service policy.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Action	Specify the action to apply to calls during the night schedule. The following actions are configurable: • None • Perform Busy treatment • Transfer to phone number/SIP-URI	Premium
Force Night Service	Set to “true” to force night service regardless of night schedule.	Premium
Night Schedule	This is the schedule to be followed for the Night Service policy.	Premium

Allow feature access codes to manually override night service	Set to “true” if FAC codes can manually override Night Service policy.	Premium
Play announcement before night service action	Set to “true” if an announcement is to be played prior to night service action.	Premium
Announcement to play in manual override mode	Two options for announcements are available to be played when Night Service is manually overridden: • Normal announcement • Manual mode announcement	Premium
Normal Mode Announcements	Select the audio or video files to play in the normal mode announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	Premium
Manual Mode Announcements	Select the audio or video files to play in the manual mode announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	Premium

8.4.6.4.3 Forced Forwarding

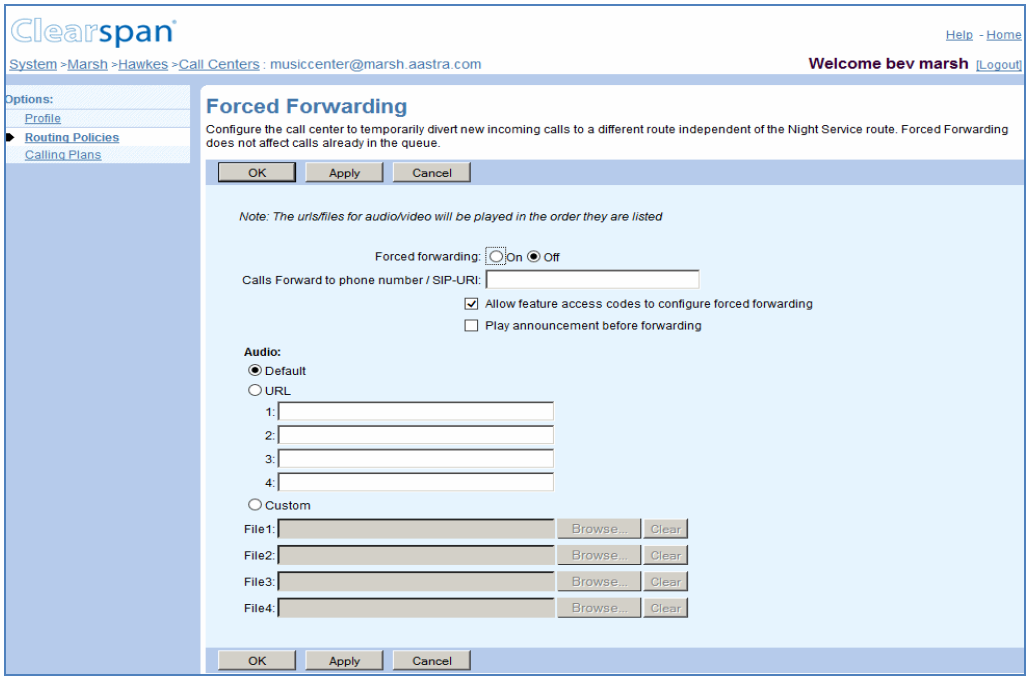

Figure 23 Forced Forwarding Policy

The following table contains the various attributes for the Forced Forwarding policy.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Enable Forced Forwarding	Set to “true” if Forced Forwarding is to be enforced.	Premium
Call forward to phone number	Define where you would like calls forwarded.	Premium
Allow feature access codes to configure forced forwarding	Specify whether feature access codes activate and deactivate the forced forwarding of calls.	Premium
Play announcement before forced forwarding the call.	Set to “true” if an announcement is to be played prior to forced forwarding the call.	Premium
Announcements	Select the audio or video files to play in the announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	Premium

8.4.6.4.4 Bounced Calls Policy

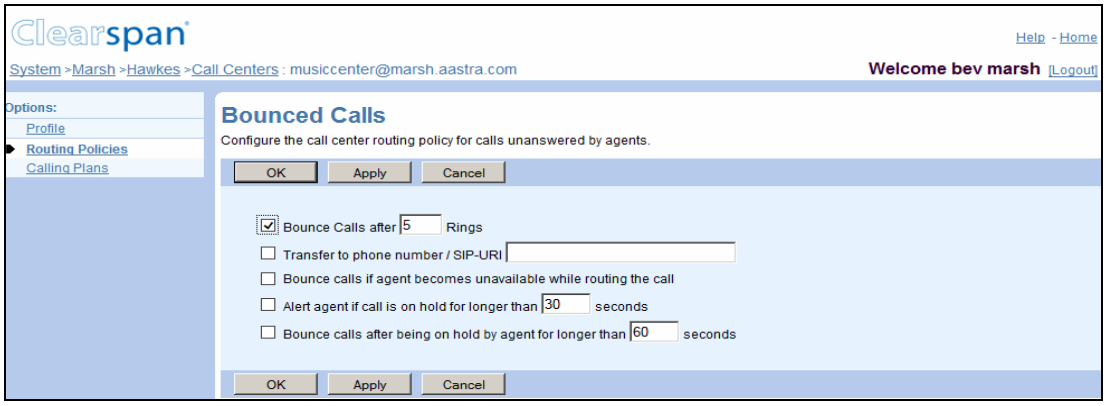

Figure 24 Bounced Calls Policy

The following table contains the various attributes for the Bounced Calls policy.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Bounce calls after x rings	Specify whether to bounce calls and the number of rings to bounce the call after.	Standard, Premium
Transfer to phone number/SIP-URI	Specify whether to transfer bounced calls and enter the phone number or SIP URI to transfer the call to.	Premium
Bounce calls if agent becomes unavailable while routing the call	Specify whether to bounce calls to an agent who becomes unavailable.	Standard, Premium
Alert agent if call is on hold for longer than “x” seconds	Specify whether to alert agents about held calls and specify the time in seconds after which to alert the agent.	Standard, Premium
Bounce calls after being on hold by agent for longer than “x” seconds	Specify whether to bounce held calls and enter the number of seconds after which a held call should be bounced.	Standard, Premium

8.4.6.4.5 Stranded Calls Policy

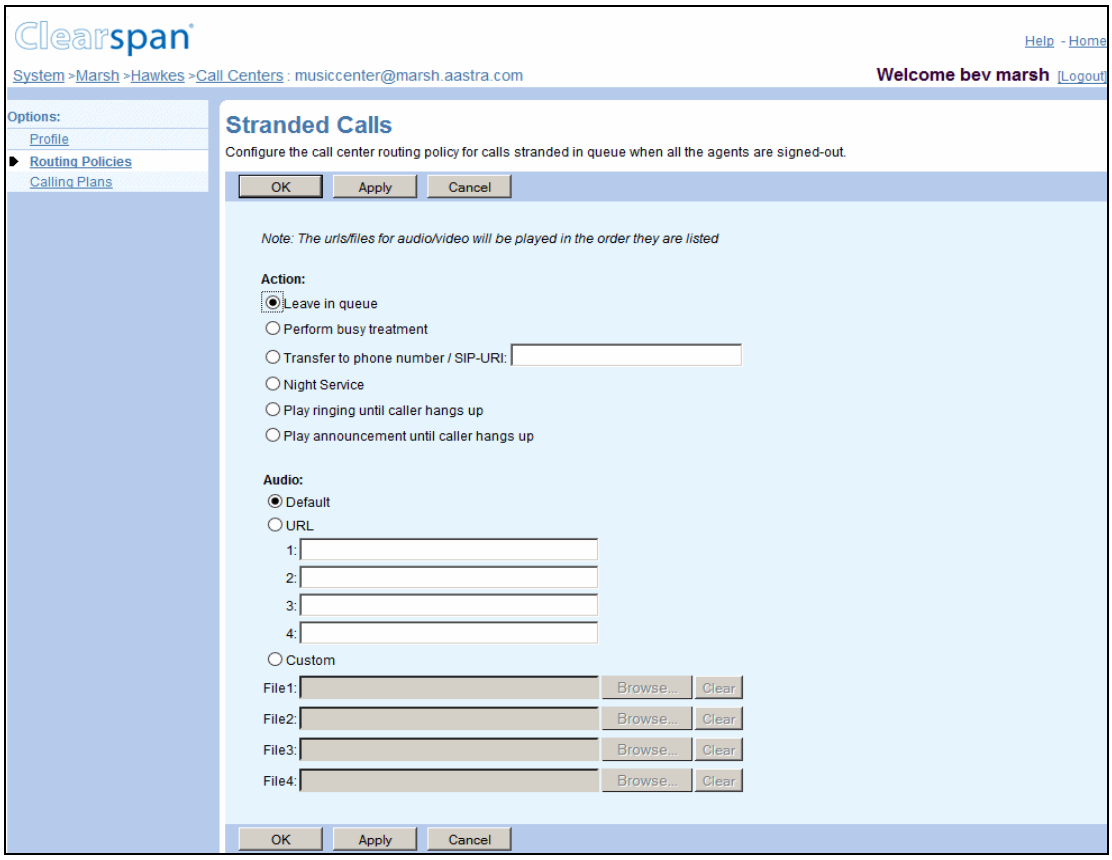

Figure 25 Stranded Calls Policy

The following table contains the various attributes for the Stranded Calls policy.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Action	Specify the action to be taken for stranded calls. The following actions are applicable to a Standard call center: • Leave in queue • Perform Busy treatment • Transfer to phone number/SIP-URI and then enter the SIP-URI in the text box The following actions are applicable to a Premium call center: • Leave in queue • Perform Busy treatment • Transfer to phone number/SIP-URI and then enter the SIP-URI in the text box • Night Service	Standard, Premium

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
	• Play ringing until caller hangs up • Play announcement until caller hangs up	
Announcements	Select the audio or video files to play in the announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed	Premium

8.4.6.4.6 Stranded-Unavailable Calls Policy

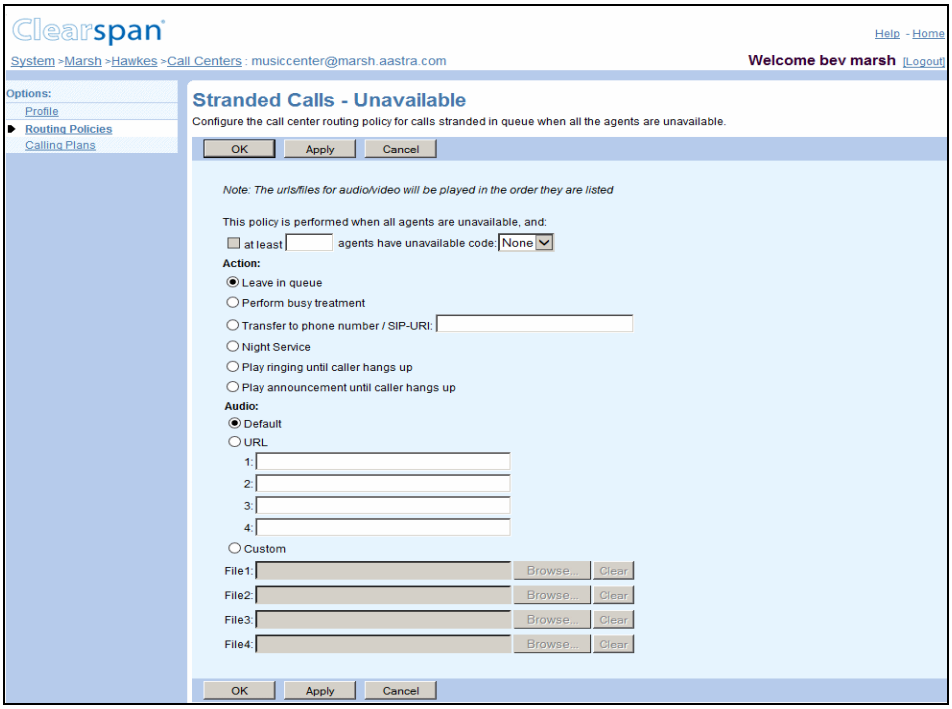

Figure 26 Stranded-Unavailable Calls Policy

The following table contains the various attributes for the Stranded-Unavailable Calls policy.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Action	Specify the action to be taken for stranded-unavailable calls. The following actions are applicable to a	Standard, Premium

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
	Standard call center: • Leave in queue • Perform Busy treatment • Transfer to phone number/SIP-URI and then enter the SIP-URI in the text box The following actions are applicable to a Premium call center: • Leave in queue • Perform Busy treatment • Transfer to phone number/SIP-URI and then enter the SIP-URI in the text box • Night Service • Play ringing until caller hangs up • Play announcement until caller hangs up	
Announcements	Select the audio or video files to play in the announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed	Premium

8.4.6.4.7 Overflow Policy

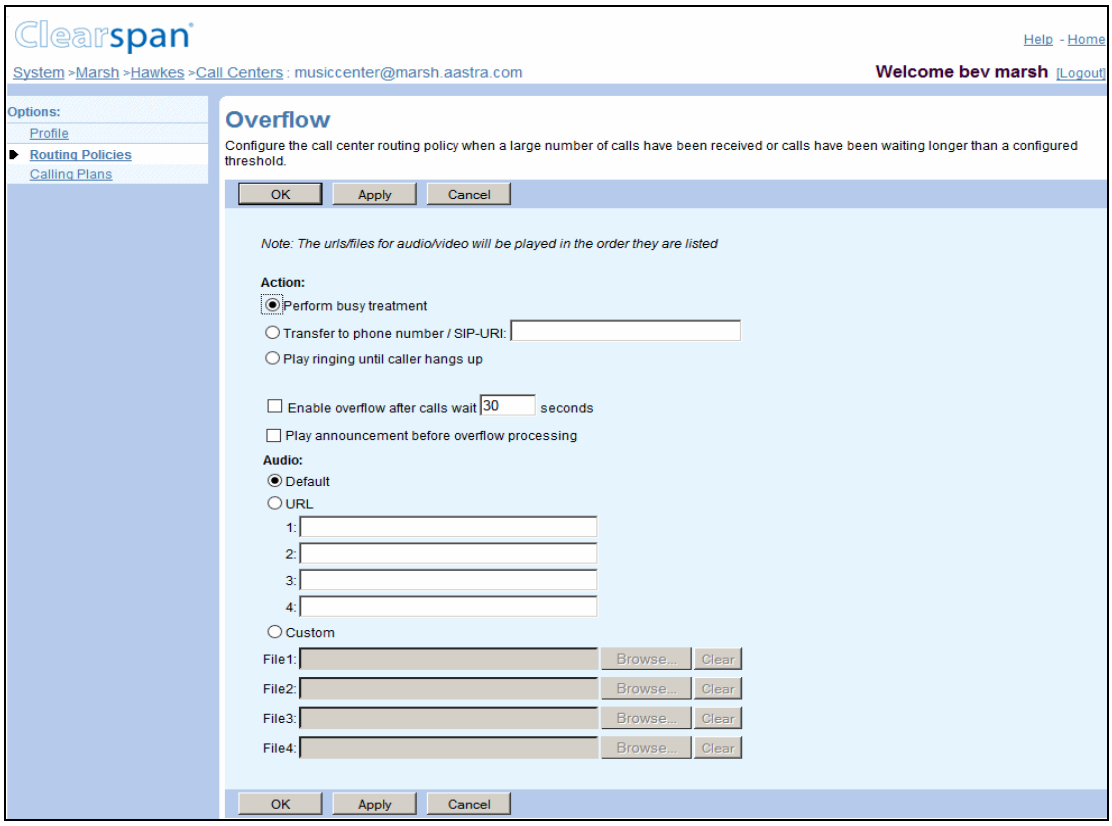

Figure 27 Overflow Policy Attributes

The following table contains the various attributes for the Overflow policy.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Action	Specify the action to take for overflow calls. The following actions are configurable: • Perform Busy treatment • Transfer to phone number/SIP-URI and then enter the SIP-URI to transfer the calls • Play ringing until caller hangs up	Standard, Premium
Enable overflow after calls wait "x" seconds	Set to "true" if the administrator would like to enable the Overflow policy (Time). Specify the waiting time after which a call is considered an overflow.	Standard, Premium
Play announcement before overflow processing	Set to "true" if an announcement is to be played prior to Overflow policy action.	Standard, Premium
Announcements	Select the audio or video files to play in the announcement. The following type of files can be chosen:	Standard, Premium

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
	• Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	

8.4.6.5 *Configure Call Treatments*

The following call treatments are configurable for a call center. For a Premium call center, the call treatments can also be customized on a per-DNIS basis.

- Entrance Message
- Estimated Wait Message
- Comfort Message
- Music On Hold
- Call Whisper Message
- Comfort Bypass Message

8.4.6.5.1 Entrance Message

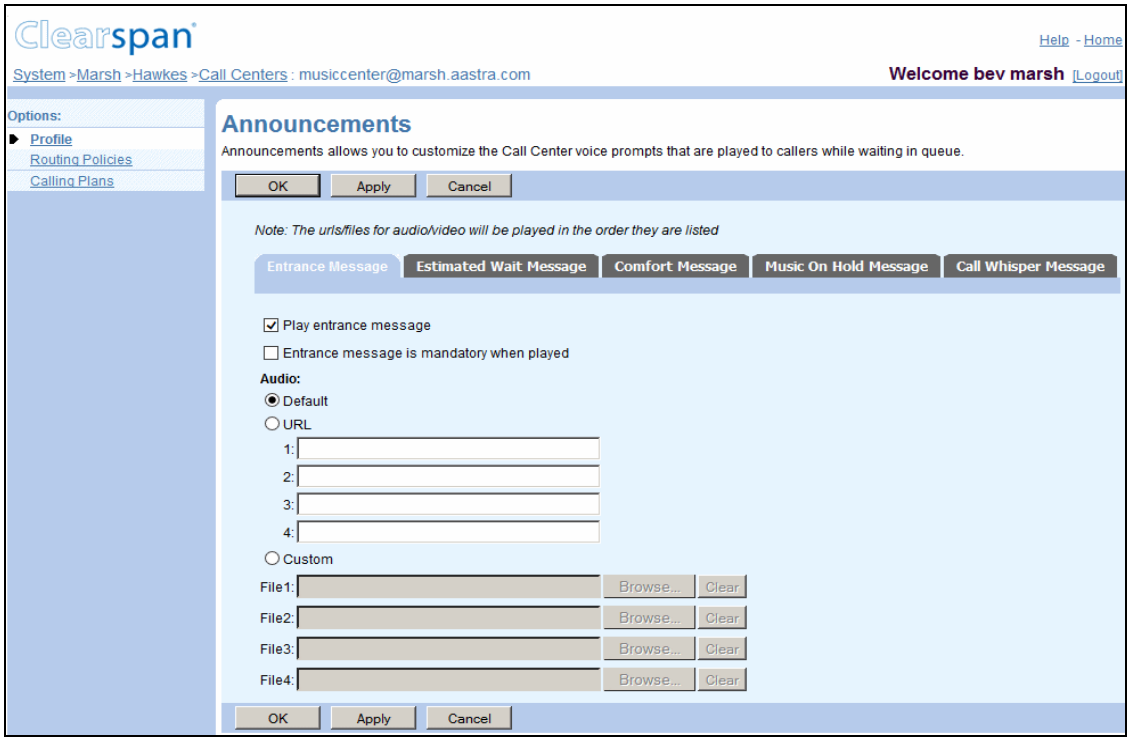

Figure 28 Call Center Entrance Message Announcement

The following table contains the various attributes configurable for the *Entrance Message*.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Play entrance message	Indicate whether the entrance message plays to queued callers.	All
Entrance message is mandatory when played	Specify whether the entrance message is mandatory.	All
Announcements	Select the audio or video files to play in the announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	All

8.4.6.5.2 Estimated Wait Message (EWM)

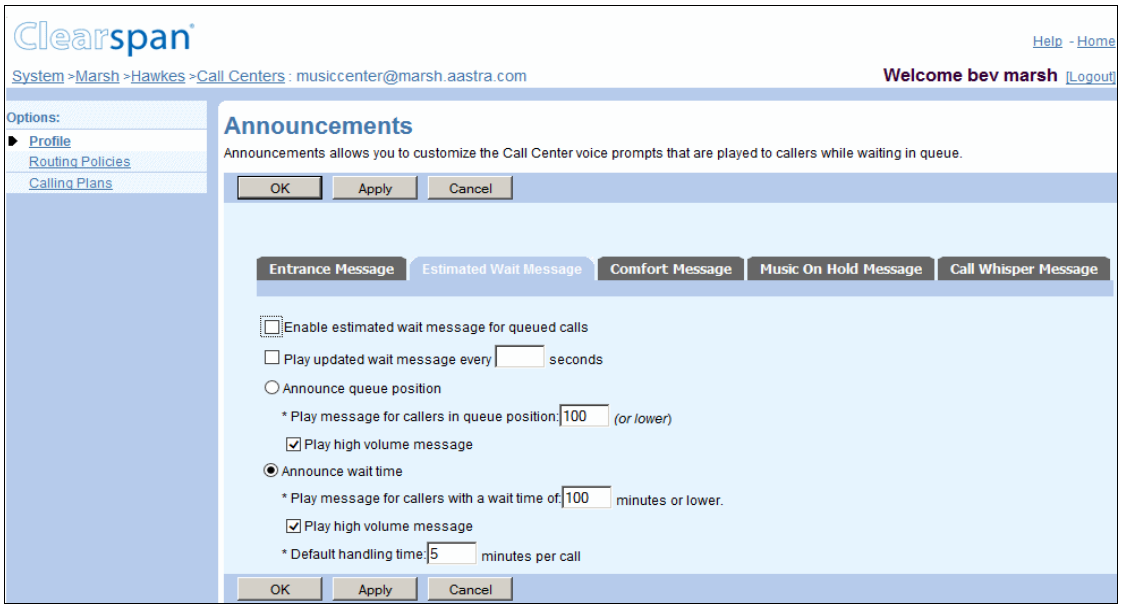

Figure 29 Estimated Wait Message

The following table contains the various attributes configurable for the *Estimated Wait Message*.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Enable estimated wait message	Enable or disable *Estimated Wait Message*.	All

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Play updated wait message	Enable or disable the re-calculation and repetition of the Estimated Wait Message. If enabled, specify the frequency of the announcement.	All
Message Options	Select and configure the message option you want to use for this call center. To announce their position in the queue to callers, choose option to announce the queue position. Enter the maximum queue position to play this announcement to. The number must be from one through 100. To announce their approximate waiting time to callers, choose option to Announce wait time. Enter the maximum waiting time (in minutes) during which the message can play. The number must be from one through 100.	All

8.4.6.5.3 Comfort Message

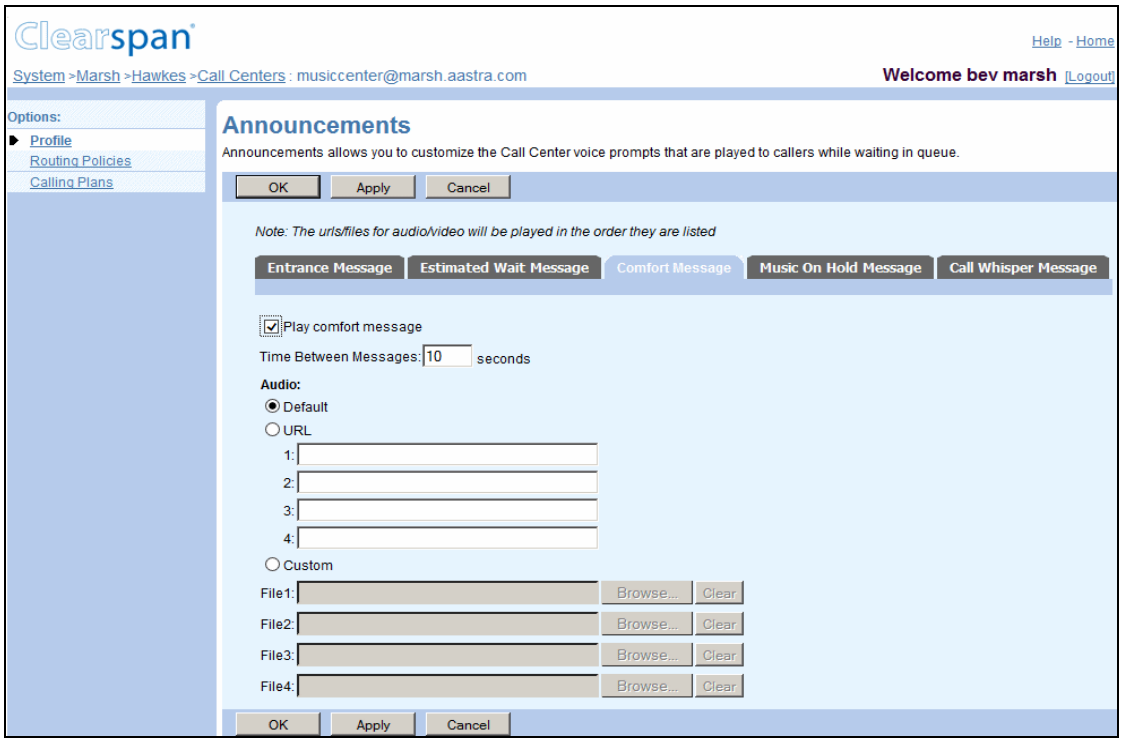

Figure 30 Comfort Message

The following table contains the various attributes configurable for the *Comfort Message*.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Play comfort message	Indicate whether the comfort message plays to	All

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
	users.	
Time between messages	Specify the time between messages.	All
Announcements	Select the audio or video files to play in the announcement. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	All

8.4.6.5.4 Music On Hold Message

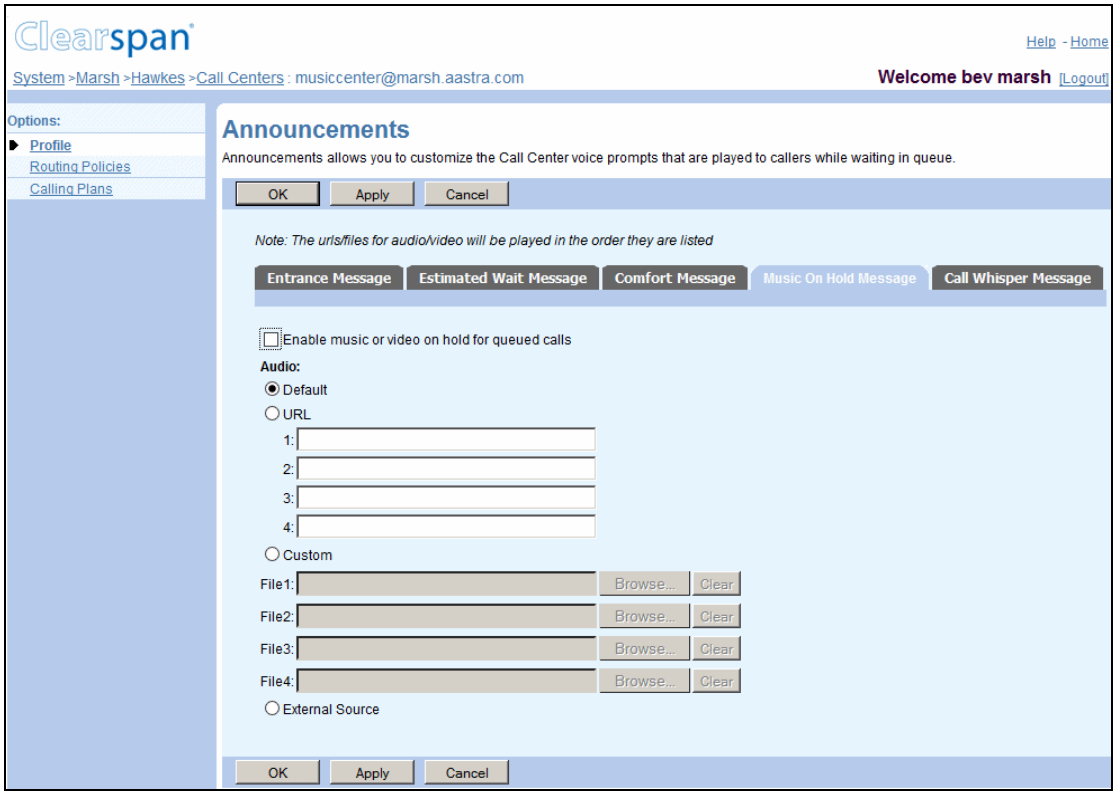

Figure 31 Music On Hold

The following table contains the various attributes configurable for *Music On Hold*.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Enable Music On Hold	Indicate whether the music or video plays to callers.	All
Music On Hold for Internal and External	The administrator can configure different Music-On-Hold settings for internal and external calls.	Basic,

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Calls		Standard
Announcements	Select the audio or video files to play for Music On Hold. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	All
External Source	Configure an external source to play Music On Hold to the callers.	All

8.4.6.5.5 Call Whisper Message

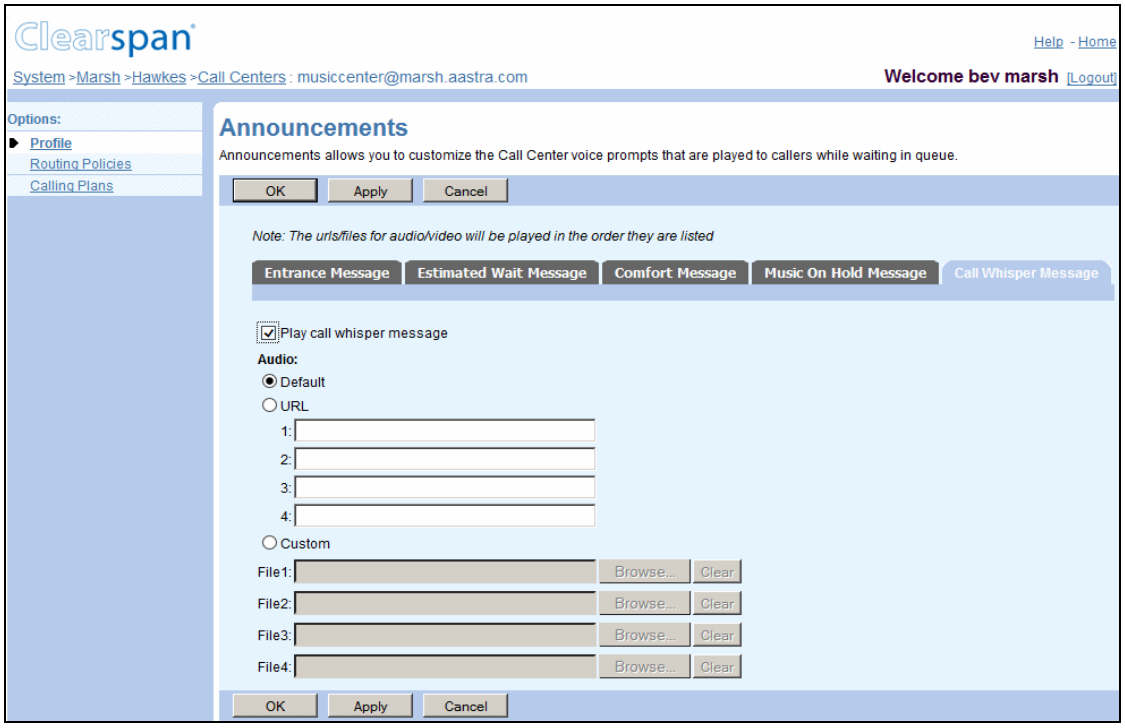

Figure 32 Call Whisper Message

The following table contains the various attributes configurable for the *Call Whisper Message*.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Play call whisper message	Indicate whether the whisper message plays to agents.	Premium
Announcements	Select the audio or video files to play for Music On Hold.	Premium

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
	The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	

8.4.6.5.6 Comfort Message Bypass

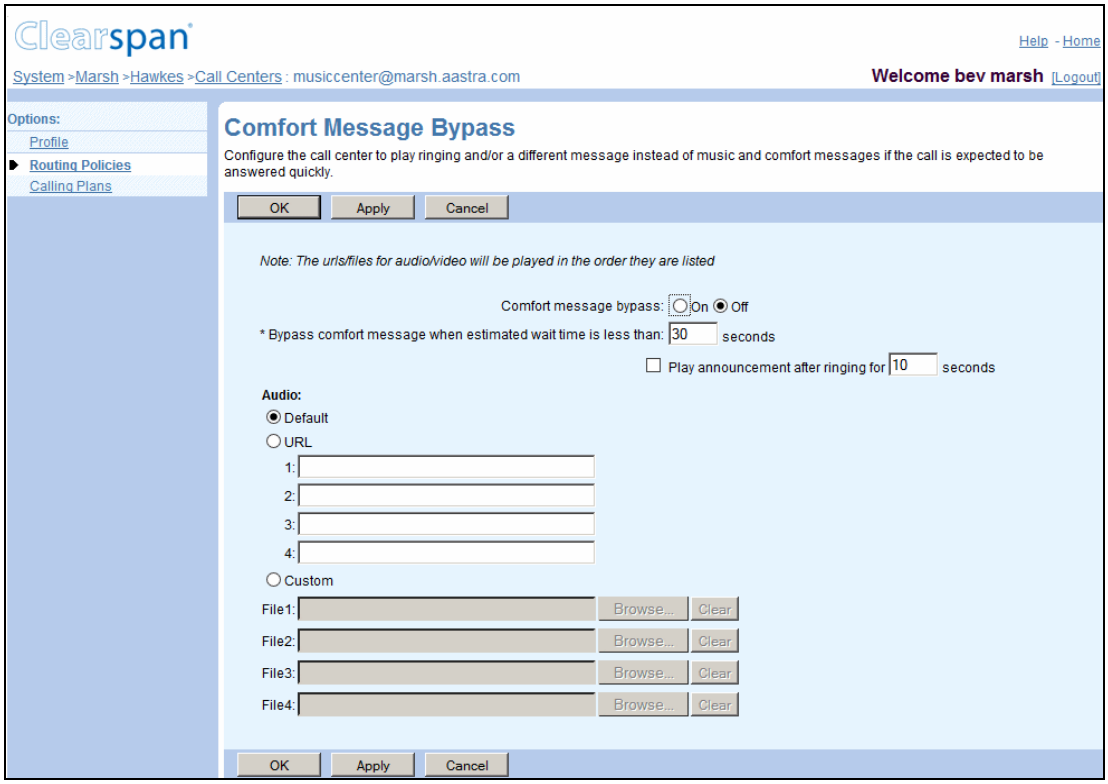

Figure 33 Comfort Message Bypass

The following table contains the various attributes configurable for the *Comfort Message Bypass*.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Play comfort message bypass	Enable or disable *Comfort message bypass*.	Premium
Estimated wait time in seconds	Specify the estimated waiting time before the comfort message is skipped.	Premium
Play announcement after ringing for “x” seconds	Specify whether the comfort message bypass announcement plays after ringing and then the interval after which it plays.	Premium
Announcements	Select the audio or video files to play for Music	Premium

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
	On Hold. The following type of files can be chosen: • Default • URL (up to four URL addresses) • Custom (up to four custom files) **NOTE**: The URLs and files specified are played in the order listed.	

8.4.6.6 *Configure Call Center Thresholds*

Standard and Premium call centers have the option of setting “Yellow” and “Red” threshold values for a set of queue-related statistics. When these thresholds are crossed (increasing or decreasing severity), the severity is rendered visually in the corresponding Agent / Supervisor clients by displaying those measurements in the respective colors on the Dashboard. Additionally, an e-mail may be generated and sent to e-mail addresses provisioned against that call center.

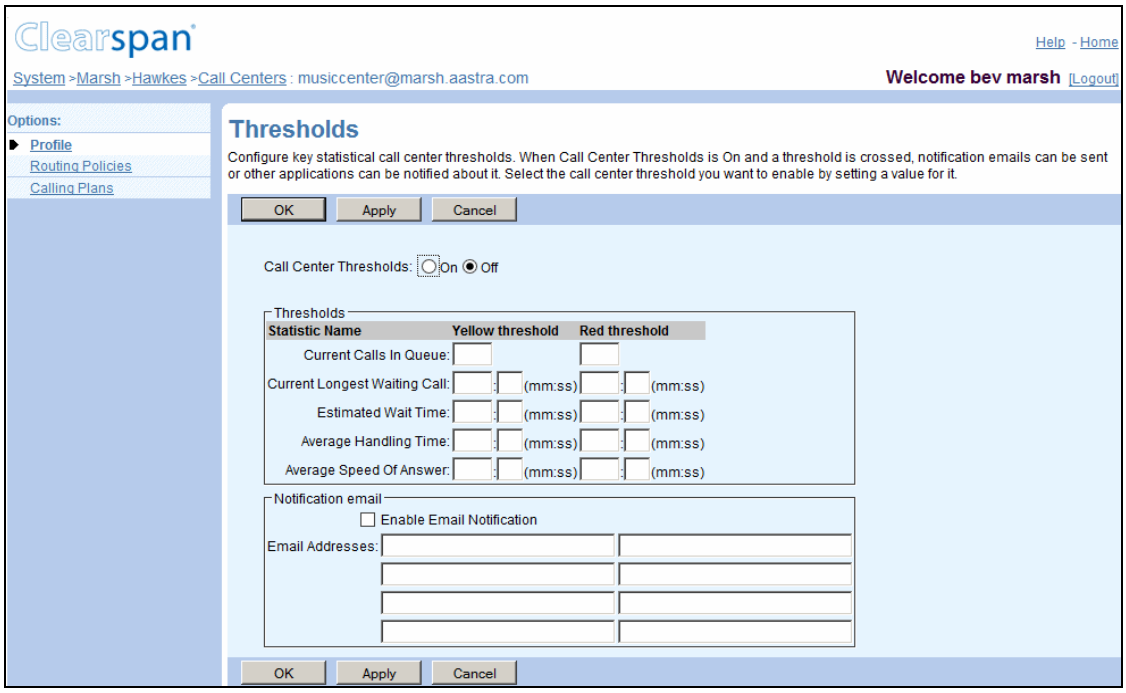

Figure 34 Call Center Thresholds

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Call Center Thresholds	Set to “On” to use the provisioned values of Thresholds. When on, clients and e-mail addresses (if provisioned) will receive a notification of threshold crossings.	Standard, Premium
Calls In Queue - Yellow / Red Threshold	If provisioned, specifies the number of queued calls which will trigger yellow/red notifications.	Standard, Premium

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Current Longest Waiting Call – Yellow / Red Threshold	If provisioned, specifies the wait time for the longest waiting call in the queue which will trigger a yellow/red notification.	Standard, Premium
Estimated Wait Time – Yellow / Red Threshold	If provisioned, specifies the estimated wait time (calculated) for the queue which will trigger a yellow/red notification.	Standard, Premium
Average Handling Time – Yellow / Red Threshold	If provisioned, specifies the average handling time for the queue which will trigger a yellow/red notification.	Standard, Premium
Average Speed of Answer – Yellow / Red Threshold	If provisioned, specifies the average speed of answer for the queue which will trigger a yellow/red notification.	Standard, Premium
E-mail Notification	Set to true if an e-mail should be generated when thresholds are crossed.	Standard, Premium
E-mail Addresses	Provision up to eight e-mail addresses for notification of threshold crossings.	Standard, Premium

8.5 MANAGING AGENT ASSIGNMENTS

A call center is often subject to agent churn in relation to call center and supervisor assignments. This section describes the workflow associated with agent assignments.

8.5.1 ASSIGN OR UNASSIGN AGENT TO OR FROM CALL CENTER

Before assigning an agent to a call center, the user must be assigned the appropriate call center user license (Basic, Standard, or Premium). Once the license is assigned, then the user can be assigned to a given call center where the assigned user license matches the call center type.

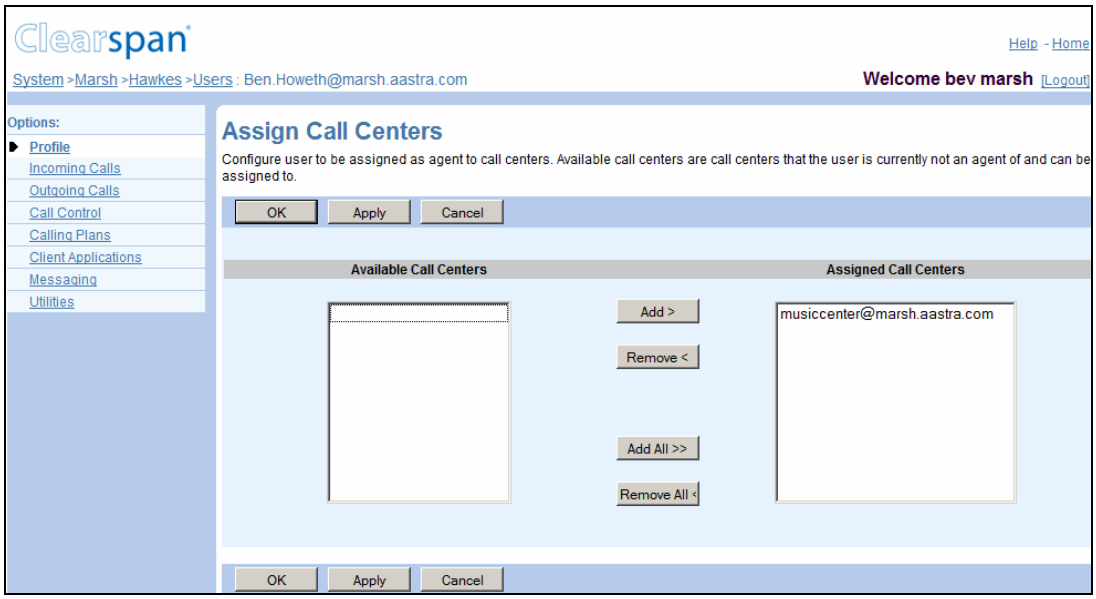

Figure 35 Assign Agent to Call Center

Best Practice

If agents are assigned to multiple call centers, it is more efficient to set up the call centers first and then go to this agent's pages. This way they can be assigned in bulk to multiple call centers in a single step.

If an agent is assigned to a Premium call center where skill-based routing is used, assign the appropriate skill level per assigned call center.

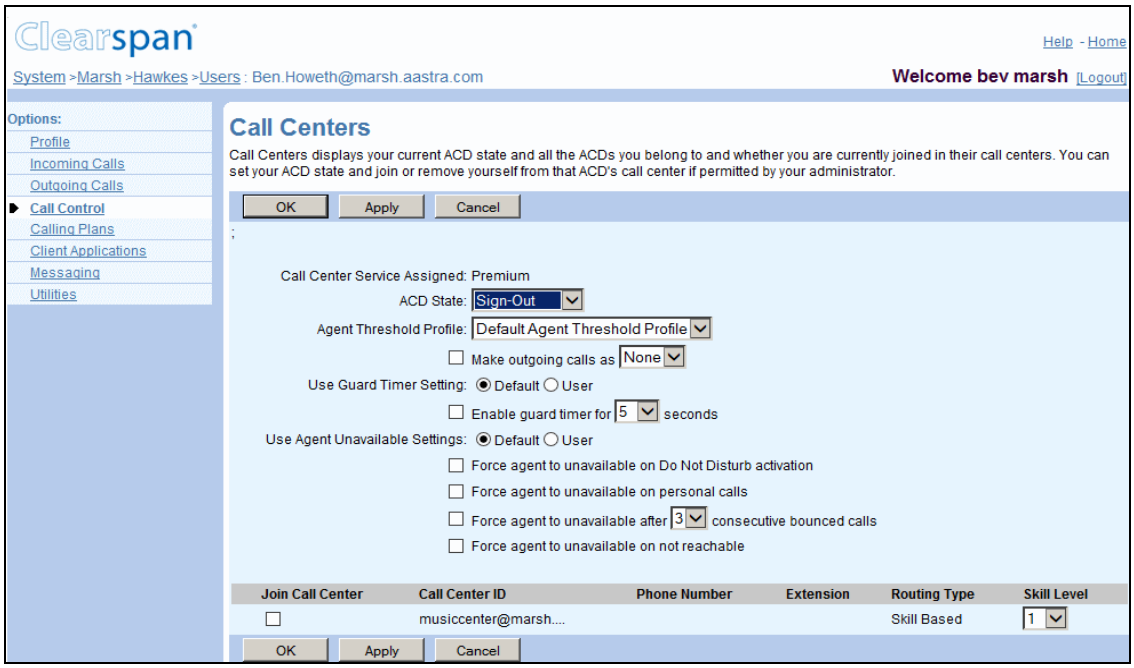

Figure 36 Assign Agent Skill Level per Assigned Call Center

8.5.2 ASSIGN/UNASSIGN AGENT TO OR FROM SUPERVISOR

Before assigning agents to a supervisor for a specific call center, the supervisor must be assigned to the call center.

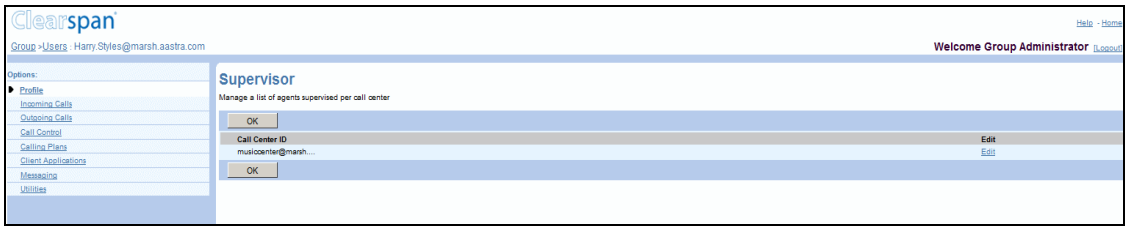

Figure 37 Manage List of Supervised Agents per Call Center

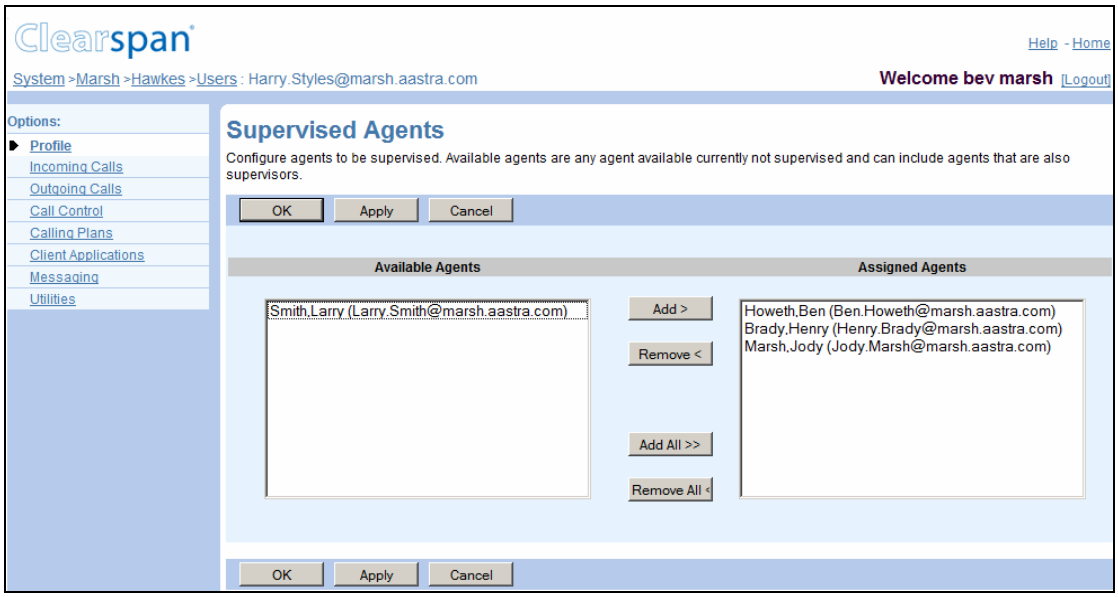

Figure 38 Assign Agent to Supervisor for Given Call Center

8.6 CONFIGURE AGENT

8.6.1 CREATE AGENT THRESHOLD PROFILES (OPTIONAL)

Standard and Premium call centers have the option of setting “Yellow” and “Red” threshold values for a set of agent-related metrics. When these thresholds are crossed (increasing or decreasing severity), the severity is rendered visually in the corresponding Supervisor client by displaying those measurements in the respective colors on the Dashboard. Additionally, an e-mail may be generated and sent to e-mail addresses provisioned against the agent threshold profile.

Empty values mean the metric is not tracked and no notifications are sent.

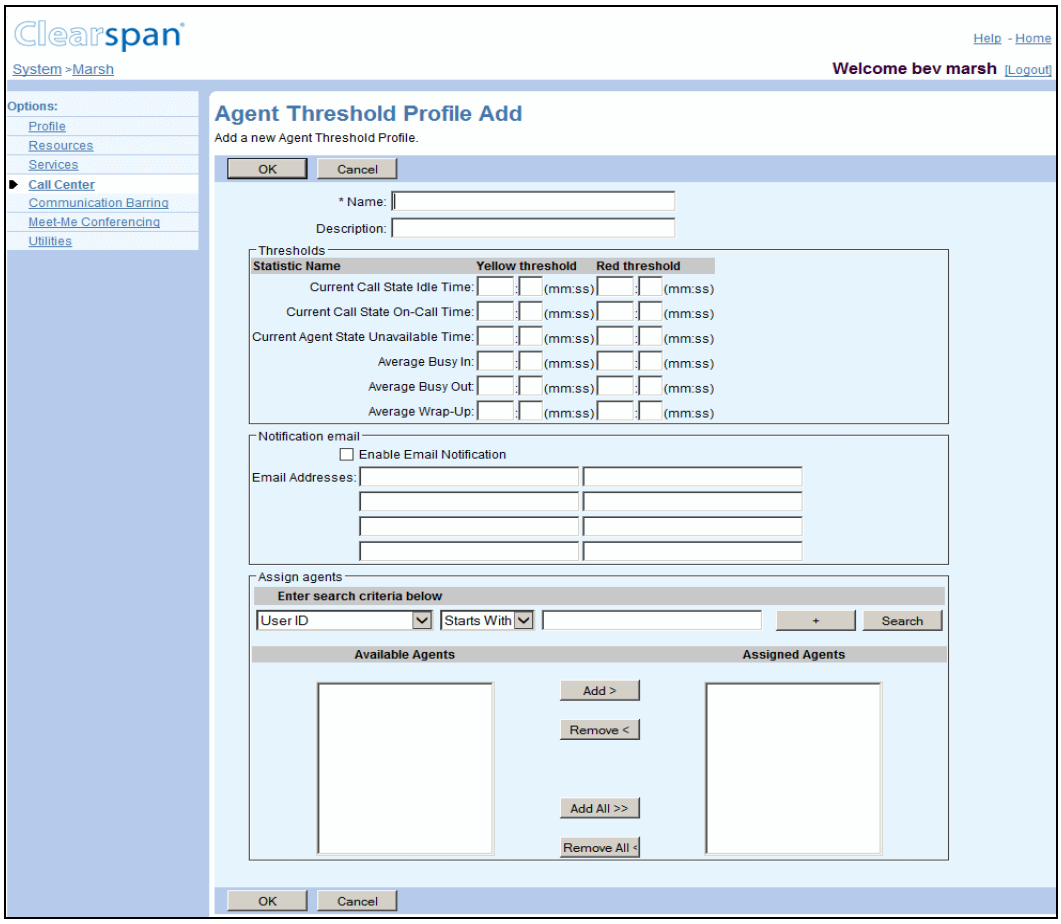

Figure 39 Agent Threshold Profile

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Current Call State Idle Time – Yellow / Red Threshold	If provisioned, specifies an agent's idle duration which will trigger a yellow/red notification.	Standard, Premium
Current Call State On-call Time – Yellow / Red Threshold	If provisioned, specifies an agent's on-call duration which will trigger a yellow/red notification.	Standard, Premium
Current Call State Unavailable Time – Yellow / Red Threshold	If provisioned, specifies an agent's unavailable duration which will trigger a yellow/red notification.	Standard, Premium
Average Busy In – Yellow / Red Threshold	If provisioned, specifies an agent's average busy time on ACD calls which will trigger a yellow/red notification.	Standard, Premium
Average Busy Out – Yellow / Red Threshold	If provisioned, specifies an agent's average busy time on outbound ACD calls which will trigger a yellow/red notification.	Standard, Premium
E-mail Notification	Set to true if an e-mail should be generated when thresholds are crossed.	Standard, Premium
E-mail Addresses	Provision up to eight e-mail addresses for notification of threshold crossings.	Standard, Premium

8.6.2 CONFIGURE AGENT SETTINGS

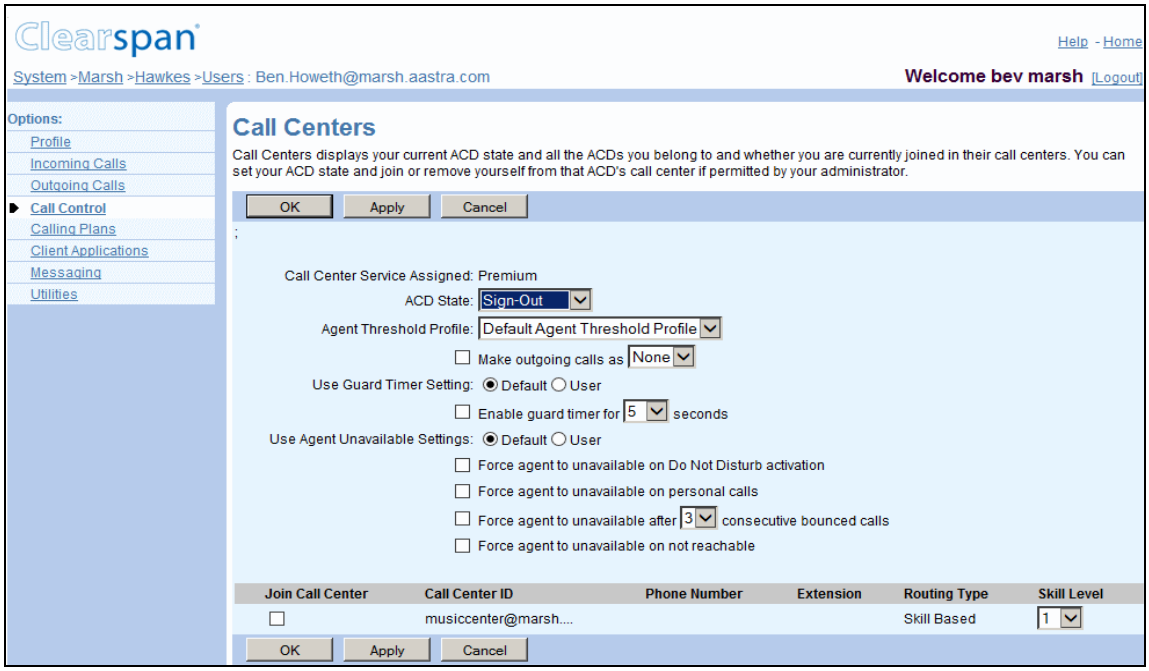

Figure 40 Agent Configuration

The following table contains the various attributes configurable for the agent settings.

ATTRIBUTE	CONFIGURATION	CALL CENTER TYPE
Agent ACD State	Set the agent's ACD state from the ACD drop-down list. The agent can change the ACD state from the web portal as well as from the client.	Standard, Premium
Agent Threshold Profile	Select the Agent Threshold Profile which should be applied to this agent.	Standard, Premium
Make Outgoing Call	Select the agent's outgoing calls setting.	Premium
Guard Timer Settings	Select the agent's guard timer settings. • Select *Default* to use the default settings. This is set by the administrator. • Select *User* to override the default setting for the user.	All
Agent Availability Settings	Select the agent's availability settings. • Select *Default* to use the default agent's availability settings. • Select *User* to override the default settings for the agent.	

Best Practice

The guard timer is used to provide a short interval between the time that a call ends and the time that a new call is offered to the agent. The typical setting is 2 through 5 seconds.

The purpose is to allow the agent to properly transition to the *Wrap-up* state (if applicable) and prevent a call from alerting the agent the instant they hang up on a call.

8.7 ENABLE ENHANCED REPORTING

Enhanced Reporting is disabled by default and must be enabled at the company level.

Note that Enhanced Reporting should only be enabled after it has been deployed on the system. For more information, see section *6.1 Deploy Enhanced Reporting*.

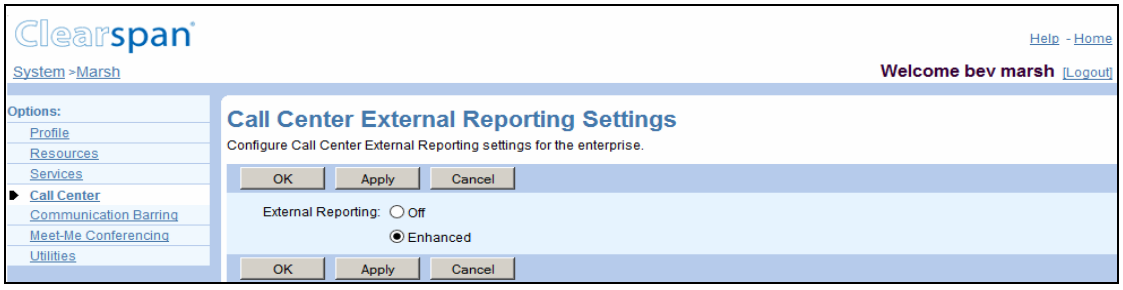

Figure 41 External Reporting Setting

ATTRIBUTE	CONFIGURATION
External Reporting	To enable *Enhanced Reporting*, set the value to “Enhanced”.

8.8 SCHEDULE REPORTS

System or company administrators schedule reports via the web portal. Any of the reports enabled for the company may be scheduled.

8.8.1 SCHEDULE AGENT REPORT

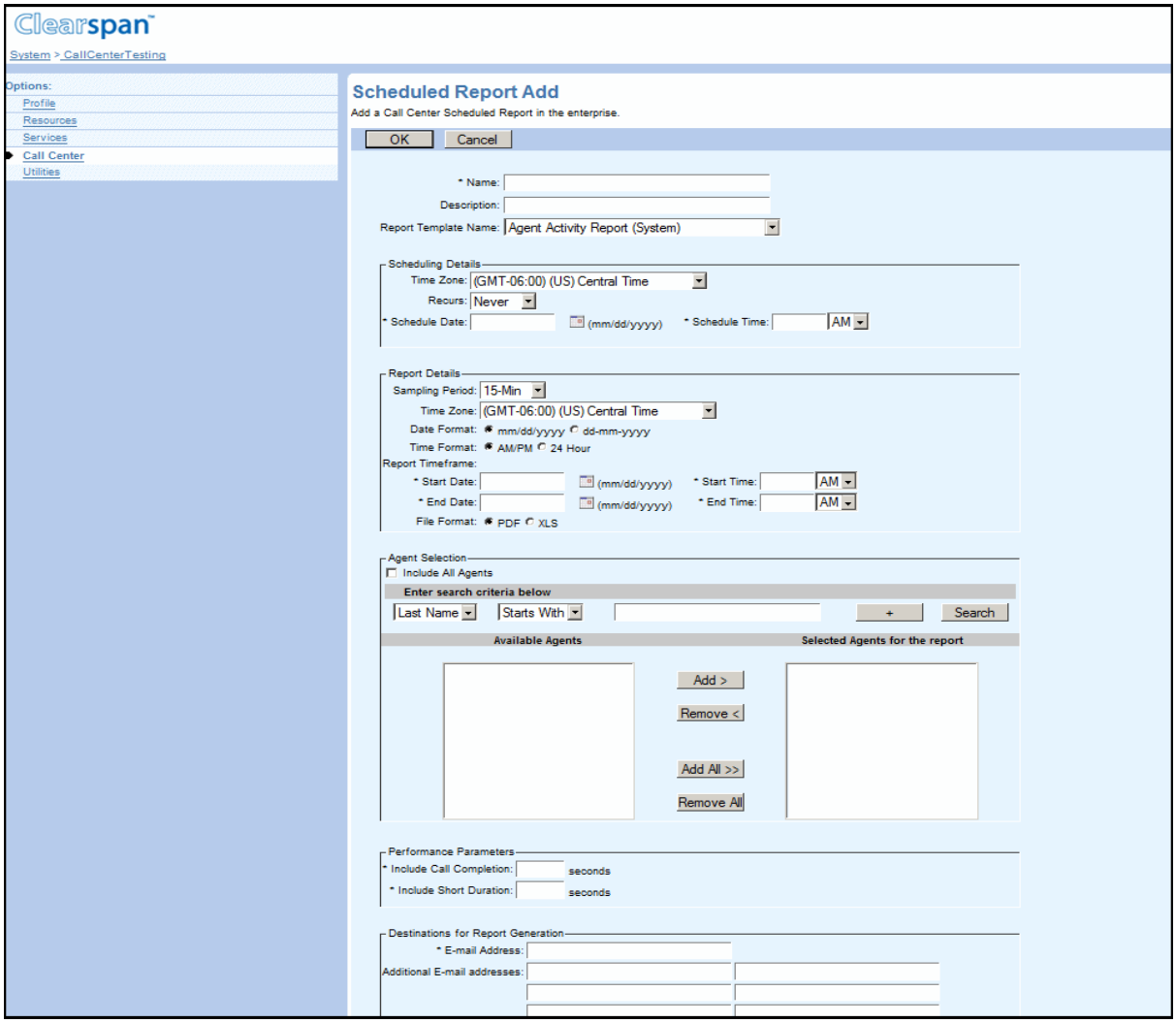

Figure 42 Agent Activity Report Schedule

ATTRIBUTE	CONFIGURATION
Report Template Name	Select the report to be scheduled by choosing the appropriate report template.
Scheduling Details	Select the time zone for the schedule and determine whether the schedule is a recurring or a one-time execution. • If it is a one-time execution, specify the date and time at which the report is to be run. • If it is a recurrence, specify the date at which the scheduled report shall become active and indicate the time at which the report should be run. Indicate the recurrence period (daily, weekly, monthly, or yearly) and indicate the date at which the scheduled report shall expire (if required).
Report Details	Select the time zone for the schedule and the time frame for the report.

ATTRIBUTE	CONFIGURATION
	Indicate the sampling period (15 minute, 30 minute, 60 minute, daily, weekly, or monthly) if the requested report template is interval-based, and indicate the start day of week if the sampling period is set to “weekly”. Indicate the report format, date format, and time format.
Agent Selection	Select the agents to include in the report. The list of agents includes former agents (that is, agents who have been removed from the call center user license or agents who have simply been deleted from the system). Records of former agents are included in reports if there are associated entries in the database for the requested time frame. Note that records of former agents are only accessible in reports scheduled by administrators via the web portal. On-demand or scheduled reports requested by agents or supervisors only include the current records of agents.
Performance Parameters	Indicate the call completion and short duration call threshold values. These values are only required for reports that make use of the performance parameters.
Destination for Report Generation	Specify the list of e-mail destinations (up to 9) for the report.

8.8.2 SCHEDULE CALL CENTER REPORT

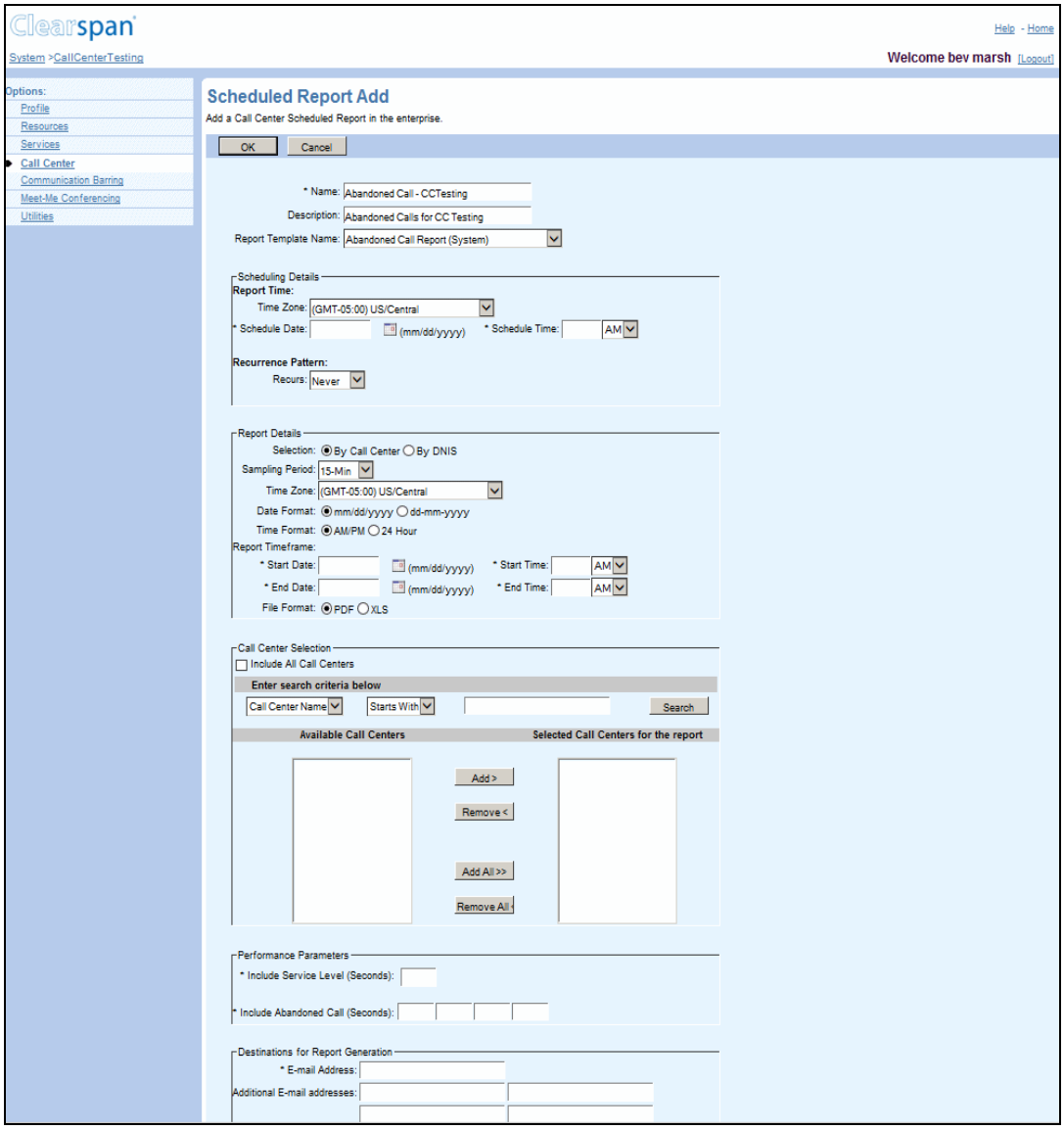

Figure 43 Call Center Report Schedule

ATTRIBUTE	CONFIGURATION
Report Template Name	Select the report to be scheduled by choosing the appropriate report template.
Scheduling Details	Select the time zone for the schedule and determine whether the schedule is a recurring or a one-time execution. • If it is a one-time execution, specify the date and time at which the report is to be run. • If it is a recurrence, specify the date at which the scheduled report shall become active and indicate the time at which the report should be run. Indicate the recurrence period (daily, weekly, monthly, or yearly) and indicate the date at which the scheduled report shall expire (if required).

ATTRIBUTE	CONFIGURATION
Report Details	Select *By Call Center* to schedule a Call Center Report. Select the time zone for the schedule and the timeframe for the report. Indicate the sampling period (15 minute, 30 minute, 60 minute, daily, weekly, or monthly) if the requested report template is interval-based, and indicate the start day of week if the sampling period is set to “weekly”. Indicate the report format, date format, and time format.
Call Center Selection	Select the call centers to include in the report. The list of call centers includes former call centers (that is, call centers for which external reporting has been deleted or call centers that have simply been deleted from the system). Records of former call centers are included in reports if there are associated entries in the database for the requested time frame. Note that records of former call centers are only accessible in reports scheduled by administrators via the web portal. On-demand or scheduled reports requested by supervisors only include the current records of call centers.
Performance Parameters	Indicate the service-level threshold values and parameters, the service-level objective, and the abandoned call threshold values. These values are only required for reports that make use of the performance parameters.
Destination for Report Generation	Specify the list of e-mail destinations (up to 9) for the report.

8.8.3 SCHEDULE DNIS REPORT

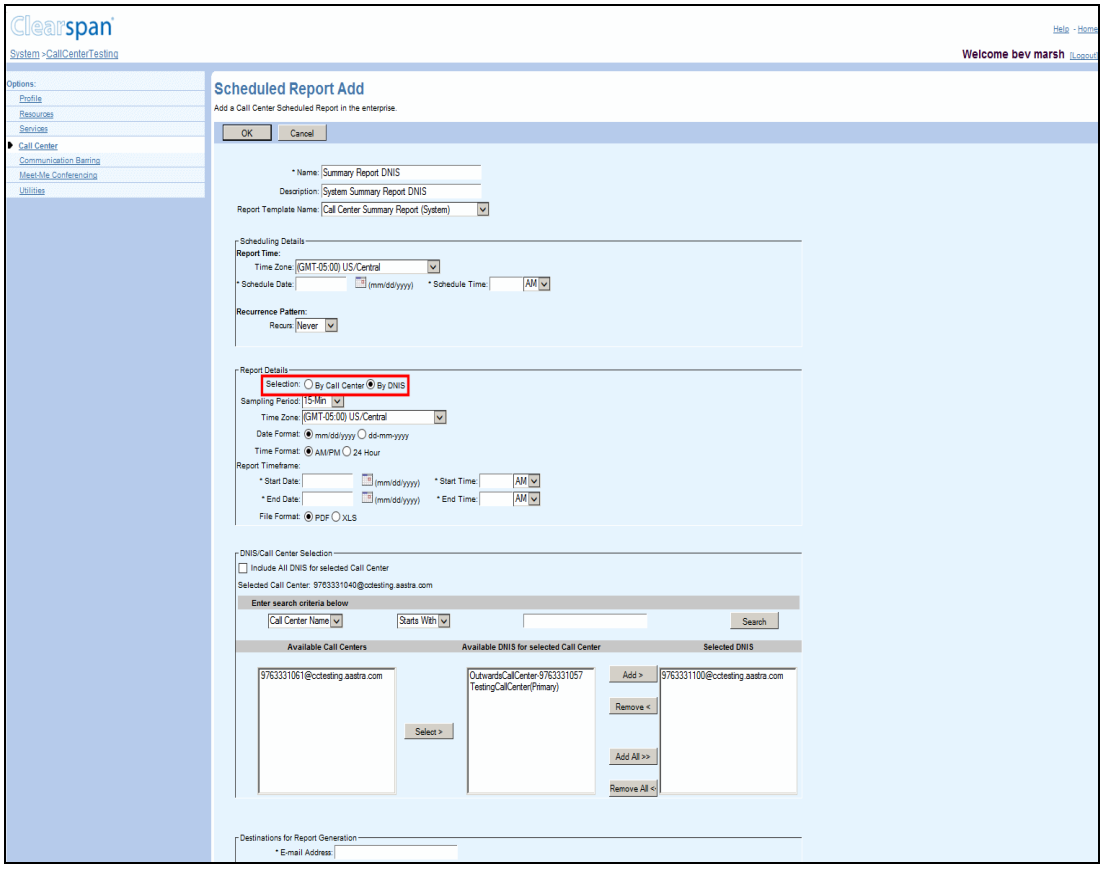

Figure 44 DNIS Report Schedule

ATTRIBUTE	CONFIGURATION
Report Template Name	Select the report to be scheduled by choosing the appropriate report template.
Scheduling Details	Select the time zone for the schedule and determine whether the schedule is a recurring or a one-time execution. • If it is a one-time execution, specify the date and time at which the report is to be run. • If it is a recurrence, specify the date at which the scheduled report shall become active and indicate the time at which the report should be run. Indicate the recurrence period (daily, weekly, monthly, or yearly) and indicate the date at which the scheduled report shall expire (if required).
Report Details	Select *By DNIS* to schedule a Call Center Report. Select the time zone for the schedule and the time frame for the report. Indicate the sampling period (15 minute, 30 minute, 60 minute, daily, weekly, or monthly) if the requested report template is interval-based, and indicate the start day of week if the sampling period is set to “weekly”. Indicate the report format, date format, and time format.
DNIS/CallCenter Selection	Select the call center and then the DNIS to include in the report. The list of agents includes former agents (that is, agents who have been removed from the call center user license or agents who have simply been

ATTRIBUTE	CONFIGURATION
	deleted from the system). Records of former agents are included in reports if there are associated entries in the database for the requested time frame. Note that records of former entries are only accessible in reports scheduled by administrators via the web portal. On-demand or scheduled reports requested by agents or supervisors only include the current records of agents.
Performance Parameters	Indicate the service-level threshold values and parameters, the service-level objective, and the abandoned call threshold values. These values are only required for reports that make use of the performance parameters.
Destination for Report Generation	Specify the list of e-mail destinations (up to 9) for the report.

9 CUSTOMIZATION OF REPORT HEADER AND FOOTER

Administrators customize the headers and footers of reports by uploading a branding template to Clearspan. The branding template is an XSL-FO document that defines the contents of headers and footers through the use of specific eXtensible Markup Language (XML) tags. The XSL-FO file can be created using the *Oracle BI Publisher Desktop v11.1.1.3* for Windows in the same way that the style template is created.

The header and footer of a report are defined as sub-templates of the style template. The style templates of all canned reports refer to the *getHeader* and *getFooter* sub-templates defined in the branding template.

The following figure shows the rich text format (RTF) representation of the default branding template. The header and footer can be customized by editing the corresponding regions and regenerating the branding template using the *BI Publisher* menu option *Export → XSL-FO Stylesheet*.

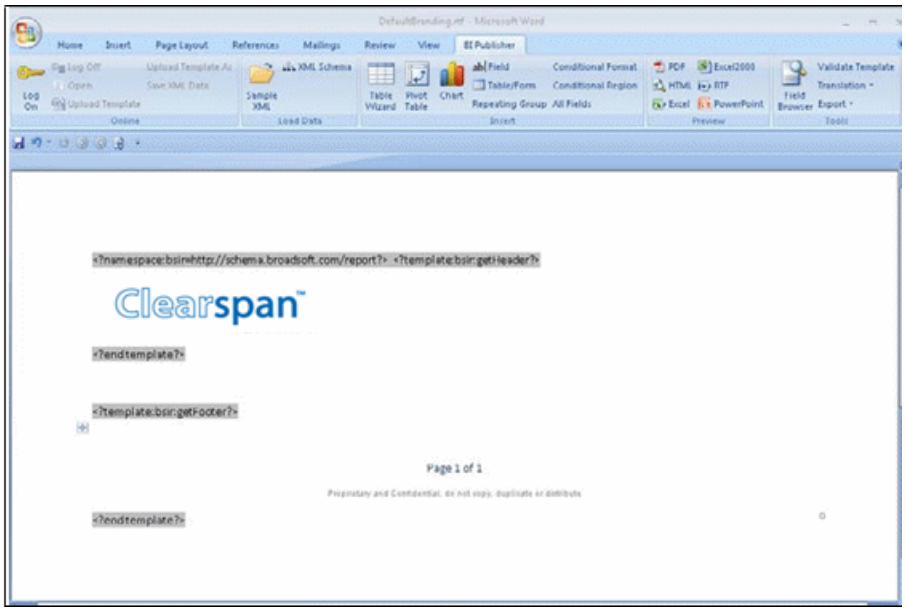

Figure 45 RTF Representation of Default Branding Template

Once the branding template is regenerated using the BI Publisher plug-in, the administrator uploads the XSL-FO style sheet to Clearspan via the web portal. The following figure shows the web portal page for an enterprise. Custom branding templates can be defined at the system level and at the enterprise level.

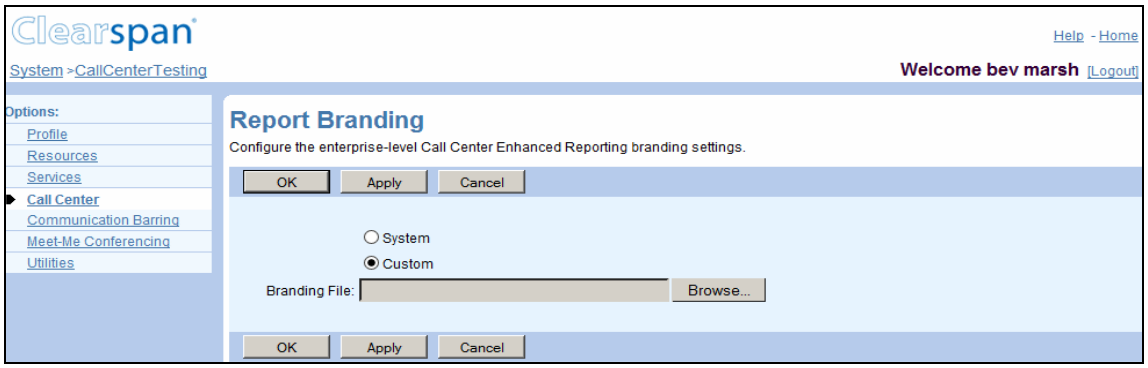

Figure 46 Enterprise Report Branding Page

10 TROUBLESHOOTING

This section describes common problems and suggests possible solutions.

10.1 CALL CENTER AND RECEPTIONIST CLIENT

PROBLEM	LIKELY CAUSE	SUGGESTED ACTION
Unable to log in to the client.	The default domain on the Call Center and/or Receptionist application does not match the system default domain.	Verify that the default domain set in the Call Center CLI and/or Receptionist CLI matches the default domain of the system.
	If the following error message is seen in the client log file, it indicates an access control list (ACL) problem: *SEVERE:* *BwCommunicationMgr: Failed to register OCI-P protocol*	Verify that the Xtended Services Platform IP address is in the Application Server CLI (*System/NetworkAccessLists/OCI/Provisioning*).
	If the following message is seen on the login screen, then the application is not configured correctly: *Real time event delivery is not configured correctly. Please contact your service provider.*	Verify the following configuration: The network access list for OCI Call Control in the Application Server CLI (*System/NetworkAccessLists/OCI/CallControl*) has the Xtended Services Platform hosting Xsi-Events. The application ID is mapped to the Xtended Services Platform(s) hosting application in the network access list for OCI Call Control in the Application Server CLI (*System/NetworkAccessLists/OCI/CallControl/Application*).
	If the following message is seen on the login screen, it indicates a launch profile configuration problem: *Your launch profile is not configured to use the thin web client.*	Verify that the Application Server CLI setting for the *ClientApplicationLaunchProfile* is set to use the Thin Client. The *UseVersion* in the profile should be set to “current”.
Reporting link is not showing up in the client.	Call centers (are) not configured for reporting.	From the CommPilot web portal, make sure that the call center profile for each call center has external reporting enabled.
Report request times out for Call Center client.	HTTP time-out set to low.	The *HttpSocketTimeout* in the client CLI should be increased. It defaults to 60000 milliseconds (1 minute).
Wrong version of client is	The client application launch	Verify the AS_CLI for the

PROBLEM	LIKELY CAUSE	SUGGESTED ACTION
launched from web portal.	profile is set to the wrong value.	*ClientApplicationLaunchProfile* to ensure the application version is set correctly for the user, group, service provider, and/or system.
Hosted Thin Client is not launched even though *ClientApplicationLaunchProfile* in Application Server is set correctly	The client application launch URL on the Xtended Services Platform is not set correctly.	Verify that the CommPilot *ClientApplicationLaunchURL* on the Xtended Services Platform CLI is set correctly.
User is logged out while using the client.	User is not being redirected to the same Xtended Services Platform in a clustered configuration	Verify that the Xtended Services Platform CLI for the HTTP interface configuration on each Xtended Services Platform in the cluster is set to redirect any requests to the cluster FQDN to its own host address.
Report templates are not showing up in the Call Center client.	Public reporting is not configured correctly.	Verify that the public reporting context in the Call Center CLI is set correctly. Verify that the supervisor user who is logged in is assigned as a supervisor or agent of at least one call center.
An error message is seen in the client when an action is taken on a call.	The user for the call has migrated to the secondary Application Server in a redundant Application Server configuration due to failover.	The client resets itself on the next call update it receives from the server for any call or when re-logging to the client.

10.2 ENHANCED REPORTING

PROBLEM	LIKELY CAUSE	SUGGESTED ACTION
A report request is failing with the following error message: *[Error 3002] Database not available.* *Cause: Read/write access to database schema is not available*.	After deploying Enhanced Reporting for the first time, this error might indicate that the database is not configured correctly for the *CCReporting* web application. Post initial deployment, it should be noted that this is an expected error if the Database Server is currently in the process of failing over from one site to another. The *CCReporting* web application requires a read-write connection to the “bweccr” database schema for report generation.	Verify the configuration of the Database Server for the CCReporting web application (for more information, see section 4.1.3 Install Reporting Engine). Inspect the CCReporting web application logs to verify the status of the database connection. If the “bweccr” schema password is not configured correctly, the following entry is in the log file, in particular in the CommonPersistency input channel: SCHEMA: Could not connect to bweccr (invalid password). In this case, use the CLI (Applications/CCReporting/Database/Schemas) to reset the “bweccr” schema password to the appropriate value. If the password is not configured correctly for a longer period, then it is possible for the “bweccr” schema to

PROBLEM	LIKELY CAUSE	SUGGESTED ACTION
		become locked. SCHEMA: Could not connect to bweccr (account locked). In this case, use the CLI (Applications /CCReporting/Database/Schemas) to reset the “bweccr” schema password to the appropriate value. Then use dbsctl tool from the Database Server to unlock the “bweccr” schema. dbsctl account unlock expired The following entry appears in the log file, in particular in the CommonPersistency input channel, if the application is connecting properly to the “bweccr” schema. SCHEMA: bweccr Access status change from SCHEMA_NA to SCHEMA_RW.
After deploying Enhanced Reporting as described in section 4.1 Deploy Enhanced Reporting, report requests are failing with the following error message: [Error 3069] No agents found for the report. [Error 3070] No call centers found for the report.	This is an indication that the Application Server is not connecting to the “bweccr” schema on the Database Server. This can be caused by the following: The database is not configured correctly on the Application Server. • The database was configured properly, but agent, call center, DNIS, and supervisor information are not synchronized on the centralized database. This can occur if Enhanced Reporting is enabled for a group/enterprise prior to configuring the centralized database for the first time. • The database was configured properly, prior to enabling Enhanced Reporting for the group or enterprise, but external reporting is not enabled for the relevant call centers. Enabling external reporting on a call center ensures that supervisor to agent, call center, and DNIS	Verify the configuration of the Database Server on the Application Server. (For more information, see section 4.1.7 Configure Enhanced Reporting on Application Server.) Inspect the Execution Server (XS) logs to verify the status of the database connection. If the “bweccr” schema password is not configured correctly, the following entry is in the log file, in particular in the CommonPersistency input channel: SCHEMA: Could not connect to bweccr (invalid password). In this case, use the CLI (Applications/ExecutionAndProvisioning/ XS/Data base/Schemas) to reset the “bweccr” schema password to the appropriate value. If the password is not configured correctly for a longer period, then it is possible for the “bweccr” schema to become locked. SCHEMA: Could not connect to bweccr (account locked). In this case, use the CLI (Applications/ExecutionAndProvisioning/ XS/Data base/Schemas) to reset the “bweccr” schema password to the appropriate value. Then use dbsctl tool from the Database Server to unlock the “bweccr” schema. dbsctl account unlock expired The following entry appears in the log file,

PROBLEM	LIKELY CAUSE	SUGGESTED ACTION
	relationships are stored on the centralized database.	in particular in the CommonPersistency input channel, if the application is connecting properly to the “bweccr” schema. SCHEMA: bweccr Access status change from SCHEMA_NA to SCHEMA_RW If the Application Server connects properly to the “bweccr” schema and the problem still exists, then verify that external reporting is enabled on the relevant call centers. (For more information, see section 6.4.1 Step 1 – Configure Call Center Profile.) If external reporting is enabled for the relevant call centers, then use the CLI (System/Util/EnhancedReporting) to resynchronize the group or enterprise call center information to the Database Server.

11 ARCHIVING REPORTING DATA

The *CCReportingDBManagement* application on the Profile Server is responsible for archiving older data on the *CCReportingRepository*.

Data purging occurs on a daily basis based on the data retention parameters. The *purgeExecutionTime* option determines the time at which the purging task is started.

The purged data are stored on the Call Center Reporting repository. The *reportingRepositoryAddress* configuration option specifies the address of the Profile Server hosting the Repository web application.

The data retention parameters can be set for the following type of data:

- *Quarter-hourly Intervals* – The *quarterHourIntervalDataRetention* parameter determines the number of days (30 through 90) before the data is purged from the database. By default, the quarter-hourly interval data are maintained in the database for 90 days.
- *Half-hourly Intervals* – The *halfHourIntervalDataRetention* parameter determines the number of days (30 through 731) before the data is purged from the database. By default, the half-hourly interval data are maintained in the database for 90 days.
- *Hourly Intervals* – The *hourlyIntervalDataRetention* parameter determines the number of days (30 through 731) before the data is purged from the database. By default, the hourly interval data are maintained in the database for 397 days.
- *Detail Data* – The *detailDataRetention* parameter determines the number of days (30 through 90) before the data is purged from the database. By default, the detail data are maintained in the database for 30 days. Detail data include such things as disposition codes entered, unavailable codes used, call details, and so on.
- *Sign-In/Sign-Out Data* – The *signInOutDataRetention* parameter determines the number of days (30 through 397) before the data is purged from the database. By default, the sign-in/sign-out events are maintained in the database for 90 days.

The data retention parameters are configured on the Profile Server.

Example:

```
PS_CLI/Applications/CCReportingDBManagement/DataRetention> get
QuarterHourIntervalDataRetention = 90
HalfHourIntervalDataRetention = 90
HourlyIntervalDataRetention = 397
DetailDataRetention = 30
SignInOutDataRetention = 90
ReportingRepositoryAddress = http://ps.domain.net/ccreportingrepository
PurgeExecutionTime = 02:05:00
…Done
```

The *CCReportingDBManagement* application is deployed in a cluster model. However, the data-purging task needs to be performed by a single application. The applications in the cluster run an election process among themselves to ensure that one and only one application runs the task.

11.1 REPORTING REPOSITORY

The reporting repository root address used by the Call Center Reporting application is defined by the *reportingRepositoryAddress* configuration parameter. Purged data archives are stored in the following path:

`<root>/DataArchive/`

… where:

`<root>` The configured reportingRepositoryAddress.

11.2 COMPRESSED ARCHIVE FORMAT

Standard ZIP format is used as the compression archive for the per-table comma separated value (CSV) files created during a data purge interval. ZIP compression is quick and effective for the call center data set. In addition, it is prevalent in the industry and it is supported by a wide variety of applications on every common operating system (OS).

Compressed archive file names are formatted as follows:

<ver>-<yyyy><mm><dd><HH><MM>.zip

… where:

`<ver>` One or more digits that represent the database schema version from which the purged data was extracted

`<yyyy>` The four-digit year

`<mm>` The two-digit month number of the year (01 through 12)

`<dd>` The two-digit day number of the month (01 through 31)

`<HH>` The two-digit hour in 24-hour format (00 through 23)

`<MM>` The two-digit minute (00 through 59)

11.2.1 PURGED DATA FILE FORMAT

Data purged from the database are written to CSV files on a per-table basis.

Per-table CSV entries in the compressed archive are named as follows:

<table>-<ver>-<yyyy><mm><dd><HH><MM>.csv

… where:

`<table>` The name of the table in the database

`<ver>` One or more digits that represent the database schema version from which the purged data was extracted

`<yyyy>` The four-digit year

`<mm>` The two-digit month number of the year (01 through 12)

`<dd>` The two-digit day number of the month (01 through 31)

`<HH>` The two-digit hour in 24-hour format (00 through 23)

`<MM>` The two-digit minute (00 through 59)

11.2.2 CSV FORMATTING RULES

Generally accepted CSV formatting rules are used for the purged data files. These rules are:

- The first line in the file is a header row. It contains the column name of each field for each line that follows.
- Subsequent lines are formatted one line per table row.
- Each line is terminated with a carriage return and line feed pair (ASCII/CRLF=0x0D 0x0A).
- Fields are separated with commas.
- Fields with embedded commas are delimited with double-quote characters.
- Fields with double-quote characters are delimited with double quotes, and the embedded double-quote characters are represented as a pair of double quotes.
- Fields that contain line breaks are delimited with double-quote characters. At this time, no data elements are expected to contain line break sequences.

- Fields that contain leading or trailing white space are delimited with double-quote characters.

No version number is included in the file (although the file name does contain this information). Column names are ultimately identified by the column heading line at the top of each file.

Comment lines are not supported or included in the file. It is not generally acceptable to place comments in a CSV file, and applications such as Microsoft Excel do not properly handle comments.

11.2.3 FILE COLUMN DEFINITIONS

The following tables define the column definitions for each CSV file. They largely match the columns as defined in the database with irrelevant data removed.

File: ACTIVITY_AGENT_CALLS

COLUMN NAME	DESCRIPTION
INCOMPLETE	This field keeps track of the calls in progress.
AGENT_UID	This field uniquely identifies an agent in the AGENTS table.
LOCAL_CALLID	The local call identifier is reported in the call detail record (CDR).
START_TIME	This field contains a time stamp capturing the time at which the call was originated or received.
RELEASE_TIME	This field contains a time stamp capturing the time at which the call was released by the agent or remote party.
CALL_TYPE	This field contains the call type.
CC_WAIT_TIME	This field contains the amount of time that a caller waited on a call center queue before being offered to the agent. This value is in seconds and does not contain the ring time associated with the call. It is only present for an inbound call center call.
ANSWER_TIME	This field contains a time stamp capturing the time at which the call was answered by the agent or remote party.
TALK_TIME	This field contains the amount of time the call was in a connected state. It does not include the ring time or held time.
HOLD_TIME	This field contains the amount of time (cumulative) that the call was held, excluding the current holding period, if applicable.
WRAPUP_TIME	This field contains the amount of time (cumulative) that the call was in the *Wrap-up* state.
REDIRECT_TIME	This field contains a time stamp capturing the time at which the call was redirected by the agent.

File: ACTIVITY_AGENT_CALL_DETAILS

COLUMN NAME	DESCRIPTION
AGENT_UID	This field uniquely identifies an agent in the AGENTS table.
CALL_TYPE_ENUM	This is the detailed call type value.
REMOTE_NUMBER	This is the number calling the agent or the number the agent called.
NUMBER_CALLED	This is the DNIS or queue number the caller used (only valid for incoming ACD calls).
NETWORK_CALLID	This is the network call identifier as reported in the CDR.
LOCAL_CALLID	This is the local call identifier as reported in the CDR.
REMOTE_CALLID	This is the remote side call identifier used for call correlation.
SIGNED_IN	The value set to “T” indicates that the agent who offered the call was signed in to the call center.
REDIRECT_NUMBER	This is the number the call is redirected to.
REDIRECT_TO_QUEUE	The value set to “T” indicates that the call was redirected to another queue.
REDIRECT_CALL_TYPE	The value set to “T” indicates that the call was transferred within the enterprise/group.
PERSONALITY	The value set to “O” indicates that the call was originated. T indicates the call was received.
DNIS_UID	This refers to a unique DNIS in the DNIS table.
ESCALATION	The value set to “S” indicates standard escalation on the call whereas the value set to “E” indicates emergency escalation for the call.
DISPOSITION_CODES	This is a comma-separated list of disposition codes associated with the agent/call.
AGENT_SKILL	This captures an agent’s skill level in the queue.

File: ACTIVITY_AGENT_STATE

COLUMN NAME	DESCRIPTION
AGENT_UID	This identifies an agent uniquely in the AGENTS table.
AGENT_STATE	This is the state of the agent.
START_TIME	This is the time the agent entered into this state.
END_TIME	This is the time the agent transitions out of this state.
UNAVAILABLE_CODE	This is the unavailable code used in the state.
WRAPUP_CALLID	This is the call associated with the agent state.

File: ACTIVITY_AGENT_SIGNIN_SIGNOUT

COLUMN NAME	DESCRIPTION
AGENT_UID	This identifies an agent uniquely in the AGENTS table.

SIGNIN_TIME	This is the time the agent signed in.
SIGNOUT_TIME	This is the agent signed out.

File: ACTIVITY_CC_CALLS

COLUMN NAME	DESCRIPTION
INCOMPLETE	This field keeps track of the calls in progress.
SEQUENCE	This is the sequence number from the Xtended Services Interface (Xsi) event. It is used to keep track of the sequence of the last packet that updated this row.
DNIS_UID	This refers to a unique DNIS in the DNIS table. The call intended for the call center is identified on a per-DNIS basis.
LOCAL_CALLID	This is the local call identifier as reported in the call detail record (CDR).
START_TIME	This field contains a time stamp capturing the time at which the call was originated or received.
END_TIME	This field contains a time stamp capturing the time at which the call is removed from the queue.
INCOMING	This field indicates whether the call was incoming to the ACD.
REMOVE_REASON	This field contains the reason why the call is removed from the queue.
WAIT_TIME_IN_QUEUE	This is the call's wait time in the queue. This wait time includes any preserved wait time if the call was in other queues.
BOUNCED_COUNT	This is the number of times this call was bounced.
TALK_TIME	This is the time an agent spends talking on the call. It does not include hold time.
HOLD_TIME	This is the total time the call was put on hold by the answering agent.
WRAPUP_TIME	This is the time spent in after-call work (related to this call) by the answering agent.
OFFER_TIME	This is the time the call was offered to an agent who eventually answers the call.
OFFER_COUNT	This is the number of times the call was offered to agents.
OVERFLOW_DNIS_UID	This uniquely identifies the call center from where the call overflowed.
OVERFLOW_REASON_SIZE	This field keeps track of the calls in progress.

File: ACTIVITY_CC_CALL_DETAILS

COLUMN NAME	DESCRIPTION
DNIS_UID	This refers to a unique DNIS in the DNIS table. The call

	intended for the call center is identified on a per-DNIS basis.
REMOTE_NUMBER	This is the number calling the ACD.
NUMBER_CALLED	This is the DNIS or queue number the caller used (only valid for incoming ACD calls).
NETWORK_CALLID	This is the network call identifier as reported in the CDR.
LOCAL_CALLID	This is the local call identifier as reported in the CDR.
REMOTE_CALLID	This is the remote side call identifier, used for call correlation.
REDIRECT_NUMBER	This is the transfer number if the call was transferred by a supervisor.
REDIRECT_NUMBER_AGENT	This is the transfer number if the call was transferred by the answering agent.
AGENT_REMOTE_CALLID	This is the call identifier for the agent who answered the call.
AGENT_NETWORK_CALLID	This is the network call identifier for the agent who answered the call.
AGENT_SKILL	This captures an agent's skill level in the queue.

File: ACTIVITY_CC_JOIN

COLUMN NAME	DESCRIPTION
AGENT_UID	This identifies an agent uniquely in the AGENTS table. It is the ID of the agent who is joining/leaving the call center.
DNIS_UID	This identifies a call center uniquely in the DNIS table.
JOIN_STATE	This identifies the state of the agent.
START_TIME	This is the time the agent entered into this state.
END_TIME	This is the time the agent transitions out of this state.

Files: INTSTATS15_AGENT/INTSTATS30_AGENT/INTSTATS60_AGENT

COLUMN NAME	DESCRIPTION
AGENT_UID	This identifies an agent uniquely in the AGENTS table. It is the ID of the agent for whom the statistics are being stored, for the interval indicated by the start time.
START_TIME	This is the interval start time.
INBOUND_CALLS_ANSWERED	This is the number of inbound calls (excluding call center calls and internal calls) that were answered by the agent.
OUTBOUND_CALLS_ANSWERED	This is the number of outbound calls made by this agent, which were answered.
INTERNAL_CALLS_ANSWERED	This is the number of internal calls made or received by the agent, which were answered.
NUM_UNAVAILABLE	This is the number of times the agent was unavailable.
NUM_WRAPUP	This is the number of times the agent was in wrap-up.
NUM_SIGNIN	This is the number of times the agent has signed in.

COLUMN NAME	DESCRIPTION
LONGEST_INBOUND_CALL	This is the longest inbound call the agent is involved in.
LONGEST_OUTBOUND_CALL	This is the longest outbound call the agent is involved in.
LONGEST_INTERNAL_CALL	This is the longest internal call an agent is involved in.
TOTAL_INBOUND_CALL_TIME	This is the total length of this agent's inbound calls during the reporting period.
TOTAL_OUTBOUND_CALL_TIME	This is the total length of this agent's outbound calls during the reporting period.
TOTAL_INTERNAL_CALL_TIME	This is the total length of this agent's internal calls during the reporting period.
TOTAL_TALK_TIME	This is the total length of time that the agent spent talking (for ACD calls). This does not include hold time or ring time.
TOTAL_HOLD_TIME	This is the total length of time that the agent put incoming ACD calls on hold during the reporting period.
TOTAL_IDLE_TIME	This is the time during the collection interval that the agent was in the *Available* state and not on a call.
TOTAL_WRAPUP_TIME	This is the time that the agent spent in *Wrap-up* state during the reporting period.
TOTAL_SIGNED_IN_TIME	This is the time that the agent was signed in during the reporting period. This includes time spent in all agent states other than *Sign-out*.
TOTAL_AVAILABLE_TIME	This is the time that the agent was in the *Available* state during the reporting period.
TOTAL_UNAVAILABLE_TIME	This is the time that the agent was in the *Unavailable* state during the reporting period.
TOTAL_UNAVAILABLE_TIME_ NOCODE	This is the time that the agent was in the *Unavailable* state during the reporting period but the agent did not enter any code.

Deprecated Files:
INTSTATS15_AGENT_DNIS/INTSTATS30_AGENT_DNIS/INTSTATS60_ AGENT_DNIS

Files:
INTSTATS15_AGENT_DNIS_SKILL/INTSTATS30_AGENT_DNIS_SKILL/INTSTATS 60_AGENT_DNIS_SKILL

Note on Release 19 deprecated csv formats:

Statistics captured prior to a Release 19 upgrade will be exported and purged using the deprecated INTSTATSXX_AGENT_DNIS file definitions as their age exceeds the configured retention values. Eventually, all such statistics will be purged and the INTSTATSXX_AGENT_DNIS definitions will no longer be used.

Statistics captured after a Release 19 upgrade will be exported and purged using the new INTSTATSXX_AGENT_DNIS_SKILL file definitions as their age exceeds configured retention values.

Fresh Release 19 installs will never export statistics using the deprecated INTSTATSXX_AGENT_DNIS file definitions. The INTSTATSXX_AGENT_DNIS_SKILL file definitions are used exclusively.

COLUMN NAME	DESCRIPTION
AGENT_UID	This identifies an agent uniquely in the AGENTS table. It is the ID of the agent for whom the statistics are being stored for the interval indicated by the start time.
DNIS_UID	This identifies a DNIS uniquely in the DNIS table. It is the ID of the DNIS on which the statistics are based.
START_TIME	This is the interval start time.
CC_CALLS_ PRESENTED	This is the number of call center calls that were presented to the agent. A presented call is a call that is routed from a queue to an agent (rings the agent or attempts to ring the agent).
CC_CALLS_ ANSWERED	This is the number of call center calls that were answered by this agent.
CC_OUTBOUND_ CALLS_ANSWERED	This is the number of outbound call center calls placed by this agent, which are answered.
CC_CALLS_HELD	This is the number of times the agent put inbound call center calls on hold. A call center call that was put on hold twice still only increments the counter by one.
CC_CALLS_ TRANSFERED	This is the number of times the agent transferred inbound call center calls.
CC_NUM_STD_ ESCALATIONS	This is the number of times the agent escalated to a supervisor.
CC_NUM_EMG_ ESCALATIONS	This is the number of times the agent initiated an emergency call to a supervisor.
LONGEST_CC_CALL	This is the longest ACD call an agent is involved in.
LONGEST_CC_ OUTBOUND_CALL	This is the longest outbound call an agent is involved in when made as an ACD call.
TOTAL_CC_CALL_TIME	This is the total length of this agent's ACD calls during the reporting period.
TOTAL_OUTBOUND_ CC_CALL_TIME	This is the total length of this agent's outbound calls acting as an ACD during the reporting period.
TOTAL_CC_TALK_TIME	This is the total length of time that the agent spent talking (for ACD calls). This does not include hold time or ring time.
TOTAL_CC_HOLD_TIME	This is the total length of time that the agent put incoming ACD calls on hold during the reporting period.
NUM_CC_ DISPOSITION_CALLS	This is the number of calls tagged with the disposition code and completed during the reporting period. Note that if a call is tagged twice with the same disposition code, it counts as two calls.
TOTAL_STAFFED_TIME	This is the time that the agent was logged in to the ACD during the reporting period.

Files:
INTSTATS15_AGENT_DNIS_SKILL/INTSTATS30_AGENT_DNIS_SKILL/INTSTATS 60_AGENT_DNIS_SKILL

COLUMN NAME	DESCRIPTION
AGENT_UID	Identifier referring to a unique agent in the AGENTS table.
DNIS_UID	Identifier referring to a unique DNIS in the DNIS table.
AGENT_SKILL	Skill level of the agent in the call center owning the DNIS identified by DNIS_UID. If that call center is a priority-based call center, this value will be 0. If the skill level is changed in the call center during the interval, there will be a separate row for each unique skill level.
START_TIME	This is the interval start time.
CC_INBOUND_CALLS_PRESENTED	This is the number of call center calls that were presented to the agent at skill level AGENT_SKILL. A presented call is a call that is routed from a queue to an agent (rings the agent or attempts to ring the agent).
CC_INBOUND_CALLS_ANSWERED	This is the number of call center calls that were answered by this agent at skill level AGENT_SKILL.
CC_OUTBOUND_CALLS_ANSWERED	This is the number of outbound call center calls placed by this agent at skill level AGENT_SKILL that are answered.
CC_INBOUND_CALLS_BOUNCED	This is the number of times an inbound call center call bounced when offered to the agent at skill level AGENT_SKILL.
CC_INBOUND_CALLS_HELD	This is the number of times the agent put inbound call center calls, answered at skill level AGENT_SKILL, on hold. A call center call that was put on hold twice still only increments the counter by one.
CC_INBOUND CALLS_TRANSFERED	This is the number of times the agent transferred inbound call center calls answered at skill level AGENT_SKILL.
CC_LONG_HOLD_BOUNCED_CALLS	This is the number of times inbound call center calls bounced because of a long hold condition for calls answered by the agent at skill level AGENT_SKILL.
NUM_CC_DISPOSITION_CALLS	This is the number of calls, answered at skill level AGENT_SKILL, tagged with a disposition code and completed during the reporting period. Note that if a call is tagged twice with the same disposition code, it counts as two calls.
LONGEST_CC_INBOUND _CALL	This is the longest ACD for each agent, answered at skill level AGENT_SKILL.
LONGEST_CC_OUTBOUND_CALL	This is the longest outbound call an agent is involved in when made as an ACD call at skill

COLUMN NAME	DESCRIPTION
	level AGENT_SKILL.
TOTAL_CC_INBOUND_CALL_TIME	This is the total length of this agent's ACD calls, answered at skill level AGENT_SKILL, during the reporting period.
TOTAL_OUTBOUND_CC_CALL_TIME	This is the total length of this agent's outbound calls acting as an ACD at skill level AGENT_SKILL during the reporting period.
TOTAL_CC_INBOUND_TALK_TIME	This is the total length of time that the agent spent talking for ACD calls answered at skill level AGENT_SKILL. This does not include hold time or ring time.
TOTAL_CC_OUTBOUND_TALK_TIME	This is the total length of time that the agent spent talking, for outbound ACD calls made at skill level AGENT_SKILL. This does not include hold time or ring time.
TOTAL_CC_INBOUND_HOLD_TIME	This is the total length of time that the agent put incoming ACD calls, answered at skill level AGENT_SKILL, on hold during the reporting period.
TOTAL_CC_OUTBOUND_HOLD_TIME	This is the total length of time that the agent put outbound ACD calls, made at skill level AGENT_SKILL, on hold during the reporting period.
TOTAL_STAFF_TIME	This is the time that the agent was logged in to the ACD at skill level AGENT_SKILL during the reporting period.

Files: INTSTATS15_AGENT_UNAVAIL_CODE/INTSTATS30_AGENT_UNAVAIL_CODE/INTSTATS60_AGENT_UNAVAIL_CODE

COLUMN NAME	DESCRIPTION
AGENT_UID	This identifies an agent uniquely in the AGENTS table. It is the ID of the agent for whom the statistics are being stored, for the interval indicated by the start time.
START_TIME	This is the interval start time.
UNAVAILABLE_CODE	This is the unavailable code in consideration.
NUM_TIMES_CODE_USED	This is the number of times the agent used the code during the reporting period.
TOTAL_CODE_DURATION	This is the total duration the agent was using this particular code during the reporting period.

Files: INTSTATS15_AGENT_DISP_CODE/INTSTATS30_AGENT_DISP_CODE/INTSTATS60_AGENT_DISP_CODE

COLUMN NAME	DESCRIPTION
AGENT_UID	This identifies an agent uniquely in the AGENTS table. It is the ID of the agent for whom the statistics are being stored for the interval indicated by the start time.

DNIS_UID	This identifies a DNIS uniquely in the DNIS table. It is the ID of the agent for whom the statistics are being stored for the interval indicated by the start time.
START_TIME	This is the interval start time.
DISPOSITION_CODE	This is the unavailable code in consideration.
NUM_TIMES_CODE_USED	This is the number of times the agent used the code during the reporting period.

Files: INTSTATS15_CC/INTSTATS30_CC/INTSTATS60_CC

COLUMN NAME	DESCRIPTION
DNIS_UID	This identifies a DNIS uniquely in the DNIS table. It is the ID of the agent for whom the statistics are being stored, for the interval indicated by the start time.
START_TIME	This is the interval start time.
OVERFLOW_FROM_ OTHER_CC_BY_SIZE	This is the number of calls received by this destination that were transferred because of overflow size.
OVERFLOW_FROM_ OTHER_CC_BY_TIME	This is the number of calls received by this destination, which were transferred because of overflow time.
OVERFLOW_BY_SIZE	This is the number of calls that had overflow processing applied because of the maximum queue size.
OVERFLOW_BY_TIME	This is the number of calls that had overflow processing applied because of the maximum wait time.
CALLS_FORCE_FORWARDED	This is the number of calls that had the Forced Forwarding policy applied.
CALLS_TO_NIGHT_ SERVICE	This is the number of calls that had the Night Service policy applied.
CALLS_TO_HOLIDAY_SERVICE	This is the number of calls that had the Holiday Service policy applied.
CALLS_TO_QUEUE	This is the number of calls incoming to the queue.
CALLS_OFFERED_TO_AGENTS	This is the number of calls incoming to the queue, which were offered to agents.
CALLS_BOUNCED	This is the number of calls bounced while being presented to an agent.
CALLS_BOUNCED_ OUT_OF_QUEUE	This is the number of calls transferred out of the queue because of bounce processing.
CALLS_STRANDED	This is the number of calls that had stranded processing applied.
CALLS_STRANDED_UNAVAILABLE	This is the number of calls that had stranded-unavailable processing applied.
CALLS_TRANSFERRED	This is the number of calls transferred out of the queue by a supervisor.

COLUMN NAME	DESCRIPTION
CALLS_ESCAPED	This is the number of calls that were removed from the queue via the ESCAPE key.
CALLS_ABANDONED	This is the number of calls that are abandoned by the caller when calls are in queue or when calls are ringing for an agent.
CALLS_ABANDONED_AT_ENTRANCE	This is the number of calls that are abandoned by the caller when calls are in queue and being played the entrance message.
CALLS_ANSWERED	This is the number of calls answered.
LONGEST_WAITING_ TIME	This is the maximum amount of time a caller waited in the queue (including any preserved wait time from other queues) before being presented to an agent who answered the call for this reporting period.
LONGEST_ANSWERED_TIME	This is the maximum amount of time a caller waited before the call was answered for this reporting period. This is the waiting time (above) plus the ringing time before answer.
LONGEST_WAIT_ ABANDONED	This is the maximum amount of time a caller waited (including any preserved wait time from other queues) before abandoning the call for this reporting period.
TOTAL_QUEUE_TIME	This is the total amount of time that calls were in queue (includes offer time to agent) during the reporting period.
TOTAL_WAIT_TIME	This is the sum of all times that calls waited before being answered by an agent during the reporting period. The total wait time does not include the ring time.
TOTAL_RING_TIME	This is the sum of all times that calls were being presented to an agent during the reporting period. The call whisper time counts as ring time and the answer timer is started when the two parties are connected.
TOTAL_ ABANDONMENT_WAIT_TIME	This is the sum of all times that calls waited before abandoning the queue during the reporting period.
TOTAL_STAFF_TIME	This is the total length of time during which agents were joined to the queue and not signed out during the reporting period.
NUM_DISPOSITION_ CALLS	This is the number of calls tagged with the disposition code and completed during the reporting period. Note that if a call is tagged twice with the same disposition code, it counts as two calls.

Files:
INTSTATS15_CC_OVERFLOW/INTSTATS30_CC_OVERFLOW/INTSTATS60_ CC_OVERFLOW

COLUMN NAME	DESCRIPTION
DNIS_UID	This uniquely identifies a DNIS from the DNIS table for which the statistics are being stored.

START_TIME	This is the interval start time.
OVERFLOW_DNIS_UID	This uniquely identifies a DNIS from the DNIS table. It is the DNIS to which the call is being overflowed.
TOTAL_COUNT	This is the number of calls overflowed to the destination identified above.

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