CISCO SYSTEMS

Reporting Guide for Cisco Unified ICM Enterprise & Hosted

Cisco Unified ICM Enterprise & Hosted Release 7.1(1)

June 2006

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Preface

Purpose

Welcome to the Reporting Guide for *Cisco Unified ICM Enterprise & Hosted*. This guide explains how reporting data is generated and how to interpret reporting data in a Cisco Unified ICM environment. This guide also helps you understand the importance of configuration and scripting for accurate reporting data.

Audience

This guide is written for anyone who uses WebView to generate Cisco Unified ICM system reports for the purpose of monitoring contact center agent performance, customer experience, and operational effectiveness.

Contact center supervisors and administrators responsible for configuring and scripting the Cisco Unified ICM system will also find this guide useful.

New Cisco product names

Effective with this release:

- Cisco ICM Enterprise Edition is renamed Cisco Unified Intelligent Contact Management Enterprise (abbreviated as Unified ICME).

- Cisco ICM Hosted Edition is renamed Cisco Unified Intelligent Contact Management Hosted (abbreviated as Unified ICMH).

- Cisco IPCC Enterprise Edition and Cisco IPCC Hosted Edition are renamed Cisco Unified Contact Center Enterprise (abbreviated as Unified CCE) and Cisco Unified Contact Center Hosted (abbreviated as Unified CCH), respectively.

Because reporting functionality and concepts are identical for Unified ICME and Unified ICMH, this guide uses 'Unified ICM' to refer to the product.

The new product names are being introduced in phases. In the 7.1(1) release, the new names refer to the product as a whole. They are not yet used for functions and utilities in the user interface.

This guide refers to the product as a whole by its new name. It refers to components and utilities by the names that appear in the user interface.

Organization

This document contains the following sections:

- System Architecture and Reporting (page 13)

  This section gives an overview of the Unified ICM architecture in relationship to reporting.

- Understanding Reporting (page 27)

  This chapter explains basic reporting concepts. It presents the reporting data environment and data flow. It gives an overview of the WebView application. It also explains how data presented in ACD reports might differ from data in WebView reports.

- Understanding Routing and Queuing (page 43)

  This section explains how routing and queuing affect reporting data.

- Planning for Reporting (page 57)

  This section has guidelines to consider as you plan your Unified ICM deployment.

- Reporting on Agents (page 77)

  This section identifies the metrics for measuring agent performance and explains how that data is generated in WebView reports.

- Reporting on Customer Experience (page 99)

  This section explains statistics for measuring customer experience and explains how report data for tracking customer experience is generated.

- Reporting on Operations (page 109)

  This section provides statistics for monitoring operational accuracy and efficiency and explains how operational data is generated.

- Reporting in a MultiChannel Environment (page 127)

  This section explains how Media Routing Domains and Media Classes are used, how agent availability and routability is determined, and the differences in report data between voice tasks and non-voice tasks.

- Reporting Implications of Data Loss and Component Failover (page 137)

This section explains 'data holes' and what happens to reporting data when components in the Unified ICM system fail over.

- Troubleshooting Report Data (page 147)

  This section describes how to correct common reporting data issues.

- Appendix A: List of all Unified ICM Report Templates (page 159)

  This appendix lists all ICM Report Templates.

- Appendix B: Reporting Entities and Databases (page 177)

  This appendix lists the reporting entities that are configured in Unified ICM software and the corresponding database tables.

- Appendix C: Configuration and Scripting for Reporting (page 181)

  This appendix has configuration procedures and scripting guidelines for reporting entities.

Related Documentation

Refer to the following documentation for additional information:

- *Installation Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*

- *ICM Administration Guide for Cisco ICM Enterprise Edition*

- *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*

- *ICM Configuration Guide for Cisco ICM Enterprise Edition*

- *ACD Supplement Guides*Cisco Systems prepares an *ACD Supplement Guide* for each supported ACD. These guides provide specific information on configuring an ACD and making any necessary adjustments to the ACD configuration. They list the Unified ICM features that are and are not supported on the ACD, as well as restrictions, any impacts on ACD configuration and ACD scripting, and the relationships between the ACD database objects and the Unified ICM database objects.

- *Cisco ICM/IPCC Enterprise & Hosted Editions Release 7.1(1) Hardware and System Software Specifications (Bill of Materials)*

- *Reporting Guide for Cisco IPCC Enterprise & Hosted Editions*

Refer to the following documentation for WebView information:

- *WebView Installation and Administration Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*

- *WebView Reporting Online Help*

- *Template Design Guide Using InfoMaker for Cisco ICM/IPCC Enterprise & Hosted Editions*

Conventions

This manual uses the following conventions:

Convention	Description
boldface font	Boldface font is used to indicate commands, such as user entries, keys, buttons, and folder and submenu names. For example: - Choose **Edit > Find**. - Click **Finish**.
italic font	Italic font is used to indicate the following: - To introduce a new term. Example: A *skill group* is a collection of agents who share similar skills. - For emphasis. Example: *Do not* use the numerical naming convention. - A syntax value that the user must replace. Example: IF (*condition, true-value, false-value*) - A book title. Example: See the *Cisco CRS Installation Guide*.

Convention	Description
`window font`	Window font, such as Courier, is used for the following: • Text as it appears in code or that the window displays. Example: `<html><title>Cisco Systems,Inc. </title></html>` • File names. Example: `tserver.properties`. • Directory paths. Example: `C:\Program Files\Cisco`
`< >`	Angle brackets are used to indicate the following: • For arguments where the context does not allow italic, such as ASCII output. • A character string that the user enters but that does not appear on the window such as a password.

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

http://www.cisco.com/techsupport

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Product Documentation DVD

The Product Documentation DVD is a comprehensive library of technical product documentation on a portable medium. The DVD enables you to access multiple versions of installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the same HTML documentation that is found on the Cisco website without being connected to the Internet. Certain products also have .PDF versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at this URL:

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Cisco Systems Attn: Customer Document Ordering 170 West Tasman Drive San Jose, CA 95134-9883

We appreciate your comments.

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Cisco products may be modified or key processes may be determined important. These are announced through use of the Cisco Field Alert and Cisco Field Notice mechanisms. You can register to receive Field Alerts and Field Notices through the Product Alert Tool on Cisco.com.

This tool enables you to create a profile to receive announcements by selecting all products of interest. Log into **www.cisco.com** (http://www.cisco.com) ; then access the tool at **http://tools.cisco.com/Support/PAT/do/ViewMyProfiles.do?local=en**.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you will find information about how to:

- Report security vulnerabilities in Cisco products.

- Obtain assistance with security incidents that involve Cisco products.

- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

http://www.cisco.com/go/psirt

To see security advisories, security notices, and security responses as they are updated in real time, you can subscribe to the Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed. Information about how to subscribe to the PSIRT RSS feed is found at this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

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- For Emergencies only: security-alert@cisco.com

  An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- For Nonemergencies: psirt@cisco.com

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302

- 1 408 525-6532

Note: We encourage you to use Pretty Good Privacy (PGP) or a compatible product (for example, GnuPG) to encrypt any sensitive information that you send to Cisco. PSIRT can work with information that has been encrypted with PGP versions 2.x through 9.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

The link on this page has the current PGP key ID in use.

If you do not have or use PGP, contact PSIRT at the aforementioned e-mail addresses or phone numbers before sending any sensitive material to find other means of encrypting the data.

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The Cisco Technical Support & Documentation website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, at this URL:

http://www.cisco.com/techsupport

Access to all tools on the Cisco Technical Support & Documentation website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

http://tools.cisco.com/RPF/register/register.do

Note: Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting**show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly

To open a service request by telephone, use one of the following numbers:

- Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

- EMEA: +32 2 704 55 55

- USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1) - Your network is down, or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2) - Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3) - Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4) - You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco offerings. To order and find out more about the Cisco Product Quick Reference Guide, go to this URL:

  http://www.cisco.com/go/guide

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- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

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  http://www.cisco.com/packet

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

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- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:

http://www.cisco.com/en/US/products/index.html

- Networking Professionals Connection is an interactive website for networking professionals to share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:

http://www.cisco.com/discuss/networking

- World-class networking training is available from Cisco. You can view current offerings at this URL:

http://www.cisco.com/en/US/learning/index.html

Chapter 1

System Architecture and Reporting

Cisco Unified ICM software distributes incoming telephone calls and web-initiated requests to the appropriate available agent across multiple contact centers.

It does this by tracking activity on all monitored devices. This includes tracking the current call handling state of each agent, the number of agents in a particular state, and the time that agents spend in these states.

Unified ICM also collects data about the call status and activity at each contact center, such as the number of calls in progress, number of calls in queue, calls handled, and how calls were routed.

These collected data, which are essential to intelligent enterprise *routing*, are also made available for enterprise-wide *reporting* of agent performance, customer experience, and system operations.

This chapter provides a high-level overview of key system components that make up the Unified ICM architecture and explains how those components are relevant for routing and reporting.

Note: *For clarity, the content and illustrations in this chapter describe the interaction of logical components. They do not represent physical models, which are typically provisioned in a duplexed manner.*

Note also that *the terms 'call', 'task', and 'contact' are used generically and interchangeably throughout this guide to refer to traditional telephone calls as well as to communications such as e-mails and text chats from Cisco multi-media channels.*

This section contains the following topics:

Central Controller

Figure 1: Central Controller
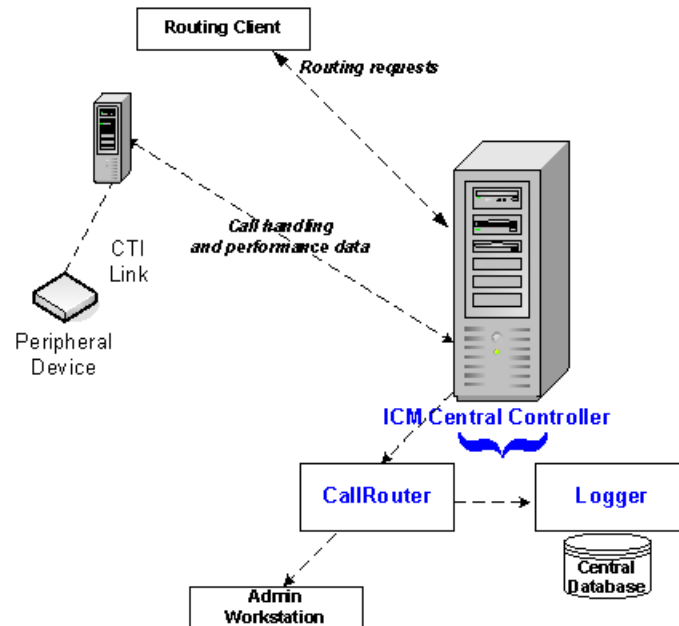
The Central Controller serves as the clearinghouse for routing and reporting data. It does this by receiving route requests, making routing decisions, and monitoring data messages about what is happening in the system.

The Central Controller is installed on one or more servers and comprises three major components: the CallRouter (Router), the Logger, and the Central Database.

Note: Although illustrations in this section show the CallRouter, the Logger, and the Central Database on the same computer, the CallRouter and the Logger can be installed on separate computers. The Logger and the Central Database are always co-located on the same computer.

- **CallRouter (Router)**

  The **Router** receives notification from a Routing Client (such as a Network Interface Controller or a Peripheral Gateway) that a call is in need of some form of routing. It then executes a user-defined script that specifies how the Routing Client is to handle the call.

  These routing scripts are created on the Administrative Workstation, are replicated and stored in the Central Database, and are loaded into Router program memory.

  In addition to receiving routing requests, the Router receives messages from all Peripheral Gateways (page 15) that monitor real-time status events in the network.

  These messages update the system's current representation of agents and system resources. Awareness of the current status of these resources is essential to the routing scripts.

The Router serves as a real-time server by immediately forwarding this data directly to the Administrative Workstations so that it is available to appear in reports. The Router also writes records to the Central Database on the Logger.

- **Logger and Central Database**

  The **Logger** receives data from the Router (such as detail messages about calls and summary messages that have been computed by the Peripheral Gateways) and serves as the interface between the Router and the SQL Server database manager.

  The following data-management processes occur at the Logger:

  – Data is written first to temporary tables.

  – Data is written to actual tables on the Central Database.

  – Historical records on the Central Database are replicated to the Historical Data Servers (page 22) on one or more distributor Admin Workstations.

  The **Central Database** serves as a buffer where data is committed to quickly support the performance of the Router. The Central Database stores the following data:

  - Configuration data, as entered and changed on the Admin Workstation

  - Routing scripts, as entered and changed on the Admin Workstation

  - Summary historical data (page 31) passed from the Router

  - Termination and Router call detail data (page 32)

  The Central Controller Database stores no real-time data.

  See also Cisco Unified ICM Data Environment (page 29).

Peripherals and Peripheral Gateways

The Central Controller obtains the routing and reporting data that it processes by communicating with each network **peripheral**.

A peripheral is a device (such as ACD, PBX, and IVR) that receives calls that have been routed by Unified ICM software. (A peripheral can also distribute calls or non-voice media contacts.)

In the illustration below, the peripheral is an ACD.

The Central Controller communicates with each peripheral through a monitoring node called the **Peripheral Gateway (PG)**.

Each call center peripheral requires a connection to a PG, and Unified ICM software has unique PGs for each device it supports. There are PGs that connect to Voice Response Units (VRUs).

There are Media Routing PGs, used to send routing requests from multichannel options that are integrated into the system.

There are also specific PGs that connect to ACDs. For example, the Aspect PG and the Definity ECS PG connect to an Aspect and Avaya ACD, respectively, for enterprise routing and reporting. IPCC Gateway is the PG used for enterprise routing and reporting to a Cisco IP-ACD such Unified IPCC Enterprise and Unified IPCC Express.

It is important to understand the type of peripheral gateway used in your deployment.

In real-time, the CallRouter receives performance and monitoring information from each PG every three seconds. The Router holds this data in memory and uses it to make routing decisions. This real-time information is constantly overwritten in the Router memory by new data.

Figure 2: Peripheral and Peripheral Gateway
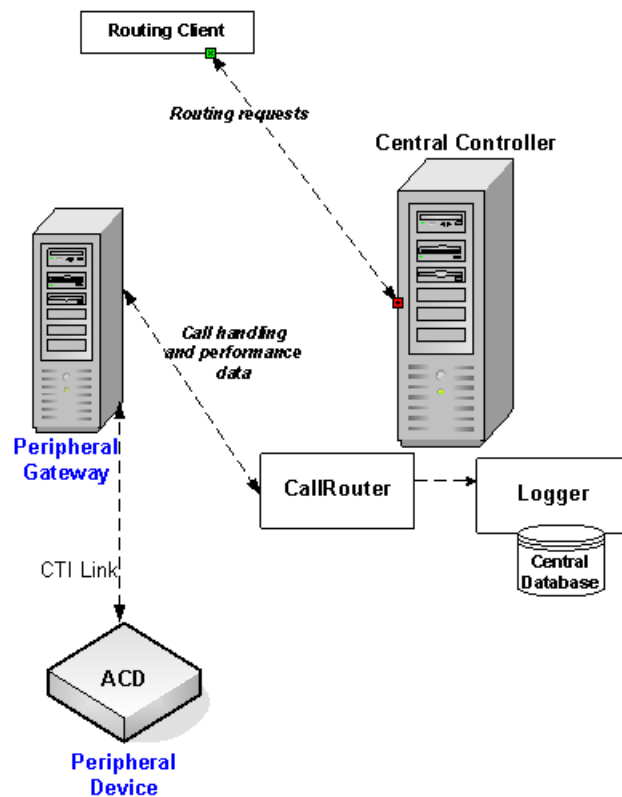
Processes on the PG interpret messages on the peripheral and provide data to the Unified ICM as follows:

- By extracting status information from the peripheral through the peripheral's proprietary CTI interface,

- By normalizing that information and converting it into the format that Unified ICM uses,

- By forming database objects (Call object, Agent objects, Routing objects, and so forth) from the information, and

- By passing the normalized data to the Router.

These processes are detailed in the next few pages.

PG Processes

Four processes on the Peripheral Gateway are critical to reporting: the Peripheral Interface Manager (PIM), the Message Delivery System (MDS), the Open Peripheral Controller (OPC), and the Peripheral Gateway Agent process (PG Agent).

Peripheral Interface Manager

The Peripheral Interface Manager (PIM) manages communication between the PG and the peripherals themselves (ACDs, IVRs). The PIM's main function is to convert peripheral-specific events and requests to an Unified ICM-compatible peripheral data stream.

The PIM supplies the Open Peripheral Controller (OPC) with Computer-Supported Telephony Application (CSTA) call event reporting messages. These messages form the basis of real-time monitoring and historical reporting. The OPC process receives the CSTA messages from the PIM and uses them to construct the actual real-time and historical routing and reporting data.

Message Delivery Service

The Message Delivery Service (MDS) manages all data flow between the Unified ICM processes within the PG. The MDS notifies connected processes of errors detected during a data flow request. In addition, it plays a key role in keeping duplexed components (such as Loggers) synchronized.

Open Peripheral Controller

The Open Peripheral Controller (OPC) is the process that takes real-time data and events from the PIM and presents these data to the Router. The OPC process forms the database objects the Router needs to route calls and monitor real-time activity on the peripheral. These include call objects, agent objects, Service objects, Peripheral device objects, routing objects, and skill groups.

To interface with the PIM, OPC uses the *OPC Interface*. The OPC Interface provides a standard communication interface between OPC and the various types of PIMs.

The OPC process outputs the data it receives from the PIM in the form of OPC Interface (OPCI) messages, which OPC uses to track the state transition of monitored calls and agents. The OPCI messages are based on ECMA Standard Protocol for Computer-Supported Telephony Application (CSTA). They also include additional components and interfaces to support real-time data feeds or other call control interfaces needed for an ACD.

PG Agent

The PG Agent process is responsible for controlling the flow of OPI messages from OPC to the CallRouter. It manages all message traffic between the Peripheral Gateway and the Agent Process on the CallRouter, which is called the Central Controller Agent (CC Agent). The protocol used between the two agent processes is the Device Management Protocol (DMP).

Open Peripheral Interface Data Elements

To interface with the Central Controller Agent, OPC uses the Open Peripheral Interface (OPI).

The Open Peripheral Interface (OPI) defines the objects that control the flow of OPCI messages from OPC to the Router. Each table in the Central Database has a set of fields that the Router uses to make its routing decisions. OPI defines tags for each of those fields.

As elements change, based on events and updates from the ACD, OPC informs the Router of the changed values based on table type, tag, and value. OPC only sends to the Router those data elements that have changed in value. Types of OPI data elements reported to the CallRouter are: Now, Half, To5, Today. See Chapter 2 (page 29) for a discussion of these data elements.

Computer Supported Telephony Application Message Example

To illustrate how Computer Supported Telephony Application (CSTA) messages from the PIM are translated into OPI data elements, it might help to examine one CSTA message: **CSTAEstablished**.

Several OPC state transitions occur when OPC receives this message. The CSTAEstablished event indicates that a call has been answered by a device (that is, an agent, trunk, or voice port).

When OPC receives this event, the following OPC state transitions take place:

- **If the call was Queued**, several database elements and call objects are changed:

  - The count for CallsQNow is reduced by one (-1).

    CallsQNow is a database element for services and routes that tracks the number of calls currently in queue at the peripheral.

  - The call object used to track the CallsQNow and CallQNowTime data elements is removed from the Call Queued object for the service and/or route associated with the call.

CallsQNowTime is a database element that records the time in seconds that all calls currently in queue to the service or route have spent in the queue.

– The CallsLeftQTo5 data element for the service and/or route associated with the call is increased by one (+1).

CallsLeftQ is a database element that provides the total number of calls to the service or route that were removed from queue during the current five-minute interval. CallsLeftQ is also used to calculate expected delay.

– LocalQTime is written in the Termination_Call_Detail table.

LocalQTime is the time in seconds that the call was in the local queue at the peripheral. The Termination_Call_Detail record contains information about how each call was handled at a peripheral. It is generated for each call that arrives at a peripheral (provided the proper monitoring is enabled for the peripheral).

- **If there is a Call Alert event**, the amount of time the call spent ringing is added to the Call object for RingTime in the Termination_Call_Detail record.

RingTime is the number of seconds that the call spent ringing at the agent's teleset before being answered.

- **If the answering device is an agent**, the following data elements and call objects are changed:

– The AgentsTalking data element for the service and/or route associated with the call is increased by one (+1).

AgentsTalking is a service and route database element that provides a count of the number of service agents currently in one of several talking states.

– The call is associated with the agent and the agent is placed in the TalkingIn state on behalf of the call. This increases by one (+1) the count for TalkingIn for the skill group associated with the call the agent is handling.

TalkingIn is a database element for skill groups that provides a count for the number of agents in the skill group currently talking on inbound calls.

– The parameters used to calculate the database element AvgSpeedAnswer are modified.

AvgSpeedAnswer is a service and route data element. It provides the average AnswerWaitTime for all calls to the service or route (that is, the average time that all calls to the service or route had to wait before being answered). The calculation for AvgSpeedAnswer is AnswerWaitTime / CallsAnswered.

– The CallsAnsweredHalf (in the real-time database tables) and CallAnsweredTo5 (in the five-minute tables), are increased by one (+1).

– The AnswerWaitTime for the call is added and written to the database.

AnswerWaitTime is the elapsed time from when the call was offered at the peripheral to when is was answered. It includes any RingTime, LocalQTime, and DelayTime (all from the Termination_Call_Detail records) associated with calls.

— RingTime, LocalQTime, and DelayTime are added to AnswerWaitTimeTo5.

— TalkTime for the call begins to be monitored.

TalkTime is a service completed call time data element. It is populated with TalkTime and HoldTime from the Termination_Call_Detail record for the call. The value is not updated in the database until any after-call work associated with the call is completed.

Two Models of Reporting

The PIM is responsible for general monitoring functions that include accessing data on the peripheral regarding agent groups, service, routes, trunk groups, and agents.

The level of data provided by the PIM is determined by the types of CTI links available on the peripheral. The PIM can retrieve ACD statistics by using an event-based CTI feed, an aggregate data CTI feed, or both. In general, an event-based CTI feed provides more data and capabilities than an aggregate data CTI feed.

Event-Based Reporting

An event-based PIM (for example, the Aspect Event Link PIM) connects to a CTI link that provides call events and agent state events.

Event-based PIMs base their data on agent and call state transitions reported from the ACD. These PIMs convert CTI events received from the switch to CSTA-based OPC API messages, which can then be forwarded to OPC. The OPC constructs the routing and monitoring data from these events.

Aggregate-Based Reporting

Some aggregate-data PIMs connect to CTI links that provide aggregate skill group, service, and route statistics. The aggregate-data PIM works by polling the ACD for certain data supported over the switch vendor's CTI link. The aggregate PIM reports to OPC those data components that are required to build the OPI data elements.

When the PIM detects a change, it updates OPC, which informs the Router of the changed values. ACD-specfic data is supported by a passed-through API defined in the OPC interfacae. OPC sends the data to the Router to be stored in the Central Database. Pass-through data requires that the database define the table format of the records.

Administrative Workstations

An Administrative Workstation (AW) is a PC that provides tools and resources to monitor the activity of the system and to manage the Unified ICM software. (Two of these tools are the Configuration Manager and the Script Editor.)

The Unified ICM software can support multiple AWs. An AW can be located at the Central Controller site, at call center sites, or both.

An AW can be one of two types: a Distributor AW or a Client AW.

A Distributor AW has these characteristics:

- Has an AW Database, which is a data repository for real time data (forwarded by the Router), configuration data copied from the Central Database, and scripts (copied from the Central Database)

- Can have an HDS Database, if the HDS option is enabled at setup

- Can also be a WebView Server (page 23)

- Has all the Unified ICM AW tools

- Acts as a data distributor to the other AW(s)

A Client AW has these characteristics:

- Has all Unified ICM AW tools

- Is not a real time distributor

- Has no databases

- Cannot be a WebView Server

- Must point to a Distributor AW/HDS for configuration and real time data information

Figure 3: Administrative Workstation
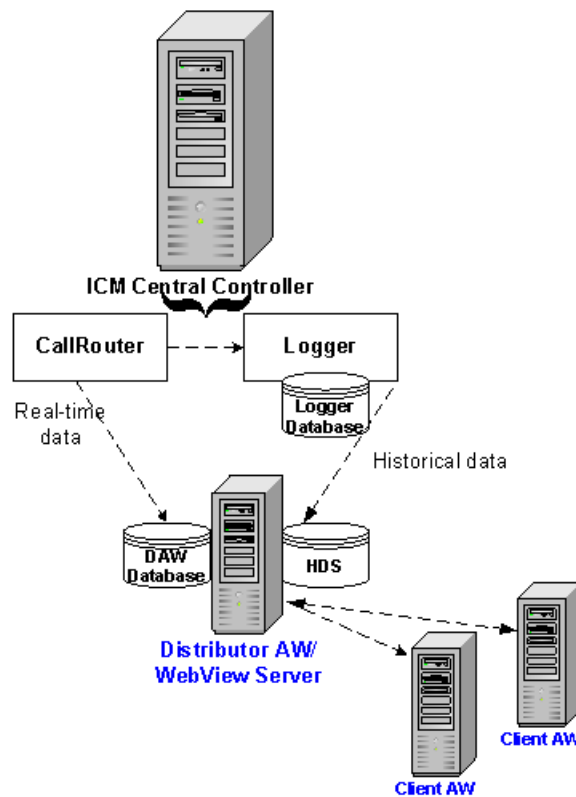
Historical Data Server

An Historical Data Server (HDS) is required if you plan to use WebView historical reports. The Historical Data Server (HDS) must reside on a Distributor Admin Workstation. It is enabled at setup and created using the ICMDBA tool.

Note that as a fault-tolerant strategy, two Distributor AWs are typically set up at a site as HDS machines, each with its own HDS database.

The HDS contains only historical data (page 31) and call detail data (page 32) forwarded from the Logger.

This historical data is not accessed directly, but rather through views that exist in the local Admin Workstation database. To retrieve information for historical reports (page 36), WebView connects to the AW where the HDS resides.

See also Planning for the HDS (page 63).

WebView Server

The WebView server consists of components that enable it to retrieve user-specified items from the databases and to display that data in one of several hundred reporting templates offered in the WebView application (page 33).

WebView is a browser-based query and presentation application that allows access to reporting data over the corporate intranet.

In a standard deployment, a single WebView server is installed co-resident with the Distributor Admin Workstation.

In a 'large-customer' deployment, multiple WebView servers can be installed on separate machines.

Regardless of the deployment model, the WebView server is configured at installation to point to, and to retrieve real-time and historical reporting data from, the databases on the Distributor AW.

To select and generate reports, reporting users (who are typically supervisors and contact center managers) log in to the WebView application on WebView client workstations (PCs with browsers).

Figure 4: WebView Server
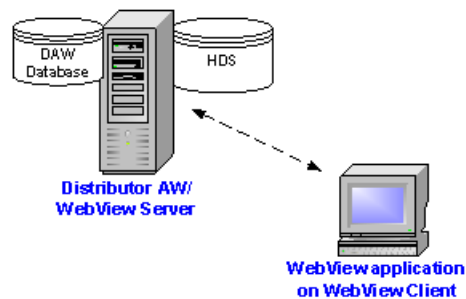
Agent/Supervisor Desktops

Unified ICM supports two server-based CTI solutions that provide desktops for contact center agents and supervisors. These are Cisco CTI Object Server (CTI OS) and Cisco Agent/Supervisor Desktop (CAD).

Certain settings must be configured on the Agent Desktops to match corresponding settings configured in Configuration Manager.

An example of Agent Desktop settings that must synchronize with Configuration Manager settings are Logout and Not Ready reason codes—if they are supported for the ACD.

Refer to your ACD supplement guide to determine if the ACD supports reason codes.

Voice Response Units (VRUs)

Voice Response Units (VRUs) are computers that run Interactive Voice Response telephony applications.

Your enterprise might implement one or more types of IVR applications on a VRU platform to serve several purposes:

- **Information gathering.** The IVR prompts for certain information through DTMF digit or ASR (Automatic Speech Recognition) collection. The information is used in the routing decision and is passed to the agent desktop.

- **Self service.** The IVR prompts for and provides certain information to the caller, such as account balance. The entire call transaction might take place within the VRU.

- **Queuing**. The VRU serves as the queue point by playing announcements or music to the caller until an agent is available.

VRUs can be integrated into Unified ICM software in several ways: at an enterprise (network) level or as a premise-based VRU for an ACD.

The way in which a VRU is integrated into Unified ICM systems affects the flow of call processing and determines the type of data Unified ICM can collect from the IVR.

For example, a Network VRU provides data used in call routing, monitoring, and reporting.

Only Service Control VRUs can be used as Network VRUs. A Service Control VRU is a VRU that implements the Service Control Interface protocol. The Service control protocol allows the VRU to utilize ICM to control call treatment and queuing. Example: provides the capability of executing VRU scripts as commanded by the ICM.

A VRU that has an interface only to the ACD has more limited capabilities.

Because VRUs support different features and behave differently, reporting data is affected by the type of VRU you have deployed in your system.

See also Understanding Routing and Queuing (page 43).
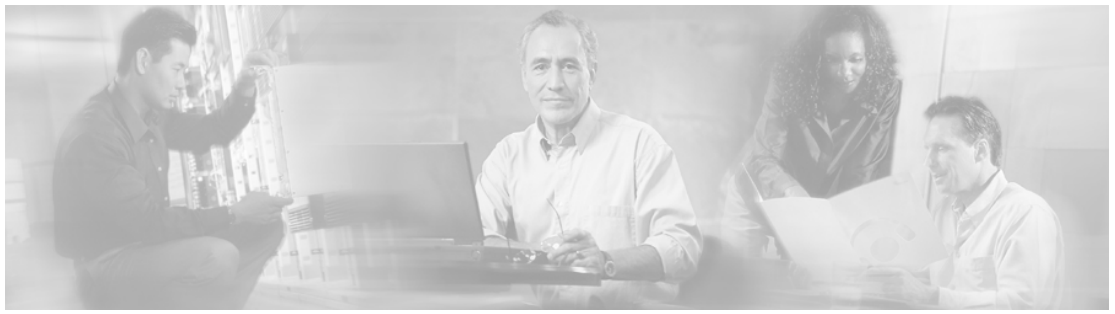
System Deployment Model

This image shows the deployment of the components covered in this chapter.

Figure 5: Diagram of System Components

System Deployment Model

System Deployment Model
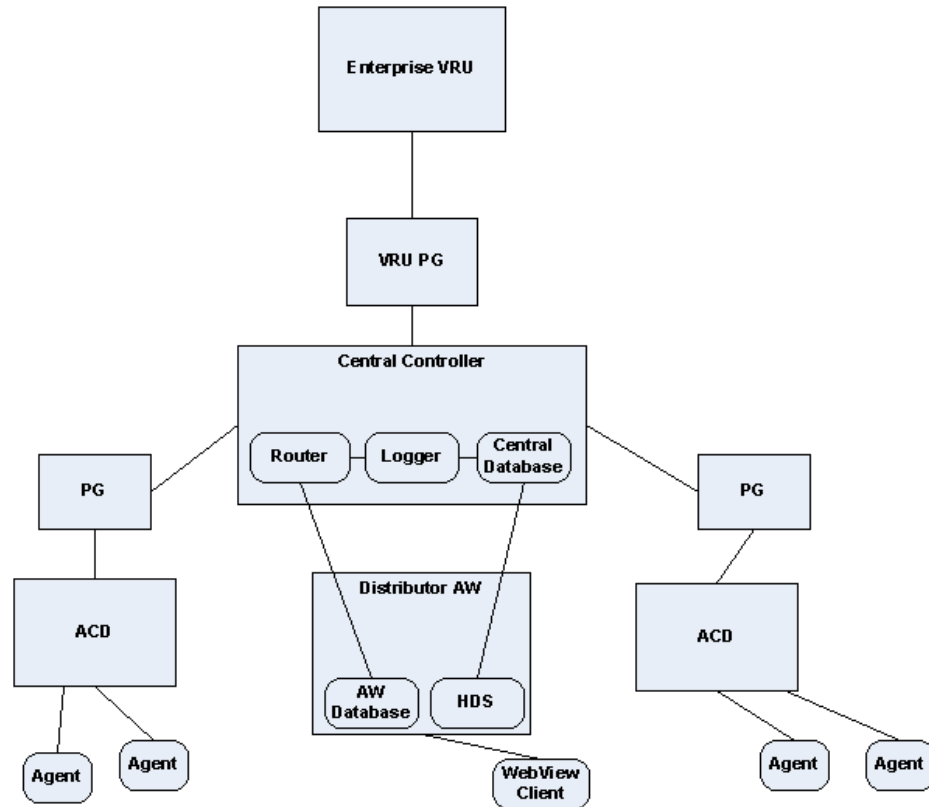
Chapter 2

Understanding Reporting

This section contains the following topics:

Reporting Concepts

This section explains several concepts used in reporting.

Concept	Definition	See Also
Call Types	A **Call Type** is a category of incoming call. Based on the Call Type, the Router selects the routing script that ultimately sends the call to an appropriate agent. Each Call Type has a schedule that determines which routing script or scripts are active for that Call Type at any time. Call Types are the highest level of reporting entity—the first reporting entity for which Unified ICM captures data. They can be used to provide cradle-to-grave reporting under certain circumstances and can also be used to provide an enterprise view of applications in the call center.	Planning for Call Types (page 61) Chapter 6, Reporting on Customer Experience (page 99) Configuring Call Types (page 185).
Services **Service Members** **Enterprise Services**	A **Service** is a particular type of processing required by the caller. Services in the Unified ICM System are configured to map to an application on the peripheral that provides the service. For	Planning for Service and Enterprise Service Reporting (page 65) Reporting on Customer Experience (page 99)

Concept	Definition	See Also
	example, a Service on Unified ICM might map to an Application on Aspect or to a VDN on Avaya. Each Service has one or more member skill groups whose agents are able to provide the service. These skill groups are **Service Members**. A skill group can be a member of more than one service. Services serve as a reporting entity to report on the applications on the ACD. An **Enterprise Service** is a configured entity that serves to group a collection of Services on different peripherals. Configuring them allows you to report on applications across all ACDs, thus providing an enterprise view.	Configuring Services and Enterprise Services (page 186)
Service Level	**Service levels** help you to set and measure goals for answering calls. Service Levels are configurable; that is you can define them in different ways, depending on the kind of information you want them to provide.	Planning for Service Level (page 67) Configuring and Scripting for Service Level Threshold and Type (page 187) Reporting on Service Level (page 105)
Short Calls	A **short call** is a call that is either abandoned very quickly or answered and terminated very quickly. By defining what you believe to be a short call, you can filter out from reporting metrics those calls that did not stay in the system long enough to be considered as abandoned or answered.	Planning for Short Calls (page 68) Configuring Short Calls (page 188) Reporting on Short Calls (page 116)
Skill Groups **Enterprise Skill Groups**	A **skill group** is a collection of agents at a single contact center who share a common set of competencies and can handle the same types of requests. An **Enterprise Skill Group** is a configured entity that serves to group a collection of skill groups on different peripherals. Configuring them allows you to report on skill groups across all ACDs, thus providing an enterprise view.	Planning for Skill Groups and Enterprise Skill Groups (page 69) Configuring Skill Groups and Enterprise Skill Groups (page 189)
Translation Routing	**Translation routing** is a Unified ICM routing concept used when a call is sent and tracked from one termination point (Network or PG) to another.	Planning for Translation Routing (page 72) Understanding Routing and Queuing (page 43)

Reporting Data

Unified ICM manages high volumes of call data, which are processed on the Central Controller. This data is also available to WebView reporting users.

This section explains how reporting data is replicated in the system and how it is presented in WebView reports.

Cisco Unified ICM Data Environment

The data that appear in WebView reports are held in three databases, all of which have the same structure.

Data Type	Central DB (Logger)	Local DB (AW)	HDS (AW)
Real-time			
Configuration and Scripting			
Historical	**	(logical views to HDS data)	

Real-time data moves from the Peripheral Gateways to the CallRouter to the local database on the Distributor AW.

Configuration Data and Routing Scripts are created and edited on the Distributor AW, are stored on the local database on the Distributor AW, and are replicated to the Central Database.

Historical Data moves from the CallRouter to the Central Database to the HDS on the Distributor AW.

** Note: The source of historical data in WebView reports is the HDS, not the Central Database.

All WebView reports are run against the local Admin Workstation database, which has views to the historical data on the HDS.

The figure below shows the flow of data in environment.

For purposes of illustration, the Distributor AW, the WebView Server, and the HDS are shown as co-located.

Figure 6: ICM Data Environment
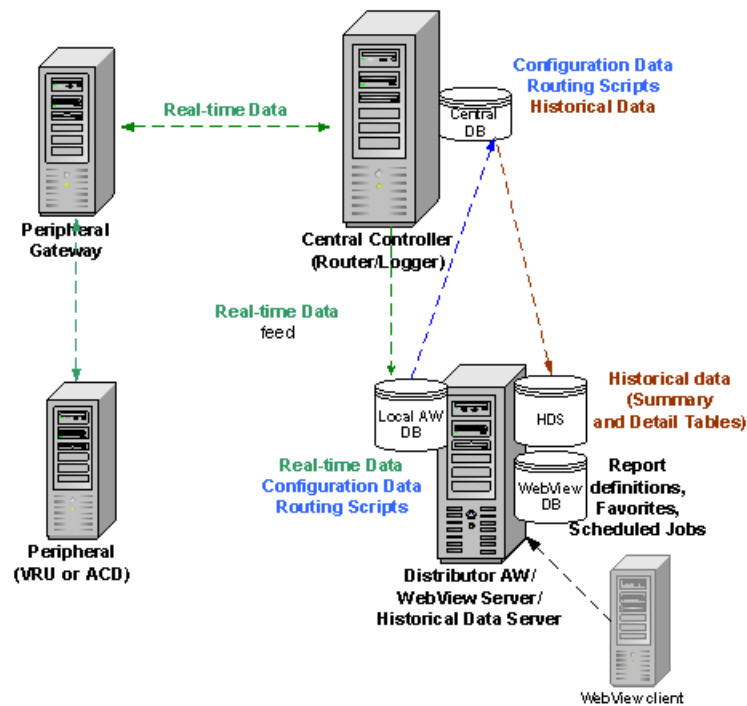
Real-Time Data

In real-time, each PG passes current status information to Unified ICM software. This current (real-time) data, which is kept in the Router's memory, includes data about agents, skill groups, services, Call Types, trunk groups, and other entities.

Every 15 seconds (by default), the Router forwards the current (*in-memory*) data to the Distributor Admin Workstation, where it is stored on a number of real-time tables in the local Admin Workstation databases and distributed to the Client AWs.

Old real-time data is constantly overwritten by new real-time data.

The illustration below illustrates how real-time data moves from the peripherals to the Router to the local database at the Distributor Admin Workstation.

Figure 7: Real-Time Data Moves to AW Local Database
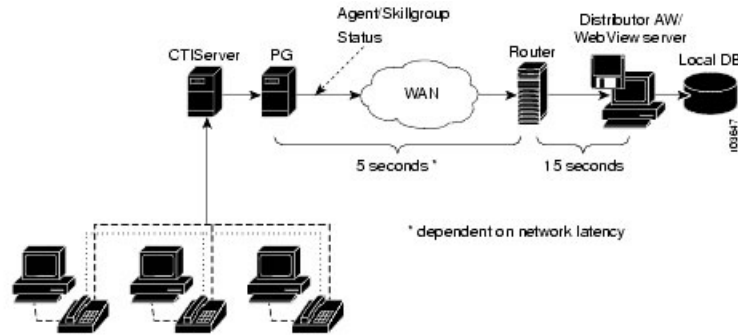
Real-time data is stored in tables in data fields that reflect four time increments, as described below.

Real-time Data Time Increments	Description
Half	"Half" values contain a value for the current half-hour. The current half-hour is defined as the time period falling between xx:00:00 and xx:29:59, or xx:30:00 and xx:59:59. For example, if it is currently xx:18:33, the CallsOfferedHalf real-time element contains a value that reflects the first 18 minutes and 33 seconds of the specific half-hour. When a new half-hour begins, at time (xx:00:00 or xx:30:00), the database element is reset to zero.
Now	"Now" contains a snapshot of the activity at a particular instant (the last check). For example, Unified ICM software tracks CallsQNow, which is the number of calls currently in queue for a service or route. When a call is answered, the CallsQNow count is reduced immediately by one (-1) because the call has left the queue. This change is seen at the next real-time update of the WebView report screen.
To5	The "To5" values track data on a rolling five-minute basis. The rolling five-minute data employs a "sliding" five-minute window. The To5 data is updated every three seconds. When the oldest three-second interval expires, a new three-second interval is added. In this manner, the window is always placed on the current five-minute interval.
Today	To arrive at values for "Today", Unified ICM software adds the values at the end of each half-hour interval since midnight. It also counts the values for the current half-hour. At the end of each half hour, half-hour data (for example CallsOfferedHalf) is summed into the Today data. At midnight, the real-time Today count is cleared in the database. Midnight is defined using the time of the peripheral.

Historical Data

Unified ICM software stores historical information in half-hour summaries. The CallRouter sends these records to the Logger, which in turn writes them to the Central Database.

A process on the Logger replicates its database tables to corresponding Half_Hour database tables on the .

These replicated HDS records are used for WebView historical reporting.

Historical Data	Description
Half Hour	Half-hour data is populated in the database only for completed half-hour intervals. The historical data fields are stored in the database with the extension "ToHalf" (for example, Skill_Group_Half_Hour.CallsHandledToHalf). These elements contain a value for a completed half-hour interval. The completed half-hour interval is the time period falling between xx:00:00 and xx:29:59, or xx:30:00 and xx:59:59. For example, if a call is offered at 15:47:00, it will be counted as an offered call in the 15:30:00 to 15:59:59 half-hour interval. Data for this half-hour interval is not written to the database until the interval is complete (for example 16:00:00). Therefore, the latest calls offered half-hour data is available for the previous completed half-hour interval (that is, the 15:00:00 to 15:29:59).
Five-minute	The five-minute data include many of the same data elements as found in the real-time data. Every five minutes, the Router copies the real-time data to the five-minute tables in the Central Database. In this way, a "snapshot" of the real-time data can be kept in the Central Database and used as historical data. Currently, WebView uses only one historical five-minute table: Routing_Client_Five_Minute. **Note:** Enabling five-minute data can have a substantial performance impact on your system. Before you enable reporting on five-minute data, consider the performance impact.

Call Detail Data

A detailed route call record is written for each call routed to a peripheral by Unified ICM, and a detailed termination call record is written for each call that is connected and then terminated.

These records are stored on the HDS in the Route_Call_Detail and Termination_Call_Detail tables, respectively.

- **Route Call Details**

  For every call routing request it handles, the Router records detailed data about the call and how it was routed. This data is referred to as *route call detail* and is stored in the Route_Call_Detail table.

  You can use the data in the Route_Call_Detail table to see the starting point of the call. For example, you can see the ANI, any CEDs entered, and the type of request made. A typical Route_Call_Detail record might describe a call that originated with a

request, had an ANI of 9785551000 and CED such as an account number. In addition, route call detail tells you how long the call was held in a enterprise queue.

- **Termination Call Detail**

  In addition, Unified ICM saves *termination call detail* for every call handled. Termination call detail contains information about how each call was handled at a peripheral.

  For example, typical Termination_Call_Detail data might show that the call was an Inbound ACD Call; that it was handled by a particular Skill Group; and that a particular agent handled the call. The Termination_Call_Detail record also describes the call's final disposition (that is, how the call terminated; abandoned in network, disconnect/drop, abandoned delay, and so forth).

Although Call Detail records are stored on the HDS in the Route_Call_Detail and Termination_Call_Detail tables, the standard WebView reports do not retrieve data from these two tables for performance reasons. To use this data, you must create custom reports (page 63).

How the WebView Application Presents Reporting Data

WebView is a browser-based query and presentation application that allows access to reporting data over the corporate intranet.

Users log in by entering the WebView URL from the browser on their PC. Once logged in, they can generate real-time and historical reports that display integrated information about various aspects of contact center operations.

WebView Templates and Categories

WebView is installed with more than 200 Cisco-provided report templates for both Cisco Unified Intelligent Contact Management (ICM) and Cisco Unified Contact Center (IPCC).

The WebView interface presents the list of available report templates, organized in categories. Each category has both real-time and historical templates, and within each category you can filter for templates based on your system type (that is, you can filter the list to show ICM templates, IPCC templates, or both).

Note: To select ICM templates, check the "ICM Templates" check box in the Webview User Interface. Deselect "IPCC Templates."

For a list of all templates in all categories, see Appendix A (page 159).

All 200-plus WebView reports derive data from a defined set of real-time database tables and a defined set of historical database tables. Although many reports contain data from identical database fields, they might present and sort that data in a distinctive format or perform slightly different calculations on it.

Template numbering indicates a 'family' of similar report data. For example:

- agent03: Agent Media Logout Status shows logon duration, logout date-time for each *agent*.

- agtper03: Agent Peripheral Media Logout Status shows logon duration and logout date-time for each *agent by peripheral*.

- agtskg03: Agent Logout Status Table shows logon duration and logout date-time for each *agent by skill group*.

- agteam03: Agent Logout Status Table shows logon duration and logout date-time for each *agent by team*.

All Fields Reports

A report template that ends with "All Fields" in its title contains all the information available to reports within a certain category.

For example, the "agtper27: Agent Peripheral Historical All Fields" template shows all the fields available for all historical reports in the Agent by Peripheral category. Most fields in an All Fields report come from a single database table.

All Fields reports are not designed or formatted for printing. You may, however, export them to one of the formats supported by WebView. Their purpose is to present all possible fields that can be included in a custom report for a report category in the event that your reporting requirements are not addressed by the system templates.

See also .

Working with WebView Reports

This is a brief overview of WebView functionality. For detailed information, see the *WebView Online Help*.

Exporting Report Data

Depending on the report displayed, you can export data from newly created or saved reports to use in other applications such as a spreadsheet or word processing program.

Note: When you export data to any format other than HTML or SQLInsert, the exported data consists of the database information from the query and not the WebView report column names.

Drill Down

Some reports offer a drill-down feature, which allows you to launch a detailed sub-report from within the current report window. Once the new report is launched, you can save it as a separate report definition. Drill-down reports have the same dates and times defined as the report from which they were launched.

For example, the Enterprise Skill Group report summarizes data from peripheral skill groups. You can drill down from an Enterprise Skill Group report to launch individual Peripheral Skill

Group reports to see details for the peripheral skill groups that comprise the Enterprise Skill Group. Drill down works similarly for Enterprise Service reports.

Printing Reports

Use the **Printable Version** button to open a report in a new window for printing.

What prints is what you see online, and many report formats are wide. You can scale a report in WebView before you click **Printable Version**. You might also want to set your printer to print in landscape orientation and to use your printer's scaling option, if available, instead of the WebView scaling.

Report Thresholds

Many reports allow you to set threshold values on one or more data values in the report. Thresholds enable you to assign color to the display that highlights when certain numeric values exceed or do not meet levels that you define. For reports that allow thresholds, you can set report thresholds for both newly created and saved reports.

Saving Report Definitions

A report definition specifies the template that the report uses to retrieve data and any data retrieval arguments that the report includes (such as dates, times, services, and skill groups). A report definition does not store actual report data. You can save a report as a report definition, and use it again as a template for other reports.

Scheduling Reports

The Job Scheduler enables you to schedule WebView reporting jobs, including printing reports and saving reports to file, to execute at a specified date and time. You can schedule a task to be executed once or repeatedly. For example, you could schedule a certain report to print every Friday at 9:00 PM. You can modify the settings of existing scheduled jobs and delete scheduled jobs that are no longer needed.

A scheduled job runs only when the user who scheduled it is logged into WebView on the machine on which the job is scheduled at the time that the job is scheduled to run.

Report Format

Reports are presented in both tabular and graphical formats.

Item and Date/Time Selections

Items

When you create a report, WebView presents a Selection list of all valid items that the report can include. For example, when you create a Call Type report, you see a list of all Call Types that have been configured.

From these lists, you can select a maximum of 1,000 items for the report.

Note that the naming conventions that you follow when configuring your systems can make your selection items easier to locate. See Planning for Naming Conventions (page 58).

Time and Date Range

When you create historical reports, WebView prompts you to select the report date and time range. The date and time range can be either relative or fixed.

Relative date and time ranges, such as Today and This Week, provide data relative to the day you run the report.

Fixed date and time ranges, such as October 3, 2005, 09:00 to October 3, 2005, 11:59, are specific dates and times that do not change if you run the report again at a different time.

WebView Real-Time Reports

For current activity on the status of certain statistics, select a real-time template. Real-time report templates offer collections of real-time data based on the report category and subject and are designated by the words "Real Time" or "Rolling 5 Minute" in their titles.

Real-time data (page 30) is collected and updated continuously and is stored in four increments in the real-time database tables on the Admin Workstation.

WebView Historical Reports

To review past performance trends, use the historical templates. These templates are designed to present prior contact center activity for a time interval that you define.

Historical reports have both Half Hour and Daily versions and are designated by the words "Half Hour", "Summary" or "Daily" in their titles.

See Historical Data (page 31).

WebView Report Categories to meet Enterprise Reporting Needs

This table shows the correlation between the WebView report categories and the type of performance they monitor.

Use this WebView Category	To Monitor
Agent (page 159)	Agent Performance and Productivity
• By Agent (page 159)	See Chapter 5 (page 77).
• By Peripheral (page 160)	
• By Skill Group (page 161)	
• By Team (page 162)	

Use this WebView Category	To Monitor
Application Gateway (page 163)	System Operations See Chapter 7 (page 109).
Application Path (page 163)	System Operations See Chapter 7 (page 109).
Outbound Option (page 164) • Import Rule (page 164) • Campaign Query Rule (page 164) • Dialer and Dialer Port (page 165)	System Operations See Chapter 7 (page 109).
Call Type (page 165)	Customer Experience System Operations See Chapter 6 (page 99) and Chapter 7 (page 109).
Peripheral (page 166)	System Operations See Chapter 7 (page 109).
Route (page 166)	System Operations See Chapter 7 (page 109).
Routing Client (page 167)	System Operations See Chapter 7 (page 109).
Script Queue (page 163)	System Operations See Chapter 7 (page 109).
Service (page 168) • Enterprise (page 168) • Peripheral (page 169) • Array (page 170)	Customer Experience See Chapter 6 (page 99).
Skill Group (page 171) • Base Only (page 171) • Enterprise (page 172) • Peripheral (page 173)	Agent Performance and Productivity System Operations See Chapter 5 (page 77) and Chapter 6 (page 109)

Use this WebView Category	To Monitor
Trunk Group (page 175) • Network (page 175) • Peripheral (page 175)	System Operations See Chapter 7 (page 109).

Comparing Data across Reports

This section explains why certain report data cannot be compared for reasons of configuration, scripting, or timing.

For another discussion of reporting data inconsistency, see Reporting Implications of Data Loss and Component Failover (page 137).

ACD and Unified ICM Reports

Data collected and presented on the Unified ICM WebView reports to measure customer experience and agent performance is expected to differ from data collected and presented in the ACD reports.

Unified ICM WebView reports give an enterprise-wide view of all your call centers. ACD reports are specific to a particular call center.

Here are some of the reasons that cause the variations:

- **Differences due to timing and transmission delays**

  All times computed in WebView reports, such as various state transitions, are based upon event arrival time at the Unified ICM Central Controller, not the actual event occurrence on the ACD. Network transmission delays cause variations in reported times between reporting data seen on WebView reports and ACD reports.

- **Differences in supported concepts and terminology**

  Differences in supported concepts and the way that similar concepts are implemented can cause variations in the data available to measure agent performance and customer experience.

  For example, while Unified ICM and an ACD might both support the concept of agent states, the ACD might not support as many state options as the Unified ICM software. In addition, some similarly named agent states might not have the same definition on both systems.

- **Differences in configuration**

  Differences in configuration on the ACD and the Configuration Manager can lead to discrepancies in reporting. If devices are not configured in Configuration Manager or if they

are configured with different settings than on the ACD, reports might not track certain statistics at all or might report different metrics.

- **Different methods of measuring and storing data**

  The Unified ICM and the ACD might differ in the way in which data segments are defined and counted. One example is how the individual agent's time is measured and stored in relation to how that agent's time spent in a conference call is measured and stored.

- **Different methodologies for sampling data**

  For example, the Unified ICM and the ACD might differ as to when an event is considered to have started and to have ended.

- **Differences in terminology and in the definitions of data elements**

  On the surface, naming conventions might appear to be the same but, in fact, are not. For example, Unified ICM and the ACD might use different criteria to evaluate what constitutes an 'offered call'.

Refer to the *ACD Supplement Guides* for details.

Real-time and Historical Reports

Data in real-time and historical records are not comparable.

Counts in real-time data (for example CallsHandledTo5) do not match up with counts in the historical half-hour records (for example, CallsHandledToHalf) because the real-time data is moved to the historical database at the end of each half-hour interval.

Consider this example: at 8:55 a call comes into the contact center and is answered by an agent.

- The real-time count for CallsAnswered increases by one (+1).

- Between 8:55 and 9:00, the real-time data shows the answered call.

- The answered call does not populate the half-hour data until 9:00, when the 8:00 to 8:29:59 half-hour interval ends.

Half-hour Boundary Issues

Counts that would typically match up for a day, such as CallsOffered and CallsHandled, might not always match up over specific half-hour intervals. This is because the counts for some data elements might be increased across half-hour boundaries.

Consider this example: at 8:55, a call comes in to the contact center and is answered by an agent. The agent completes the call at 9:05.

- In the historical database, the call is counted as offered in the 8:30:00 to 8:59:59 interval.

- The call is counted as handled in the 9:00:00 to 9:29:59 interval.

- If you run a report for the 9:00:00 to 9:29:59 interval, it appears that tasks handled does not equal tasks offered for the interval.

You also might notice that tasks offered does not equal task abandoned + tasks handled for a half-hour interval. Tasks offered reflects the number of calls and tasks that were offered to agents in this interval, while tasks handled and tasks abandoned might include calls that were offered in the last interval and completed in this interval. Some historical report templates group statistics into "Completed Tasks" to indicate that the statistics represent all calls and tasks that completed in this half-hour interval.

In general, half-hour boundary issues are reduced if you run daily reports. However, if your contact center runs 24 hours a day, you might still notice half-hour discrepancies for the 11:30:00 to 11:59:59 and 12:00:00 to 12:29:59 intervals.

Skill Group and Enterprise Skill Group Reports

You can expect double counting in Enterprise Skill Group reports when a call is queued to multiple skill groups on the same peripheral, and those skill groups are associated with the same Enterprise Skill Group.

See also Planning for Enterprise Skill Group Reporting (page 70).

Call Type and Skill Group/Service Reports

Do not compare Call Type reports to Skill Group or Service reports. Skill Group and Service reports might have statistics for calls that were routed directly to the ACD and not routed by Unified ICM.

Certain statistics are computed differently when Enterprise queue are used. See Chapter 3 (page 43).

In Unified ICME with ACD environments, services define call treatment. All skill groups belong to specific services and, therefore, skill group data rolls up to the service. Reports for services provide call treatment information for all of the skill groups assigned to those services.

Call Type reports in Unified ICM primarily provide call routing statistics and contain no other call handing statistics., unless they used translation routing. You might notice that data for a Call Type and the skill group(s) related to the Call Type through a routing script do not match. If a skill group is used in multiple scripts, reporting for that skill group includes data for all of the Call Types to which it is assigned. If a Call Type routes to multiple skill groups, data for the Call Type is distributed among those skill groups.

Base and Sub- Skill Group Reporting

Some ACDs available in the Unified ICM system support the concept of prioritized skill groups ('sub-skill groups'). Configuration Manager also supports this concept and allows you to distinguish priority levels (primary, secondary, and forth) of a base Skill Group.

If you have set up sub-skill groups, and if you select as WebView report items both the base skill group and its component sub-skill groups, some agent and skill group reporting statistics will reflect multiple counts of the same call.

For Skill Group By Enterprise reports, you must determine which skill groups to include in the Enterprise skill group. If you configured sub-skill groups from several peripherals or from different media, group only the sub-skill groups into the Enterprise Skill Group and not both base and sub-skill groups.

Comparing Data across Reports

Chapter 3

Understanding Routing and Queuing

This chapter presents basic routing concepts. It also explains the two types of queuing models for reporting and how they affect reporting metrics.

This section contains the following topics:

About Routing

When the Unified ICM software receives a routing request, it determines the appropriate destination for the call by executing routing scripts.

These scripts use real-time information about activity at the contact centers to find the destination best able to handle the call. You can monitor how the system is handling calls and can make changes to the scripts when needed, using the Script Editor.

A destination (called a *routing target*) can be a network target such an announcement or a ring, or a skill target such as an agent, a skill group, or a service. Once these targets are defined in the Configuration Manager, they can be specified in the routing script.

Pre-Routing

Pre-routing is a routing decision that is executed before the call terminates at the call center. With pre-routing, the Network Interface Controller (NIC) receives the route request from the IntereXchange Carrier (IXC) and passes the call information along to the Unified ICM software.

The Unified ICM bases pre-routing decisions on real-time data gathered by the PGs at the call center sites. Unified ICM then runs the appropriate script that defines how the call is to be routed.

A pre-routing request therefore determines the initial destination for a call.

Post-Routing

Post-routing is a routing decision made after the call has initially been processed at a VRU or call center. Post routing enables Unified ICM to process calls when an ACD, VRU, or PBX generates a route request via the PG.

Unified ICM executes scripts to process the route request and return the destination address. This directs the ACD/PBX to send the call to an agent, skill group, service or Call Type in the same call center or at a different call center. In making a post-routing decision, Unified ICM software can use all the same information and scripts used in pre-routing.

A post-routing request therefore sent by the peripheral to refine the original route or redirect the call.

Note: Your *ACD Supplement Guide* describes the features of Unified ICM post-routing available with the ACD, as well as any considerations you should be aware of when using post-routing or Translation Routing on the PG.

Translation Routing

Translation routing is the term used when additional information is sent along with a call.

This is necessary because the carrier can deliver *voice*, but has no way to deliver *data* to the peripheral.

Unified ICM software works with the PG to deliver the call to the final destination on the peripheral and to ensure that the appropriate information collected for the call is also delivered to the agent's desktop.

Once the data is delivered to the peripheral, the PG receives back information about which agent the call will be sent to.

You define Translation Routes with the Configuration Manager, using the Translation Route Wizard.

Note: Refer to your *ACD Supplement Guide* to see if your ACD supports translation routing and for any considerations you should be aware of when using translation routing on the PG.

Translation routing is always used when a call moves from one peripheral to another. A call can also be translation routed from the network.

- The term ICM TranslationRoute is used when calls are translation routed to a peripheral that is an ACD.

- The term TranslationRouteToVRU is used when calls are translation routed to a peripheral that is a VRU.

Translation routing plays a significant role in the accuracy of reporting and allows for 'cradle-to-grave' call tracking and reporting. Some reporting metrics gathered for Call Types and skill groups are applicable only if calls are translation-routed.

Skills Based Routing

Skills based routing is a routing decision whereby a call is routed to the skill group that has agents with the appropriate expertise.

About Queuing

Queued calls are calls that are being held until an agent is available.

The Unified ICM software calculates a number of call center metrics based on the time spent in queues.

It is important to understand the two models of queuing and how queuing affects reporting metrics.

ACD Queuing

ACD queues are used to queue calls on a targeted ACD and are *controlled by the ACD*.

Unified ICM might route a call to the ACD, based on knowledge gathered by the Peripheral Gateways (PGs) that a certain skill group or service at that ACD is best suited to answer the call.

Once the call arrives at the ACD, if an agent is not available, the ACD queues the call to the skill group. Optionally a call can be queued to a skill group on the ACD during agent transfers or resulting from a call treatment provided on the ACD.

Enterprise Queuing

Enterprise queues are *controlled by Unified ICM* using the Service Control Interface (SCI), irrespective of the telephony platform chosen to queue the call.

In this model, calls are held at a "network-level" VRU that has an enterprise view of available agents, based on the skill groups and services configured for the peripheral.

The following telephony platforms are supported for Enterprise queuing:

- Cisco Voice Portal and Cisco IP-IVR, when connected to Unified ICM by a VRU PG

- A third-party VRU that supports service control and is connected to Unified ICM by a VRU PG

- A VRU at the TDM Network that supports service control and is connected to Unified ICM by a NIC

Enterprise queues are an efficient way of routing a call in your enterprise network and are also a cost-effective way to save on toll charges before terminating a call on the ACD.

Reporting Considerations when using an Enterprise Queue

The use of enterprise queues affects Call Type, Skill Group, and Service reporting.

The reporting metrics that are affected include queued metrics, answered metrics, service level metrics, and abandoned metrics.

The reporting of these metrics is also affected by whether or not the call was translation-routed (page 43) when sent to an ACD.

Notes

- Some reporting metrics for skill groups and call types are applicable only if calls are translation routed.

- Translation Routing plays a significant role in the accuracy of reporting. Some reporting metrics gathered for Call Types and skill groups are applicable only if calls are Translation Routed. Calls can be Translation routed either to a VRU Peripheral or to an ACD.

- Translation Routing is primarily applicable when Unified ICM software is used for Enterprise Routing to traditional ACDs and Cisco Unified System Contact Center. This includes deployments connected to legacy ACDs using any supported TDM PG such as Aspect PG and deployments connected to Cisco Unified System Contact Center using IPCC Gateway PG. Translation Routing enables Unified ICM for cradle to grave reporting.

- For deployments where the Unified ICM provides integrations to an ACD for Enterprise Routing the following is true:

  - The Unified ICM system reports on ACD queue metrics.

  - When the Unified ICM software is used to provide initial call treatment and/or enterprise queuing, the Unified ICM software reports on enterprise queue metrics. However once the call is routed to an ACD the ACD may queue the call. In this case Unified ICM software reports on both enterprise queue and ACD queue metrics.

  - The Unified ICM system uses a Service Control VRU as the telephony platform for enterprise queuing.

- Reporting is the same whether the Unified ICM script uses a Send To VRU node or a Translation Route To VRU node.

Call Type Metrics

When a call is translation-routed:

- The *AnswerWaitTime*, *ASA*, and *Service Level* include both the time spent in the Enterprise queue and the time spent in the ACD queue.

The measurement of AnswerWaitTime for a call begins when the call is queued. The measurement of Service Level begins when the call arrives at the routing script or when its Call Type is changed.

This means that if self-service is performed on a call before the call is queued to an agent, the routing script must be set up to change the Call Type when self-service is completed. Otherwise, the time spent in self-service will negatively impact the Service Level.

- *Aabandoned* statistics are classified in three ways:

  - Calls that abandoned while ringing at the agent desktop.

  - Calls that abandoned in an Enterprise queue while waiting for an available agent.

  - Total number of calls that abandoned. This includes calls that abandoned in a VRU (prompting), calls abandoned in both Enterprise queue and ACD queue, and calls that abandoned at the agent.

    Note: Although the total abandons includes calls that abandoned at the ACD, there is no separate count for only those calls that abandoned at the ACD.

When a call is not translation-routed:

- The Call Type *Abandoned* metrics allow you to determine the number of calls that abandoned in an enterprise queue while waiting for an available agent and the number of calls that were abandoned while in self-service.

  However, they do not allow you to determine the number of calls that were abandoned after they left the VRU and before an agent answered them.

- The Call Type *Answered* metrics will always be zero and are not applicable.

- The Call Type *Service Level* metrics are not applicable.

Skill Group Metrics

When a call is translation-routed:

- The Skill Group *Answered* metrics only include time spent in the ACD queue.

When a call is not translation-routed:

- The Skill Group *Queued* metrics are applicable.

- The Skill Group *Abandoned* metrics allow you to determine the number of calls that abandoned in an enterprise queue while waiting for an available agent, but they do not allow you to determine the number of calls that were abandoned after they left the VRU and before an

agent answered them. The ACD report shows calls that abandoned after they arrived at the ACD.

- The Skill Group *Answered* metrics do not include any time spent in the enterprise queue and therefore are not applicable.

Note that none of the skill group metrics include time spent in self-service, or calls that ended during self-service. A call is not associated with a skill group until it is queued, and a call is queued after self-service is complete.

Service Metrics

If a Service Control VRU is used for VRU application, the Service metrics can be used to provide performance measures for the VRU service. The type of VRU and configuration determines the information and usefulness of the metrics reported for the VRU service.

The metrics reported for Unified ICM Services defined for the ACD peripherals do not include any time spent in the enterprise queue. Hence the service metrics are not useful when using an enterprise queue.

Understanding the Deployment for Routing and Reporting

The Unified ICM system is configured with Peripheral Gateways (PGs) that can connect to legacy ACDs and Cisco Unified CC using any of the supported TDM PGs and IPCC Gateway PGs, respectively.

The Unified ICM can also be configured with a PG that connects to a Service Control Network VRU to provide initial all treatment and queuing.

When a call comes in, it can be routed directly to the ACD, or it can be routed to the network VRU.

- **When the call is routed to the ACD**, the call treatment and queuing are provided by the ACD. It is the ACD that chooses the agent who is available and skilled to handle the call.

- **When the call is routed to a "network-level" VRU**, the VRU can be used to provide initial call treatment and queuing, The Unified ICM has an enterprise view of available agents, based on the skill groups and services configured for all sites (all ACDs).

  The call can be queued by the ICM on the VRU and is routed to an ACD when an agent becomes available at that site. The ACD offers the call to agents based on skill definitions on the ACD. If for any reason an agent is not available after the call is routed to the ACD, the ACD queues (uses an ACD queue) the call and then directs the call when an agent becomes available.

This illustration shows the Unified ICM system connected to three ACDs and to a network VRU.

Figure 8: Routing Deployment
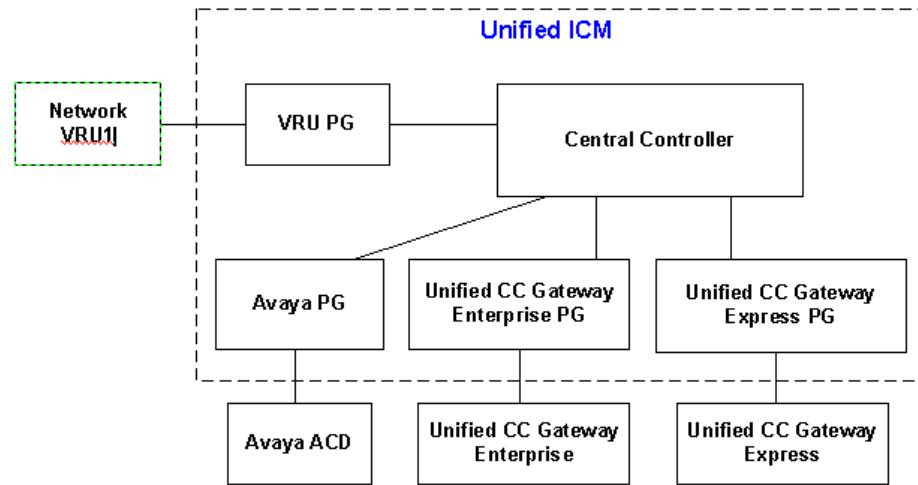
- When calls are routed to an ACD, call treatment is provided on the ACD and the ACD controls the queuing.

- Network VRU1 can be any Service Control VRU that can be used to provide initial call treatment and serve as the telephony platform for queuing calls across all call center ACDs. VRU1 can also be used for information gathering and self-service.

Routing and Scripting

Unified ICM software uses real-time reporting statistics gathered from the different peripherals (ACDs) to make routing decisions to route calls to the ACD at a site that is best suited to answer the call.

Site selection can be scripted using real time Service and Skill Group metrics provided by the Peripheral Gateway (PG). Several metrics can be used to make the selection such as Agent availability, CallsInProgress, and Minimum Expected Delay (MED) calculation.

A typical script used to route calls in this deployment is illustrated and explained below. The script is associated with a Call Type. The example is shown for an enterprise that has two sites (Boston and New York), each running a call center.

The call center at either site can provide call treatment to handle "Support" calls. "Support" is configured as a Service in Unified ICM.

Both call centers have agents trained to handle calls for either "Laptop Support" or "Server Support". These are configured as Skill Groups in Unified ICM. The relationship of the Service to Skill Groups is configured as Service Members in Unified ICM.

The Boston call center has an Avaya ACD (peripheral) connected with an Avaya PG, and New York call center has an Aspect ACD (peripheral) connected with the Aspect PG. Service and Skill Groups are configured for each peripheral in Unified ICM.

Figure 9: Sample Script for Enterprise Routing
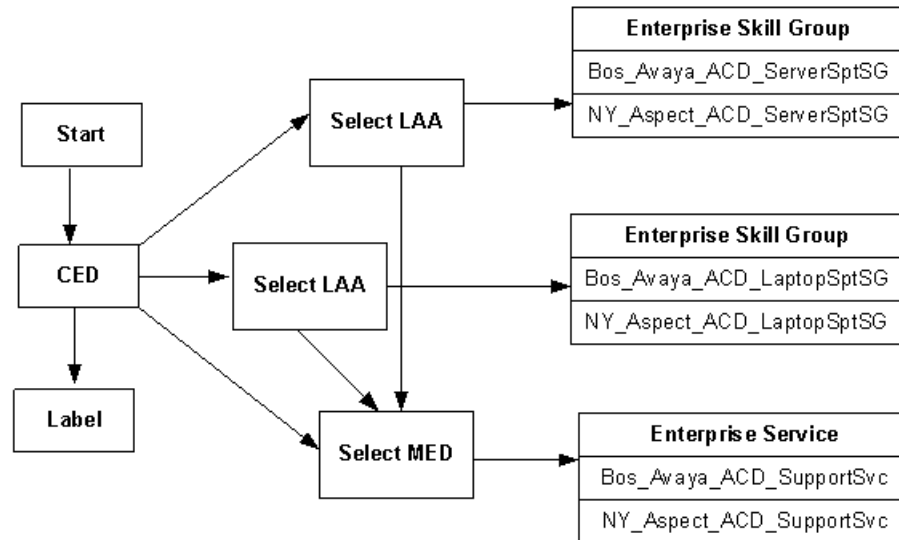
The script illustrated above shows an example of pre-routing and ACD queuing, processed as follows:

1. The script is associated with a Call Type to route Support calls.

2. The script uses caller entered digits (CED) to determine the skill group (Laptop Support or Server Support) required to handle the call and/or the Service treatment (Support) required by the caller.

3. The script uses the LAA (longest available agent) node to look for an available agent across the enterprise who can handle the call.

   Unified ICM software routes the call to the call center site that has an available agent. The ACD at that site picks an agent and assigns the call.

4. If an agent is not available, the script uses the MED (Minimum Expected Delay) node to select a site that can handle the call with minimum delay.

   Once the site with the least expected wait time is selected, the call is routed to the ACD at that site.

   After the call arrives on the ACD, call treatment is provided by the ACD. If an agent is available, the ACD assigns the call to that agent.

   If an agent is not available, the ACD will queue the call to skill group to wait for an available agent.

Reporting Considerations

This section is an overview of reporting categories to use to meet the reporting needs for your enterprise in this deployment.

Two key factors that affect reporting are:

- Are you using ACD queuing or Enterprise queuing?

- Are you using Translation Routing to route calls to the ACD?

The information is therefore presented based in four scenarios:

Scenario One: Calls are Queued on the ACD and are not Translation Routed. (page 51)

Scenario Two: Calls are Queued on the ACD and are Translation Routed. (page 52)

Scenario Three: Calls are Enterprise Queued and are not Translation Routed. (page 53)

Scenario Four: Calls are Enterprise Queued and are Translation Routed. (page 54)

Scenario One: Calls are Queued on the ACD and are not Translation Routed

For Enterprise reporting, use the following report categories:

- Use Enterprise Service (page 168) reports for an enterprise view of reporting statistics for the application.

- Use Enterprise Skill Group (page 172) reports for enterprise view of reporting statistics routed to a particular skill group.

This table shows other report categories and the statistics they provide.

Report Focus	Reporting Statistics Needed	Report Category	Key Statistics
Application	Before the call is routed to the ACD	Call Type	Number of calls routed Number of calls received Number of calls that encountered an error or received default treatment
	After the call is routed to the ACD, calls queued on the ACD	Peripheral Service Enterprise Service	Queue Statistics (ACD Queue) Abandons

Understanding the Deployment for Routing and Reporting

Report Focus	Reporting Statistics Needed	Report Category	Key Statistics
			Service Level RONA
	After the call is answered by agent	Peripheral Service Enterprise Service	ASA Calls Handled Avg. Handle Time Transfers
Skill Group	For calls routed to skill groups and queued calls	Peripheral Skill Group Enterprise Skill Group	Queue Statistics (ACD Queue) Abandons RONA
	After the call is answered by agent	Peripheral Skill Group Enterprise Skill Group	ASA Calls Handled Avg. Handle Time Avg. Talk Time
	Agent Info	Peripheral Skill Group Enterprise Skill Group	FTEs and Percent Utilization
Agents	Agent Info	Agent (all four subcategories)	Agent's current state Duration in state Agents logged out Calls Handled Avg. Handle Time Avg. Talk Time

Scenario Two: Calls are Queued on the ACD and are Translation Routed

The report categories to use are the same as for , with the additional statistics available for Call Type (Cradle to Grave):

Report Focus	Reporting Statistics Needed	Report Category	Key Statistics
Application	After the call is routed to the ACD, calls queued on the ACD	Call Type	Abandons
	After the call is answered by agent	Call Type	ASA Calls Handled

Note: Call Types cannot report on *queued metrics* for calls queued on the ACD (ACD queue), such as the number of calls queued on the ACD.

Scenario Three: Calls are Enterprise Queued and are not Translation Routed

For Enterprise reporting, use the following report categories:

- Use Enterprise Service (page 168) reports for an enterprise view of some reporting statistics for the application.

- Use Call Type (page 165) and Enterprise Skill Group (page 172) reports for an enterprise view of queued and abandon in queue statistics for the application and skill group respectively.

- Use Enterprise Skill Group (page 172) reports for enterprise view of reporting statistics when routed to a particular skill group.

Skill Group and Agent reporting are the same as for Scenario One (Calls Queued on the ACD that are not Translation Routed) (page 51).

This table shows other report categories and the statistics they provide.

Report Focus	Reporting Statistics Needed	Report Category	Key Statistics
Application	Before the call is routed to the ACD, queued in the enterprise	Call Type	Number of calls routed Number of calls received Number of calls that encountered an error Enterprise Queue Statistics and Abandon in Enterprise Queue
	After the call is routed to ACD	Peripheral Service Enterprise Service	Abandons RONA
	After the call is answered by the agent	Peripheral Service Enterprise Service	Calls Handled Avg Handled Time

Report Focus	Reporting Statistics Needed	Report Category	Key Statistics
			Transfers

Note: Skill Groups report on Enterprise queue statistics.

Also see Reporting Considerations when using an Enterprise Queue (page 46).

Scenario Four: Calls are Enterprise Queued and are Translation Routed

For Enterprise reporting, use the following report categories:

- Use Call Type (page 165) reports for enterprise view of reporting statistics for the application.

- Use Call Type (page 165) and Enterprise Skill Group (page 172)reports for enterprise view of queued and abandon in queue statistics for the application and skill group respectively.

- Use Enterprise Skill Group (page 172) reports for enterprise view of reporting statistics when routed to a particular skill group.

Skill Group and Agent reporting are the same as for Scenario One (Calls Queued on the ACD that are not Translation Routed) (page 51).

This table shows other report categories and the statistics they provide.

Report Focus	Reporting Statistics Needed	Report Category	Key Statistics
Application	Before the call is routed to the ACD, queued in the enterprise	Call Type	Number of calls routed Number of calls received Number of calls that encountered an error Queue Statistics and Abandon in Queue
	After the call is routed to the ACD	Call Type	Abandons Service Level **Note:** RONA calls are reported on services and are not available for Call Types.
	After the call is answered by agent	Call Type	Calls Handled Avg Handled Time ASA

Note: Skill Groups report on Enterprise queue statistics.

Also see Reporting Considerations when using an Enterprise Queue (page 46).

Understanding the Deployment for Routing and Reporting

Chapter 4

Planning for Reporting

There are guidelines to consider while planning your system for effective reporting.

This section contains the following topics:

Planning for Reporting at Unified ICM Setup

Below is a list of Unified ICM setup options that have a bearing on reporting. For complete details, refer to the *ICM Installation Guide for ICM Enterprise Edition* and the *WebView Installation and Administration Guide*.

Make sure that the administrator responsible for setup has performed the following tasks:

- Defined the Distributor Admin Workstation that will host the reporting databases.

- Created the Historical Data Server (HDS) (page 22).

- Installed the third-party software on the WebView server (page 23).

- Installed the WebView application and selected the correct database locations.

- Planned for database sizing, based on your reporting needs. See the *Cisco ICM/IPCC Enterprise & Hosted Editions Release 7.1(1) Hardware and System Software Specifications (Bill of Materials)* for specifications on database size.

- Selected Outbound Option Support—if you intend to use the Outbound Option templates (page 164).

- Purchased Sybase InfoMaker and installed it on a machine where WebView is *not* installed—if you plan to design custom reporting templates (page 63).

Planning for Configuration and Scripting

You can report on contact center data as soon as the System Administrator has (1) completed configuration and has (2) created routing scripts, in that order.

About Configuration

Use the Configuration Manager tool in the ICM Admin Workstation group to enter and update information about the agents, skill groups, services, Call Types, and devices that are part of your enterprise.

For error-free routing and accurate reporting, it is crucial to configure all peripheral targets—that is, any and all destinations to which a call can be sent. WebView reports show no data for devices that are not configured and monitored.

Configured entities are stored as records in database tables. For Unified ICM Configuration, entities include agents, Call Types, dialed numbers, labels, routes, translation routes, trunks, trunk groups, and network trunk groups, services and service members, skill groups, peripheral monitors, and targets.

See Configured Entities that Capture Reporting Data (page 177) for the full list of the entities.

Configuration data are stored in the Central Controller database. When you apply a change to the Configuration Manager, it is immediately applied to the Central Database on the Logger and copied to all local AW databases.

Also see Appendix C (page 181) for configuration procedures relevant to reporting.

Configuration on the ACD

Not all Unified ICM Configuration entities are supported on all ACDs.

For all Peripheral Gateway types per ACD type that Cisco supports, there is a published ACD Supplement document. You can find these ACD Supplements on **www.cisco.com** (http://www.cisco.com) under Technical Support and Documentation.

To the extent that configurations *do* correlate, it is critical to match them exactly.

Please read the appropriate *ACD Supplement Guide* to ensure that the configuration settings on the ACD operate properly with the Unified ICM software.

ACD Supplement guides provide the following information:

- Unified ICM features that the ACD does, and does not, support

- The ACD Configuration

- Unified ICM Configuration with respect to the specific ACD

- Any configuration and scripting issues you need to be aware of

- Reporting caveats specific to the ACD

The *ACD Supplement Guides* direct you to make configuration changes *other than deletions* on the ACD first, and then in Configuration Manager. This ensures that the PG is aware of the updates.

For deletions, first remove the references to those objects in Unified ICM, then delete the objects from the ACD. This ensures that the deleted objects are not used in routing decisions.

If you make configuration changes on the ACD, make sure they are reflected in the Unified ICM. For example, if you configure a new agent, skill group, or route on the ACD, make a corresponding change in Configuration Manager.

Planning for Naming Conventions

Before configuring the system, consider how you want to name the reporting entities that you will be configuring—such as peripherals, skill groups, and agents.

The configured names for these entities appear in the WebView user interface as selection criteria ('items') for reports. When you generate a WebView report, you can select up to 1000 items from a list. If you are running an agent report, you can select from a list of agents; if you are running a skill group report, you select from a list of skill groups, and so forth.

Using meaningful naming conventions can help reporting users interpret and locate the appropriate report selection items.

Suggestions are to append the same prefix for all items associated with a particular site and to use descriptive text to identify Call Types.

About Scripting

After your configuration is defined, you create routing scripts using the Script Editor.

Unified ICM software uses routing scripts to determine the best destination for a call by assessing the current information extracted by the PGs regarding call center activity.

The call flow defined in the script determines the data that is gathered for reporting.

Routing scripts contain instructions that can:

- Examine the call information provided by the routing client and use that information to classify the call as a particular Call Type.

- Determine the best destination for the call.

- Direct the call to an appropriate routing target; for example, to an individual agent, to a skill group, or to an appropriate announcement.

- Post-route transfers and conferences from the ACD to the Unified ICM.

Routing scripts are a representation of your business rules.

- You can create a specific set of scripts to be executed for each Call Type, such as Sales or Support. For more granular reports, you might want to create multiple scripts; for example, you might create a script for initial call classification and also create scripts that route calls that are sent to particular services or skill groups on different ACDs.

- You can schedule different scripts to be used at different times of day or different days of the week and year for each Call Type.

- Use ICM dialed numbers to direct calls to scripts that handle transfers.

Routing script data are stored in the Central Controller database. You cannot alter scripts directly. Instead, you create and maintain routing scripts with the Script Editor, one of the tools on the ICM Admin Workstation.

Changes that you make are applied to the AW local database, immediately update the Central Database on the Logger, and are copied to all local AW databases.

Scripting on the ACD

Refer to your *ACD Supplement Guide* for any modifications you need to make in your ACD scripts. For example, you might need to modify your ACD scripts to include SEND INFO commands that notify the Unified ICM when a call state transition occurs.

Also, ensure that the script the ACD follows to route the call to the appropriate agent takes into account the Services and the Service Members (skill groups) that are configured in Unified ICM.

Planning for Agent Reporting

Do you want to view agent data in reports?

Viewing agent data in reports is a configurable option in Unified ICM.

If you plan to monitor agent activity using ACD reports only, you do not need to enable agent reporting in Unified ICM. However, if you intend to use the WebView agent reports, you *must* enable agent reporting in the Configuration Manager.

Note: In a large enterprise, with multiple sites and multiple skill groups, and with agents at each site who are assigned to more than one skill group, enabling Unified ICM agent reporting creates many records and can have a considerable impact on the database.

Do you want to enable the agent state trace option?

This option allows you to track every state an agent passes through. You might do this if you have concerns about the productivity or performance of one or more agents. It is an option you enable on a per-agent basis.

Note: *Enabling agent state trace for many agents can impact system performance and database sizing, as the option causes more records to be written to the database. If you notice a performance problem, consider disabling agent state trace or enabling it for certain agents only.*

Do you want to organize agents into supervised teams?

This option enables individuals who are configured as supervisors to log in to WebView to run reports for the teams they supervise.

See also

Planning for Call Types

A Call Type is a category of incoming call. Based on the Call Type, the Router selects the routing script that ultimately sends the call to an appropriate agent. Each Call Type has a schedule that determines which routing script or scripts are active for that Call Type at any time.

There are two classes of Call Types: voice (phone calls) and non-voice (for example, e-mail and text chat). Voice Call Types are categorized initially by the dialed number (DN) and,

optionally, by the caller-entered digits (CED) and the calling line ID (CLID). Non-voice Call Types are categorized initially by the Script Type Selector and, optionally, Application String 1 and Application String 2.

Call Types are also the highest level reporting entity. Configuring a separate Call Type for each type of call treatment that you offer can eliminate the need for most custom reporting.

Creating Call Types that correlate to the type of service the caller wants and changing Call Types during the script result in reporting statistics that reflect the customer's experience.

See also

- Configuring Call Types (page 185)

- Call Type Reports (page 101)

What Call Types Might You Need?

Based on the deployment model, scripting, queuing, and on whether or not calls are translation-routed, you can define Call Types to:

- Provide enterprise-wide routing statistics for the call center, such as the number of calls to be routed to different peripherals or the number of calls that encounter routing errors.

- Group calls to report on certain types of activity that occur within the contact center. For example, you might create separate Call Types for calls that redirect on no answer (RONA) or calls that are transferred to another agent.

- Report on statistics for a self-service VRU application.

Consider the Call Types you need to create to meet your reporting needs.

Do you want to configure a separate Call Type associated with call transfers and conferences? Doing so enables you to direct the transfer to a different routing script.

Do you plan to report on individual transactions within Network VRU Self-Service or Information Gathering applications? If so, you might configure a separate Call Type for each transaction.

Do you want to separate Information Gathering VRU metrics from queue metrics?

If so, you might configure a separate Call Type for queuing.

Do you plan to use Outbound Option? If so, create a separate Call Type for Outbound Option calls. Outbound Option uses a routing script in addition to a physical call to reserve agents. WebView Call Type real-time and half-hour reports contain data for the Call Type associated with the routing script.

Changing Call Types

Call Type can be changed throughout the life of a call to direct the call to a new routing script or to gather report metrics for different legs or transactions.

Reasons for changing the Call Type within a routing script include the following:

- In a Self-Service network VRU application script, you might change the Call Type at specific points in the script to indicate that a transaction has been completed. For example, if the customer is calling a bank and successfully checks his or her account balance using a Self-Service script, you might want to change the Call Type to indicate that the account balance transaction has completed and a new transaction has begun. In this case, you would create a Call Type for each transaction on which you want to report.

- You might change the Call Type when a call enters a queue at the end of an Information Gathering VRU application in order to separate Information Gathering and queuing metrics. In this case, you would create Call Types associated with the Information Gathering applications and Call Types associated with queuing.

Planning for Custom Reporting

To determine whether you require custom templates to meet your reporting needs, decide what data you need and review the data available through WebView report templates (page 159).

If the standard 'out-of-the-box' templates do not meet your needs, you can create custom report templates.

Note: Note that standard WebView reports do not contain call detail data (page 32) stored in the Route_Call_Detail and Termination_Call_Detail tables. Custom reports are required for displaying this data.

Note also that custom reports created for Termination Call Detail and Route Call Detail records are more resource-intensive and could therefore decrease the performance of the database or of WebView.

Refer to the *Template Design Guide Using InfoMaker* for more information about creating custom reports.

Planning for the HDS

Follow these guidelines to ensure that your Historical Data Server (page 22) is configured to meet reporting needs:

- Decide how many Historical Data Servers you require.

The number of Historical Data Servers that you configure depends on how long the HDS will take to back up and on your reporting demands. If you are storing large amounts of data, backup might take several hours. Do not run historical reports on an HDS while it is backing up, as this might decrease performance. If you want to run reports while the HDS is backing up, configure at least one additional HDS to use to run WebView reports.

See the *Cisco ICM/IPCC Enterprise & Hosted Editions Release 7.1(1) Hardware and System Software Specifications (Bill of Materials)* for guidelines on Reporting Users per HDS and HDS capacity.

- Determine the size of the HDS.

  The size of the database depends on the size of your configuration and on how long you want to retain data.

  Configuration that impacts the size of the HDS includes the number of Call Types, skill groups, agents, skills per agent, routing clients, trunk groups, services, peripherals, scripts, calls routed daily, and calls terminated daily.

  The larger the configuration, the bigger the HDS must be to store data. For example, the historical Call Type database tables store data for each Call Type for each five minute and half-hour interval.

  The amount of time that you want to retain data on the HDS also affects database size. Decide how long you want to retain reporting data before it is automatically purged from the databases. Data beyond the configured retention time is purged each day at 12:30 PM.

  You can use the Database Administration (ICMDBA) tool to estimate the sizes of your databases. The tool prompts you for your configuration information and the amount of time that data is retained in the databases.

- Determine how you want to back up the HDS.

  You can back up the HDS either while the HDS is running or while it is offline (generally when the contact center is closed or during a time with low call volume).

  Performing a backup during peak hours while the HDS is running can impact performance, especially if you are backing up a large amount of data. While the HDS database is being backed up, new data from the Logger is stored in the transaction log. If the transaction log reaches maximum capacity before the HDS has completed the backup, updates to the database stop until an administrator manually empties the log.

  It is preferable to back up at a regularly scheduled time when the contact center is not busy. You can also take the HDS offline and perform a backup. However, the HDS is not available for reporting when it is offline. If you plan to back up the HDS database while offline, you might want to configure a secondary HDS to use for reporting during the backup interval.

- Determine the HDS backup schedule and the number of days for which data is retained on the Logger.

  You can configure the number of days for which data is stored in the Logger Central Database and the HDS.

The Logger stores data for less time than the HDS. For example, you might store two weeks of data on the Logger and a year of data on the HDS. Configure the amount of time that data is stored on the Logger in relation to the schedule for HDS backups to ensure that you do not lose data in the event that the HDS goes offline.

Also see Data Flow from Logger to Historical Data Server (page 137).

Planning for Enterprise Routing and Enterprise Reporting

When Unified ICM receives a route request for a call, it first determines the Call Type, finds the script currently scheduled for that Call Type, and routes the call to the desired destination (for example, to a service, skill group, agent, or announcement).

The Call Type can be changed throughout the life of a call to direct the call to a new routing script and to gather report metrics for different legs or transactions.

For legacy ACDs where Unified ICM software is used for Enterprise Routing, consider the following to ensure that your reports contain correct and relevant metrics:

- Ensure all calls are routed by the Unified ICM software.

- Deploy a Service Control VRU to provide treatment and to queue calls in the enterprise while waiting for an available agent in a skill group. Queue calls to skill groups in Unified ICM (Enterprise queuing) for all call centers. Avoid using ACD queues (site queues).

- Use Translation Routes for routing calls to the legacy ACD. Always use translation routing when routing calls between ACDs.

- Once the call is routed and is terminated on the legacy ACD, have no treatment at the ACD.

- Avoid having agents transfer calls directly to other agent stations or agent IDs. Instead, use post routing capabilities to provide treatment and queuing for transferred calls.

- Avoid handling Redirection on No Answer (RONA) situations on the ACD, where possible. Instead, use post-routing capabilities to have the RONA calls routed by Unified ICM.

Also see Chapter 3 (page 43).

Planning for Service and Enterprise Service Reporting

Service refers to a particular type of processing required by the caller.

Services in the Unified ICM System are configured to map to an application on the peripheral that provides the service. For example, a Service on Unified ICM might map to an Application on Aspect or to a VDN on Avaya.

Every call routed to a peripheral by the Unified ICM software must have an associated peripheral Service.

A single peripheral might have several services defined such as Sales, Technical Support, and Customer Accounts.

You can determine the service level (page 67) for a service as well as how abandoned calls (page 103) impact the service level.

The application on the peripheral provides the call treatment, and Service reports are used to measure the customer experience across peripheral services.

To report on individual Services at a local peripheral, such as Sales or Technical Support Services, use the WebView Services by Peripheral report category (page 169).

Service Members

Each Service has one or more skill groups whose members can provide the service. These skill groups are "Service Members". A skill group can be associated with (that is, can be a member of) more than one service.

Service and Service Members assist Unified ICM software in tracking how scripts on an ACD are routing calls.

It is important to configure Service Members in Configuration Manager to accurately reflect their scripting in the ACD.

Enterprise Services

An Enterprise Service is a collection of services on different peripherals.

While an individual service is associated with a specific peripheral, an Enterprise Service can span several services from different peripherals in the contact center.

Creating and reporting on Enterprise Services gives contact center managers a consolidated measure of customer experience across similar services configured in different ACD peripherals distributed throughout the contact center.

Note: Avoid queuing to multiple services on the same or on several peripherals. Instead, configure and queue to Enterprise Services.

To run Enterprise Service reports, use the WebView Services by Enterprise report templates (page 168).

See also

- Configuring Services and Enterprise Services (page 186)

- Service Reports (page 101)

Planning for Service Level

Service level help you to set and measure goals for answering calls. Service levels are configurable.

Two important configuration parameters contribute to the calculation of Service Level:

See also:

Service Level Threshold

The service level threshold is the number of seconds you set as a goal for connecting a call with an agent.

For example, your goal might be to answer 80% calls within two minutes. In this case, you would set the Service Level Threshold to 120 seconds. Reports show you the percentage of calls that are answered within that time threshold, enabling you to see whether you are meeting your goal.

This value is configured at the peripheral and at the service. Typically, these values match.

- When you set up a peripheral, you can specify a default service level threshold for all services associated with that peripheral.

  Different peripherals use slightly different formulas to calculate service level. Unified ICM software provides a uniform calculation across all peripherals.

- When you set up each service, you can choose to either use the default threshold set for the peripheral or specify a threshold for the service itself in the Service Level Threshold field.

  If you do not specify a service level threshold for an individual service, the default threshold you specified for the peripheral is used.

- If you are using translation routing and doing enterprise queuing, you might also want to configure service level for call types. You can configure it globally, or you can configure it for individual call types.

Service Level Type

Service level type determines how abandoned calls affect service level.

You can choose not to track Abandoned Calls by simply leaving the Abandon Wait Time field blank.

However, if you establish a value for abandoned calls, you can configure them to affect the service Level in one of three ways:

- They can be ignored (and removed from the number of calls you had the opportunity to answer).

- They can affect the Service Level negatively (and be treated as lost opportunities).

- They can affect the Service Level positively (and be counted as answered calls).

Planning for Short Calls

A short call is a call that is either abandoned very quickly or answered and terminated very quickly. By defining what you believe to be a short call, you can filter out from reporting metrics those calls that did not stay in the system long enough to be considered and counted as events.

The Abandoned Call Wait timer, set at the peripheral, defines the threshold under which the abandoned call will not be counted. If the abandoned threshold is lower than the service level threshold, the call will not affect the Service level. If call wait time is higher than this threshold, the call is counted as Offered.

The Answered Short Call threshold, also set at the peripheral, defines the time under which the call will not be counted as answered and will not impact agent performance.

If you plan to use Short Calls to filter out false abandons or to detect when calls are answered and terminated too quickly to be considered handled, consider the following:

- You can configure abandoned short calls globally for all Call Types.

- You can configure abandoned short calls for the peripheral. These are tracked for the services that are configured for that peripheral.

- You can choose not to count any abandoned calls as short calls regardless of how quickly they abandon.

- You can choose how abandoned calls affect the Service Level—negatively, positively, or not at all.

- You can configure answered short calls for agents and skill groups.

- You cannot configure answered short calls for Call Type.

- You can choose not to count any answered calls as short calls regardless of how quickly they terminate.

See also:

- Configuring Short Calls (page 188)

- Reporting on Short Calls (page 116)

Planning for Skill Groups and Enterprise Skill Groups

A skill group is a collection of agents at a single contact center who share a common set of competencies and can handle the same types of requests.

Each skill group belongs to a Media Routing Domain (page 128).

You can report on agents individually or report on all of the agents in one or more skill groups to monitor agent performance.

You can also report on skill groups as a whole to see how one skill group is performing compared to other skill groups. You might use this level of reporting, for example, to see if calls are being distributed evenly by your routing scripts and configuration.

See also:

- Configuring Skill Groups and Enterprise Skill Groups (page 189)

- Reporting on Skill Group Operations (page 109)

- Reporting on Agent Activity in Skill Groups (page 79)

About Base Skill Groups and Sub-Skill Groups

Sub-skill groups are used to assign priority to agents. They are set up in the Configuration Manager Skill Group Explorer and are intended to distinguish priority levels (primary, secondary, and forth) of a base Skill Group. For example, in a skill group of Spanish speakers, agents who are fluent in Spanish might be grouped into the primary sub-skill group, while agents with less fluency might be grouped in the secondary sub-skill group. The name of a sub-skill group is the name of its base skill group with .pri, .sec, and so forth appended to the end of the name.

Sub-skill groups do not imply priority in scripting. You must indicate the priority of each sub-skill group in the script.

Each sub-skill group is treated as a separate skill group by the Central Controller. Data from sub-skill groups automatically rolls up into base skill groups.

You can have a mix. That is, you can configure some skill groups with sub-skill groups and have others without sub-skill groups.

While there are benefits to using sub-skill groups, there are also some reporting issues to be aware of:

- If you configure sub-skill groups, you cannot assign agents to base skill groups. You must assign them to the sub-skill groups.

- If you configure sub-skill groups, the WebView item selection list for Peripheral Skill Group reports contains both the 'parent' base skill group and its component sub-skill groups.

- To ensure correct enterprise queue reporting data on the agent desktop reporting applications and WebView, the Routing script must queue calls to sub-skill groups only and not to the base skill group.

  To queue calls to base skill groups, do not configure sub-skill groups.

- You cannot route to the base skill group.

  Any call routed to the base skill group will stay in the queue indefinitely or will go to an ACD-picked skill group, if one is configured.

See also Configuring Skill Groups (page 189) and Report Statistics when Sub-Skill Groups are Configured (page 153).

Planning for Enterprise Skill Group Reporting

An enterprise skill group is a logical organization of skill groups. While each individual skill group is tied to a specific peripheral, an enterprise skill group can span peripherals.

Determine which skill groups you want to group into an enterprise skill group. These skill groups might be from several peripherals and/or from different media. For example, you may have a

skill group called Boston_Sales on one peripheral and a skill group called NewYork_Sales on another peripheral. You could create an enterprise skill group called Enterprise_Sales.

To obtain enterprise-wide values, Unified ICM simply totals some statistics. For example, to obtain the number of agents available in an enterprise skill group, the software adds the number of agents available in each member peripheral skill group.

Because Unfied ICM affords total flexibility in how you group skill groups into an Enterprise skill group, you need to consider how you configure the Enterprise Skill Groups.

Depending on your grouping, you might see double-counting of some metrics in your reports. For example, if a call comes in requesting information on printers, and if you queue that call to both SkillGroup1 (PrinterSales) and SkillGroup2 (PrinterSupport) and if SkillGroup1 and SkillGroup2 are associated with the same Enterprise Skill Group, you will see two calls reported as queued for that Enterprise Skill Group.

Planning for Transfer and Conference Reporting

Unified ICM supports transfers and conferences to skill groups and transfers and conferences directly to agents.

Call transfers and conferencing can be accomplished in two ways.

- The agent can manually transfer the call to another agent or can conference in another agent by dialing that agent's extension directly on the ACD.

- The agent can use the ACD number to access a routing script on the ACD or can optionally post-route the call to Unified ICM.

  The latter method is preferable, since Unified ICM will be able to track the transferred calls and how they are handled across the enterprise. This also provides the ability to transfer the call to another ACD site.

  It is best to discourage direct agent-to-agent transfers, as one has to rely on the ACD for skill group and service assignment for the purposes of reporting. In situations where you are handling transfers and conferences on the ACD itself, use the ACD number to control how transfers are reported.

  Note: Unified ICM will be unaware of a direct transfer if the agent extension is not configured.

If you are planning to provide for transfers and conference calls using post-routing, follow these guidelines to obtain accurate and useful data:

- Configure the ACD number to post-route the call to Unified ICM.

- Consider creating separate scripts for transfer and conference scenarios if you are post-routing all transfers and conferences.

- Plan to create a separate script for transfers on the Unified ICM that uses the dialed numbers you configured. Having a separate script on the ACD or on Unified ICM allows you to track data across all known skill groups.

  Note: If you do not do this, the skill group affected by reporting statistics is unknown, and results are unpredictable.

Note: Refer to your *ACD Supplement Guide* for any restrictions that might affect the transfers and conferencing. For example, some ACDs do not support blind transfers.

See also:

- Configuration and Scripting for Conferences and Transfers (page 185)

- Reporting on Agent Call Transfers and Conferences (page 93)

Planning for Translation Routing

Consider whether you want to implement Translation Routing.

Translation Routing allows you to:

- Do cradle-to-grave reporting.

- Transfer call data between sites when using Cisco CTI.

- Track calls between sites.

- Use Call Type reporting more effectively, as certain Call Type statistics are not available if you do not do translation routing.

See also:

- Configuring Translation Routes (page 191)

- Translation Routing (page 44)

Planning for Unexpected Scripting Conditions

Decide whether you want calls that encounter unexpected scripting conditions to be counted as default-routed or as errors.

If you want the calls to count as default-routed, plan to configure default labels for each dialed number. When a call is routed to a default label, the call is added to the count of default routed calls for the Call Type. If the call cannot be routed and a default label is not assigned, the call is counted as an error.

Also, plan to include a Termination Node with Termination type of default label for all scripts in which there is some unexpected input (else condition). This ensures that the call is added to the count of default routed calls to the Call Type. If the call cannot be routed and a default label is not assigned, the call is counted as an error.

In all scripts, account for failure by creating a path for calls that encounter unexpected conditions. You might want to route these calls to voicemail, an announcement, or a busy signal.

Planning for VRU Application Reporting

Your enterprise might implement one or more types of VRU applications to provide initial call treatment and enterprise queuing across all ACD sites:

These VRU applications can be used as follows:

- In **Self-Service** applications, the customer can obtain information through a series of VRU prompts, and the entire transaction occurs within the VRU. For example, if the customer calls a bank, the Self-Service application might prompt the user for his or her account number and password and then provide abilities to check account balance, review recent payments, modify PIN numbers, and so forth.

- In **Information Gathering** applications, the VRU prompts the caller for certain information, such as which department he or she wants to reach, and then uses the information in the routing decision and might pass the information to the agent desktop.

- The VRU is also used to **enterprise-queue** calls while a customer waits for an available agent. During queuing, the VRU might be configured to play music on hold or perform a VRU application.

The types of VRU applications that you use in your Enterprise determine what report data you should monitor.

For example:

- If your VRU performs queuing only, you might want to see how long callers waited in queue and the number of callers who abandoned while queued.

- If your VRU is used for Self-Service, you might want to see how many successful transactions occurred in the Self-Service application and whether the caller was transferred to an agent from the application.

- If you are using an Information Gathering application, you might want to see how many callers opted out of the digit collection to be transferred directly to an agent.

Follow these guidelines to obtain accurate and useful data for VRU applications:

- If you have Self-Service or Information Gathering IVR applications and want to separate self-service and digit collection metrics from queuing metrics, plan to change the Call Type in the routing script before the call is queued. This ensures that you can report on both the self-service/digit collection section of the call and the queuing section of the call using Call Type reports.

- If you want to track how callers have progressed through a Self-Service or Information Gathering IVR application, plan to use the VRUProgress variable in the Set node of the routing script to indicate the status of the call at different points in the routing script. Use the VRU Activity reports to view how callers have progressed through the VRU script. You can use this variable to determine how many calls the application did not handle, how many were handled, how many were transferred to an agent at the caller's request, how many were not able to navigate and were redirected to an agent, and how many encountered error conditions and were redirected to an agent.

  For each transaction in the VRU Self-Service or Information Gathering application for which you plan to change the VRUProgress variable, create a separate Call Type. In the script, change the VRUProgress variable when the call reaches the end of a transaction and then change the Call Type. This enables you to report on each transaction separately using the Call Type VRU Activity reports.

- Plan to enable Service Control and Queue Reporting at the VRU peripheral if you want to report on VRU applications, services, queuing, and trunk groups.

- Determine the Service Level for the VRU peripheral.

  Also, determine how abandoned calls should impact the Service Level. Do you want them to be ignored in the Service Level calculation, to negatively affect Service Level, or to positively affect Service Level? For example, for VRU Self-Service applications, all calls that terminate are considered abandoned, even if the caller received the information he or she required. You might want to ignore these calls or have them positively affect Service Level. You might want calls that abandon while queuing or while ringing to negatively impact Service Level.

  You can configure global Service Level for all VRU services or configure Service Level for individual services.

See also:

- Configuration and Scripting for the VRU (page 190)

- Reporting on VRU Applications (page 117)

Chapter 5

Reporting on Agents

Managing agents in a contact center can assist with measuring performance, determining incentives, and identifying training needs.

In the Unified ICM system, an agent is associated with a peripheral and is a member of one or more skill groups. Agents might also be organized into teams.

The Agent Reports category in WebView offers more than 60 reports on agent performance and activity. You can find a list of all Agent Reports in Appendix A (page 159).

This chapter explains reporting metrics useful for managing agents and which report templates contain those metrics.

It has cross references to sections in Appendix C (page 181) that explain how to configure and script your system so that your reports contain appropriate and accurate agent data.

Note: This chapter explains WebView reporting in Unified ICM system. If you choose to use ACD Agent reports, or if your ACD does not support Unified ICM agent reporting, the information in this chapter is not relevant for you.

Unified ICM does not support agent reporting for some Peripheral Gateways and for very large enterprise deployments. Refer to the *Cisco ICM/IPCC Enterprise & Hosted Editions Release 7.1(1) Hardware and System Software Specifications (Bill of Materials)* for details.

This section contains the following topics:

What Agent Data do you Want to See?

The reporting templates you use to monitor agent activity and task performance depend on several factors, including your role in the contact center and the type of data you want to see.

As for all WebView reports, agent reports are categorized as either real-time (page 36) or historical (page 36).

Statistics provided in agent reports include the following:

- Agent's current state and applicable reason codes

- The amount of time the agent has spent in a particular state

- Agent availability for handling calls

- The amount of time the agent has been logged into the system

- The number of calls queued to an agent's skill group that can be answered by the agent

- Which agents are currently logged out

- The agent's performance measure, which includes Avg HandleTime, Avg Hold Time, Avg TalkTime

Agent Report Subcategories

Agent reports are organized in four subcategories.

- Agent By Agent (page 159)

  Use Agent By Agent reports to view current activity for an individual agent or to measure an individual agent's performance trends.

  This category is useful to contact center administrators with global responsibility for all agents in the contact center, regardless of skill group, peripheral, or team.

- Agent By Peripheral (page 160)

  Use these templates to view current activity for agents on a common peripheral or to measure and compare agents' performance trends for a common peripheral.

  This category is useful to contact center administrators who are responsible for a certain site within the enterprise.

- Agent By Skill Group (page 161)

Generate Agent By Skill Group reports to view current activity for agents in a skill group or to measure and compare agent performance trends for a skill group.

This category is useful for contact center supervisors or team leads who are responsible for certain skill groups.

- Agent By Team (page 162)

Use to view current activity for agents in a team or measure and compare agent performance trends for a team.

This category is useful for contact center supervisors who manage teams of agents.

Reporting on Agent Activity in Skill Groups

A skill group is a collection of agents at a single contact center who share a common set of competencies that equip them to handle the same types of requests. Some examples of skill groups are a collection of agents who speak a specific language or who can assist callers with billing questions.

Each skill group belongs to a Media Routing Domain (MRD). All voice calls belong to the Voice MRD by default. An agent can be a member of zero, one, or more skill groups (depending on the peripheral).

You can generate reports for skill groups that show agent activity (for example, the number of agents talking, available, or in wrap-up for a particular skill group).

You can report on agents individually or report on all of the agents in one or more skill groups.

Note that in addition to generating reports from the Agent by Skill Group category, you can also use reports in the Skill Group category (page 171) to monitor operational performance. For example, you might want to see how a skill group is performing compared to other skill groups or to see if calls are being distributed evenly by your routing scripts and configuration.

See also:

- Configuring Skill Groups and Enterprise Skill Groups (page 189)

- Reporting on Skill Group Operations (page 109)

- Planning for Skill Groups and Enterprise Skill Groups (page 69)

Reports that show Agent Skill Group Activity

These are some reports that show information on Agents by Skill Group:

- agtskg20: ICM Agent Skill Group Real Time

- perskg39: Peripheral Skill Group Logout Real Time

- agtskg21: Agent Skill Group Summary Half Hour

- agtskg03: Agent Skill Group Media Status Logout Report

For the complete list of Agent by Skill Group templates, see Appendix A (page 161).

Reporting on Agent States

Agent states are determined based on an agent's activity *within a skill group*. Agent state is recorded in the Agent_Real_Time and Agent_Skill_Group_Real_Time database tables.

Agent state data is forwarded from the peripheral.

You can monitor agent states in real-time to view current agent activity. You can also review past performance data to identify trends in agent states. For example, historical reports can show how much time an agent spends in Not Ready state, which indicates whether the agent is adhering to the schedule.

The following table describes the agent states supported by Unified ICM that appear in WebView reports.

Note: Agent states reported by the ACD might not be equivalent to agent states reported by Unified ICM. For some ACDs, certain Agent States might not be applicable at all. For example, an ACD might support the *Work Ready* state but not the *Work Not Ready* state. See the appropriate *ACD Supplement Guide* for information on ACD Agent State definitions and how they correspond to Unified ICM Agent States.

Note also that information for some states is different for the Multi-session Chat MRD. This table highlights these differences.

State in Skill Group	Description for all MRDs except Multi-session Chat	Description for Multi-session Chat MRD
Active/Talking	The agent is working on a task or a call in this skill group. For agents who handle non-voice tasks, this state is reported as *Active*.	The agent is working on one or more chat requests associated with this skill group. For these agents, the state is reported as *Active*.

State in Skill Group	Description for all MRDs except Multi-session Chat	Description for Multi-session Chat MRD
	For agents who handle voice-tasks, this state is reported as *Talking*.	
Work Ready	The agent is performing wrap-up work for a call or task in this skill group.

If the agent is handling a voice call, the agent enters Not Active state when wrap is complete.

If the agent is handling a non-voice task, the agent might enter Not Active or Not Ready state when wrap up is complete. | The agent is performing wrap-up work for a task associated with this skill group. The agent is not in the Active state with respect to a task associated with this skill group. |
| Work Not Ready | The agent is performing wrap-up work for a call in this skill group. The agent enters Not Ready state when wrap up is complete. | The agent is performing wrap-up work for a call in this skill group. The agent enters Not Ready state when wrap up is complete. |
| Paused/Hold | The agent is paused with respect to a call or task associated with this skill group.

For agents who handle non-voice tasks, the state is reported as *Paused*. Note that only multi-session chat tasks can be Paused. Single-session chat, Blended Collaboration, and e-mail tasks cannot be paused by the agent.

For agents who handle voice tasks, the state is reported as *Hold*.

For agents handling Outbound Option calls, the Hold state indicates that the agent has been reserved for a call because the Outbound Dialer puts on the agent on hold while connecting the call. | The agent is not in Active or Work Ready state with respect to a task associated with this skill group. The agent is *Paused* with respect to a task associated with this skill group. |
| Reserved | The agent has been offered a call or task associated with the skill group.

For voice calls, agents are Reserved when their phones are ringing.

Agents handling Outbound Option calls are never placed in Reserved state; the Outbound Option Dialer puts the agent on hold when reserving him/her for a call. | The agent is not in Active, Work Ready, or Paused state in this skill group. The agent has been offered one or more tasks associated with this skill group. |

State in Skill Group	Description for all MRDs except Multi-session Chat	Description for Multi-session Chat MRD
Busy Other	The Agent is Active, Work Ready, Reserved, or on Hold/Paused in another skill group in the same MRD.	The agent is not in Active, Work Ready, Reserved, or Paused state with respect to a task associated with this skill group. The agent is in Active, Work Ready, Reserved, or Paused in another skill group in the same MRD.
Not Active	The agent is not working on any task or call associated with this skill group.	The agent is not working on any task or call associated with this skill group.
Not Ready	The agent is not available to be assigned a task. If an agent is Not Ready in one skill group, the agent is Not Ready in all skill groups within the same Media Routing Domain.	The agent is not available to be assigned a task. If an agent is Not Ready in one skill group, the agent is Not Ready in all skill groups within the same Media Routing Domain.

Agent States and Skill Groups

Agents can belong to multiple skill groups in a Media Routing Domain. When an agent is handling a task that was routed to a skill group, the agent is Active in that skill group.

For Unified ICM routed calls or transferred Unified ICM-routed calls that use the dialed number, the active skill group is the skill group to which the task was queued.

For direct incoming calls or transferred routed calls on the ACD, the active skill group is the first skill group defined for the agent or the skill group assigned by the ACD.

For new outgoing calls (AgentOutCalls or InternalCalls) or transferred outbound calls, the active skill group is either the ACD-picked skill group or the first skill group defined for the agent.

If you are reporting on agents who handle multi-session chat tasks (and who can work on more than one task at a time), gather agent state information from both the Available in MRD and Agent State columns.

The agents' state in the active skill group dictates their state in other skill groups in the Media Routing Domain to which they belong, as follows:

- If the agent is Active, Work Ready, Reserved, or Hold/Paused in one skill group in the MRD, the agent state is Busy Other for all other skill groups in the MRD.

- If the agent is Not Ready in one skill group in the MRD, the agent is Not Ready in all skill groups in the MRD.

See also Reporting in a MultiChannel Environment (page 127).

Agent State and Task State Relationship

Agent state times are reported on half-hour boundaries regardless of whether or not the call or task is finished. Call and task state times are reported only when the task ends. The call/task ends when wrap up is complete.

The following figure illustrates the correlation between agent state and call state for a voice call. The agent reserve time includes the time it took the call to arrive at the agent's phone or desktop (network time) as well as the amount of time that the call rang on the agent's phone or waited on the agent's desktop (offer/ring time).

Figure 10: Agent State and Task State Relationship
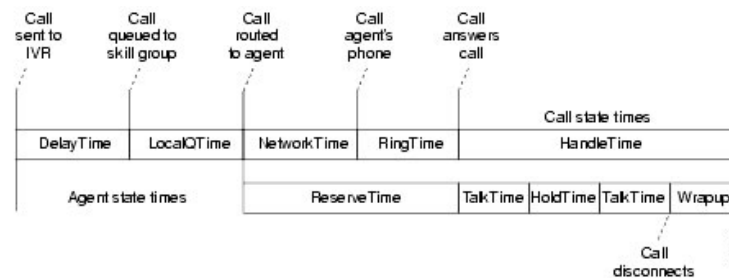
If the half-hour boundary ends when the call is ringing on the agent's phone, the reserved time for the agent includes the network time and part of the ring time. At the next half-hour interval, the remaining ring time is reported in the reserved time of the agent. However, the call's time does not appear on a report until wrap up has been completed on the call.

Reports that show Agent State

These are some reports that show information on Agent State:

- agteam32: Agent Team State Counts Real Time

- agtper20: Agent Peripheral Real Time Report

- agteam32: Agent Team State Counts Real Time

For the complete list of agent templates, see .

Note: Certain reports indicate how many agents are in different states. In these reports, the Hold column is used to report on agents in both Hold and Paused states, and the Active column is used to report on agents in both the Active and Talking states.

Reporting on Average Speed of Answer for Agents and Skill Groups

Average Speed of Answer (ASA) is the total wait time of a call before being answered divided by the number of answered calls.

AnswerWaitTime starts when the call enters the queue.

ASA is set at these levels:

- Agent

- Skill group

- Call Type

- Service

At the skill group and agent level, the ASA metric is useful for monitoring agent and skill group performance.

Note: For real-time reports, ASA5 is the average speed of answer for calls during the rolling five minute interval.

For measuring overall customer experience, the provides insight into how callers experience the system and how quickly calls are being answered.

ASA for the Agent

The ASA is calculated for the agent at the PG level. The internal queuing time is sent to the PG by Unified ICM when an agent becomes available for the call. The agent's PG adds up the internal queue time, ring time and network time and adds it into AnswerWaitTimetoHalf in the agent skill group table. AnswerWaitTime is then divided by the CallsAnswered for the agent.

ASA for the Skill Group

The ASA is calculated for the skill group at the PG level.

When doing Enterprise Queuing, the time spent in the enterprise queue is not used in the calculation of AnswerWaitTime. The calculation includes the ACD queue time only.

For ACD queuing, the queue time is reported by the PG based on events receive from the ACD.

Consider this example:

- A call is queued at Skill Group X.

- At Time T, the call is then queued at Skill Group Y at time T+30 seconds.

- An additional 10 seconds transpire before the call is answered by an agent at Skill Group Y.

In this case, the internal queuing time will be 40 seconds. This is the total length that the call has been queued even though it was only queued at Skill Group Y for 10 seconds.

The agent's PG adds the internal queue time, ring time, network time to create the total AnswerWaitTime for the call and adds it to AnswerWaitTimetoHalf in the skill group table. AnswerWaitTime is then divided by CallsAnswered within the skill group table to arrive at the ASA for the skill group.

Reports that show ASA

These are some reports that contain ASA statistics for Agents and Skill Groups:

- agent23: Agent Performance Summary Half Hour Report

- perskg20: ICM Peripheral Skill Group Status Real Time Report

- agtper24: Agent Peripheral Performance Summary Daily Report

For the complete list of agent templates, see Appendix A (page 159).

Reporting on Agent Logout Reason Codes

Agent Logout Reason codes are defined in the agent desktop software and appear in WebView historical reports as their numeric equivalent, with no text code. For example, if reason code 1 equals "end of shift" and the agent selects that reason for logging out, the WebView report displays "1".

In addition to the codes configured at the desktop, some codes are generated automatically when the agent is logged out by the software. the table below describes these predefined Logout Reason codes.

Note: Check your *ACD Supplement Guide* to make sure that Agent Logout Reasons codes are supported for your ACD.

See also:

Configuring Agent Logout Reason Codes (page 184)

Predefined Logout Reason Code	Description
-1	The agent reinitialized due to peripheral restart.
-2	The PG reset the agent, normally due to a PG failure.
-3	An administrator modified the agent's extension while the agent was logged in.
50002	A CTI OS component failed, causing the agent to be logged out. This could be due to closing the agent desktop application, heartbeat time out, a CTI OS Server failure, or a CTI OS failure.
50003	The agent was logged out because the ACD reported the agent's device as out of service.
50004	The agent was logged out due to agent inactivity as configured in agent desk settings.
50020	The agent was logged out when his/her skill group assignment dynamically changed on the AW.
20001 - applicable if you are using the Cisco Agent Desktop	The agent's state was changed to NOT READY.
20002 - applicable if you are using the Cisco Agent Desktop	A normal log out condition from NOT READY
20003 - applicable if you are using the Cisco Agent Desktop	Forces the logout request.

Reports that show Agent Logout Reason Codes

These are some reports that contain information on Agent Logout reason codes:

- agent03: Agent Media Status Logout Report

- agteam03: Agent Team Media Status Logout Report

- agtper03: Agent Peripheral Media Status Logout Report

Reporting on Agent Not Ready Reason Codes

There are WebView reports that show the codes agents select when entering Not Ready state, calculate the percentage of time spent in the Not Ready state, and specific Not Ready reasons based on the time range you specify.

If an agent's total login session is not included in the specified time range (for example, the agent was still logged in at the end of the time range), an asterisk (*) appears next to the agent's name in the report to indicate that data for that agent is not complete for the range.

These reports help you identify whether agents are taking the appropriate number of breaks and whether their breaks are the appropriate length.

Two of these reports (agent30 and agent31) display both the text of the reason code (if configured)*and* the corresponding number.

For example, if an agent enters Not Ready state and selects "Break" as the reason code, and if you have configured text for this code in Configuration Manager, these two reports display "Break [1]".

In all other reports that contain the Reason Code field, the report displays the numeric Not Ready reason code only.

There are no predefined Not Ready Reason codes for the Unified ICM environment.

Note: Check your *ACD Supplement Guide* to make sure that Not Ready Reasons codes are supported for your ACD.

See also:

Configuring Agent Not Ready Reason Codes (page 183)

Reports that show Agent Not Ready Reason Codes

These are some of the reports that contain information on Not Ready codes and the time spent as Not Ready:

- agent30: Agent Not Ready Summary

- agent31: Agent Not Ready Detail

- agtper23: Agent Peripheral Performance Summary Half Hour Report

- agteam24: Agent Team Performance Summary Daily Report

For the complete list of agent templates, see Appendix A (page 159).

Reporting on Agent Task Handling

Agents can receive and place many different types of tasks.

WebView reports show you what kind of tasks agents are handling and how well they are handling them. For example, there are reports that display statistics for calls placed, received, transferred, and conferenced. There are reports that indicate how many calls were rerouted when the agent failed to answer the call.

Types of Tasks

Voice calls can be external or internal. Single-session chat, multi-session chat, e-mail, and Blended Collaboration task are always external.

Internal tasks are calls made to an agent from another person on the same ACD.

External tasks are calls that are placed off-switch, tasks that go through a voice gateway or Media Routing PG, or tasks that are routed to an agent from a person on a different ACD. For example, calls from the call center to customers are considered external.

In addition to being internal or external, voice call tasks can be *incoming* or *outgoing*. Single-session chat, multi-session chat, e-mail, and Blended Collaboration task are always incoming.

An **incoming** task is a task that an agent receives. An **outgoing** task is a call that an agent places. For example, if a customer calls an agent, the call is incoming for the agent. If an agent calls a supervisor, the call is outgoing for the agent.

For voice calls only, agents can also transfer calls, receive transferred calls, place consultative calls, and engage in conference calls.

The following table describes the tasks that an agent can receive and place and how those tasks are reported.

Table 13: Types of Tasks

Type of task	Description	Reported As
Incoming direct/internal	Incoming Direct Tasks are tasks that come directly to the agent's extension. These calls can be either internal (agent or device on same ACD) or within the network to another switch. Examples of this kind of call include calls that are directly transferred by another agent without going through a script and calls that resulted from agent-to-agent calling. Data for these calls are stored in the InternalCallsRcvd fields of the Agent_Skill_Group_Half_Hour historical database table.	Internal In
Outgoing external	These are calls initiated by agents from their extension that are placed off-switch or pass through a voice gateway. Outgoing External Tasks are always voice tasks. Consult, conference out, and transfer out calls are counted as outgoing external calls if they are placed off-switch or to remote agent extensions at another site. Agent-to-Agent dialing is outgoing external for the agent initiating the call if the call has to be placed off-switch to get to the destination agent.	External Out Tasks

Type of task	Description	Reported As
	Data for these calls are stored in the AgentOutCalls fields of the Agent_Skill_Group_Half_Hour historical database table.	
Outgoing internal	These are calls initiated by agents from their extension to another extension within the ACD or to another ACD within the network. Outgoing Internal Tasks are always voice tasks. Consult, conference out and transfer out calls are counted as outgoing internal calls if they are placed to another device. The device could be another agent line or any other extensions to the VRU. Agent-to-Agent calls are outgoing internal for the agent initiating the call if the destination agent is on the same ACD as the source agent. Data for these calls are stored in the InternalCalls fields of the Agent_Skill_Group_Half_Hour historical database table.	Internal Out Tasks
ICM-routed/ACD calls	All calls that are routed by the ACD to the agent. Outbound Option calls are considered Unified ICM-routed/incoming calls. Data for these calls are stored in the CallsHandled fields of the Agent_Skill_Group_Half_Hour historical database table.	Tasks Handled Note that Tasks Handled includes all ACD calls and ICM-routed calls, including calls that are transferred and conferenced, and consultative calls. Tasks Handled provides a high level view of routed tasks. Other report columns such as Transfer In and Conf Out provide more details about how the task was handled.
Transferred in	Calls that are transferred to an agent. Both incoming and outgoing calls can be transferred to an agent. Data for these calls are stored in the TransferredIn fields of the Agent_Skill_Group_Half_Hour historical database table.	Transfer In
Transferred out	Calls that are transferred from an agent. An agent can transfer both incoming and outgoing calls. Data for these calls are stored in the TransferredOut fields of the Agent_Skill_Group_Half_Hour historical database table.	Transfer Out
Consultative	Calls in which an agent consulted with another agent or supervisor while having another call on hold. Data for these calls are stored in the ConsultativeCalls fields of the Agent_Skill_Group_Half_Hour historical database table.	Cons Out

Type of task	Description	Reported As
Conference in	Incoming calls that are conferenced. Data for these calls are stored in the ConferencedInCalls fields of the Agent_Skill_Group_Half_Hour historical database table.	Conf In
Conference out	Outgoing calls that are conferenced. Data for these calls are stored in the ConferencedOutCalls fields of the Agent_Skill_Group_Half_Hour historical database table.	Conf Out

Task Times

For each type of task that an agent can place, the amount of time that the agent spent working on that task is recorded in the Agent_Skill_Group_Half_Hour database table, as follows:

- ACD routed tasks - The time for these tasks begins when the agent answers the task and ends when the agent completes wrap up. The time is stored in the HandledCallsTimeToHalf field.

- Incoming direct tasks - The time for these tasks begins when the agent answers the task and ends when the task disconnects. The time is stored in the InternalCallsRcvdTimeToHalf field.

- External outgoing tasks - The time for these tasks begins when the agent initiates the task and ends when the task disconnects. The time is stored in the AgentOutCallsTimeToHalf field.

- Outgoing internal tasks- The time for these tasks begins when the agent initiates the task and ends when the task disconnects. The time is stored in the InternalCallsTimeToHalf field.

- Transferred in tasks - The time for these tasks begins when the agent answers the transferred task and ends when the task disconnects. The time is stored in the TransferredInCallsTimeToHalf field.

- Transferred out tasks - The time for these tasks begins when the agent activates the transfer button and ends when the transfer is complete. The time is stored in the InternalCallsTimeToHalf field.

- Consultative tasks - The time for these tasks begins when the agent activates the transfer button and ends when the target agent answers and the held task is restored (drop consultative call) or consult party drops. The time is stored in the ConsultativeCallsTimeToHalf field.

- Conferenced in tasks - The time for these tasks begins when the agent answers the task and ends when the task disconnects. The time is stored in the ConferenceInCallsTimeToHalf field.

- Conferenced out tasks - The time for these tasks begins when the agent activates the conference button and ends when the agent disconnects from the conference call and the supervisor drops out of the call. The time is stored in the ConferenceOutCallsTimeToHalf field.

You might notice overlapping data in your reports for the amount of time for different types of calls. This happens because incoming tasks, such as ACD routed tasks and calls directly to an agent, can be Transferred In and Conferenced In. Both incoming calls and outgoing calls placed by agents can be Transferred Out and Conferenced Out. The total time for the incoming or outgoing call includes transfer and conference time.

Note: Agents can transfer and conference incoming calls both in and out. However, they can transfer and conference outgoing calls out only. This means that if an agent transfers an outgoing task to another agent, it is still considered an outgoing task.

Reports that show Agent Task Handling

These are some of the reports that contain information on Agent Task Handling:

- agent21: Peripheral Agent Task Summary Half Hour

- agteam05: Agent Task Detail Performance

- agtskg07: Agent Task Analysis

For the complete list of agent templates, see Appendix A (page 159).

Reporting on Agent Performance for Outbound Option Dialing Campaign Calls

Outbound Option is a functionality that is selected (or not) at setup. If it is selected, the Configuration Manager presents configuration screens for it, and the WebView interface presents Outbound Option reporting categories.

Outbound Option provides automatic outbound dialing capability. The Outbound Option Dialer places outbound calls to customers and connects these calls with agents.

The Dialer assigns and connects calls differently than regular Unified ICM Enterprise routing. Report data for agents handling Outbound Option calls therefore differs from data for agents handling typical voice calls and multichannel tasks.

To interpret agent data for Outbound Option tasks, you need to understand how Outbound Option reserves agents, reports calls that are connected to agents, and handles calls dropped by customers before the calls are connected.

When the Outbound Dialer initiates a call to a customer, it reserves the agent assigned to handle the call by placing a reservation call to the agent and changing the agent's state to Hold. This reservation call is reported as a Direct In call to the agent.

For typical voice calls, the agent is placed into Reserved state when Unified ICM software reserves the agent to handle a call; the agent's state is reported as Reserved. For Outbound Option calls, reports show the agent in Hold state when reserved for a call and the time that agent spends reserved is reported as Hold Time.

When the customer answers the call, the Outbound Option Dialer transfers the call to an agent. The call is now reported as a Transfer In call to the agent. When the customer call is transferred to the agent, the reservation call is dropped by the Dialer and classified as Abandon on Hold. For more information regarding Outbound Option termination call detail records, see the *Cisco ICM/IP Contact Center Enterprise Edition Outbound Option User Guide*.

The abandoned call wait time, set in the Campaign Configuration screen, determines how calls are reported if the caller hangs up. Calls are counted in the Customer Abandon field in the WebView campaign query templates (camqry01 and camqry02) only if the customer hangs up before the abandoned call wait time is reached.

Reports that show Agent Outbound Dialing Campaign Activity

These Agent by Skill Group reports show agent Outbound Dialing Campaign activity:

- agtskg06: Outbound Option (Blended Agent) Status

- agtskg10: Outbound Option (Blended Agent) Predictive and Progressive Calls Detail Performance

- agtskg11: Outbound Option (Blended Agent) Preview Call Detail Performance

- agtskg12: Outbound Option (Blended Agent) Reservation Call Detail Performance

For more information on other Outbound Option reports, see Reporting on Outbound Option Campaign Effectiveness. (page 112).

Reporting on Agent Redirection on No Answer

The Redirection on No Answer (RONA) feature ensures that if an agent does not answer a call within a configurable amount of time, the call is assigned to a different skill group or agent. The original agent is made Not Ready so that additional calls are not routed to that agent.

Redirection on No Answer metrics are reported directly from the ACD.

Reports that show Agent RONA Statistics

These reports contain information on Agent RONA:

- agtskg07: Agent Task Analysis

- agtskg26: Agent Skill Group Consolidated Daily

- agteam24: Agent Team Performance Summary Daily

For the complete list of agent templates, see Appendix A (page 159).

Reporting on Agent Call Transfers and Conferences

Voice calls can be transferred or conferenced. Non-voice tasks, such as e-Mail, single-session chat and multi-session chat, and Blended Collaboration tasks cannot be transferred and conferenced.

Transfer can be either blind or consultative, and is supported only for agents within the ACD. A *blind transfer* is a transfer in which the agent transfers the call to another agent without first ensuring that another agent is available. A *consultative transfer* is a transfer in which an agent places the call on hold, calls the receiving agent to discuss the transfer and then transfers the call to the agent. Consultative transfer is not supported when CVP is used as the VRU.

It is best to discourage direct agent-to-agent transfers. Instead, use ACD numbers to transfer to a Skill Group and application service. This enables tracking of these calls and provides you with the ability to report on how calls were eventually handled. You can also post route calls to the Unified ICM, which allows you to transfer calls to agents on other ACD sites and to be able to report on those calls.

See also:

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Transfers and Conferences Using ACD/Dialed Numbers

Transfers and Conferences are can be handled at the ACD, with ACD queuing, or through Unified ICM using ACD/Dialed Numbers, with Enterprise queuing.

For ACD and local queuing, reporting statistics are accurate when the agent uses an ACD number and the script on the ACD queues and sends the call.

TransferOut or ConferenceOut is incremented for the source agent and TransferIn or ConferenceIn is incremented for the target agent.

For Enterprise Queuing, when the agent activates the transfer or conference button and selects a number to which to transfer or conference the call, the dialed number is sent to the Router from the agent's PG. This dialed number determines the Call Type, which in turn selects the transfer routing script. The Unified ICM script must include a Queue to Skill Group node that references the appropriate skill group based on the dialed number to which the call is to be queued.

If an agent is available in the selected skill group, a message is sent to the source agent's PG, containing a label or dialable number. The PG transfers the call from the source agent's phone to the target agent using the label returned from the Central Controller. For these types of transfers and conferences, TransferOut or ConferenceOut is incremented for the source agent and TransferIn or ConferenceIn is incremented for the target agent.

If no agents are available for a transfer in the selected skill group, the Router sends the source agent's PG the label to forward the call to the VRU. For these types of transfers and conferences, TransferOut or ConferenceOut is incremented for the source agent.

How Database Fields Are Affected by Transfers and Conferences

Transfers and conferences affect fields in the Agent_Skill_Group_Half_Hour database table.

The TransferIn field is incremented for the target agent if all of the following conditions are true:

- The call was transferred (blind or consultative) by an agent to a Unified ICM Call Type script or to an application script on the ACD that checks for agent availability

- For blind transfers only, an agent within the same peripheral was available at the time that the transfer was initiated.

The ConferenceIn field is incremented for the target agent receiving the conference call if all of the following conditions are true:

- The call was conferenced by an agent to a Unified ICM Call Type script or to an application script on the ACD that checks for agent availability.

- An agent within the same peripheral was available at the time that the conference was initiated.

The TransferOut field is incremented for the agent initiating either a blind or consultative transfer when the initiating agent disconnects from the transfer.

The Conference Out field is incremented for the agent initiating a conference when the initiating agent disconnects from the conference.

The ConsultativeCalls field is incremented for the initiating agent when the consultative call disconnects and wrap-up is complete. Note that consultative transfer is not supported for systems using CVP as the VRU and therefore this field is never incremented if you are using CVP.

Note: If you are using CVP as the VRU, the transfer can be performed through a network transfer. If the network transfer is used, the TransferIn and TransferOut fields do not display data for these transfers.

How Types of Calls are Affected by Transfer and Conference

The following table describes the fields that are incremented in the Agent_Skill_Group_Half_Hour database table when different types of calls are transferred and conferenced.

Type of Call	How the call is affected
Outgoing internal	The InternalCall field is incremented for the source agent that initiates a transfer or conference operation if the target agent is on the same ACD as the source agent. This field is incremented after the call is disconnected.
Incoming direct/incoming internal	The InternalCallsRcvd field is incremented for the target agent that completes a transfer or conference if the agent dialed the target agent directly (that is, does not access a routing script). This field is incremented after the call is disconnected.
Outgoing external	The AgentOutCalls field is incremented for the source agent who completes a transfer or conference to an external destination. This field is incremented after the call is disconnected.
ACD Calls	The CallsHandled field is incremented for the target agent if the call is sent to the agent via an ACD routing script. This field is incremented against the skill group to which the routing script queued the call. This field is incremented after the call disconnects and wrap-up is completed.

How Skill Groups are Affected by Transfer and Conference

The skill group for which transfer and conference data is reported depends on how the original call was placed.

The transfer or conference is reported for the ACD-picked skill group if the original call is a direct call, placed to the agent's extension. For example, if an agent received a call directly to his extension and then transferred the call, the transfer is reported for the ACD-picked skill group of both the agent who initiated the transfer and agent who received the transfer.

The transfer or conference is reported for the skill group to which the call was routed if the original call was routed via an ACD routing script to a specific skill group. For example, if an agent in the Sales skill group received a Sales call and then transferred the call, the transfer out is reported for the Sales skill group. The transfer in is reported for the skill group of the agent who received the transfer.

The following scenarios further explain how database fields are incremented for different types of transfers and conferences.

Call Scenario 1: Blind Transfer of ACD calls - agent is not available

In this example, agent A is presented with an ACD call for skill group Y. Agent A selects skill group X via the ACD number (which accesses a script) and initiates and completes a blind transfer. The InternalCalls and TransferOut fields are then incremented for Agent A against skill group Y.

After wrap-up is completed, the CallsHandled field is incremented for agent A against skill group Y. Since there are no agents available in skill group X, the call queues on the ACD. When agent B in skill group X becomes available, the ACD routes the call to agent B. Agent B answers the call and the call disconnects and wrap-up is complete.

Fields incremented for Agent A against skill group Y	Fields incremented for Agent B against skill group X
CallsHandled, InternalCall, TransferOut	CallsHandled, TransferIn

For agent A, the call is reported in the TasksHandled, Internal Out, and TransferOut report fields. For agent B, the call is reported in the Tasks Handled report fields.

Call Scenario 2: Consultative Transfer of an ACD call-agent available

In this example, agent A is presented with an ACD call for skill group Y. Agent A selects skill group X via the ACD number and initiates a transfer. The script on the ACD realizes that Agent B is available and requests that agent A's PG initiate a transfer to agent B on behalf of Agent A's phone. Agent B answers the transferred call. After consulting with Agent B, Agent A completes the transfer. The InternalCall and TransferOut fields are then incremented for Agent A against the skill group Y. After wrap-up is completed, the CallsHandled field is incremented for agent A against skill group Y.

Agent B now talks to the caller. When the call disconnects and wrap-up is completed, CallsHandled and TransferIn are incremented for Agent B against skill group X.

Fields incremented for Agent A against skill group Y	Fields incremented for Agent B against skill group X
CallsHandled, InternalCall, TransferOut, Hold	CallsHandled, TransferIn

For agent A, the call is reported in Tasks Handled, Internal Out, Transfer Out, and Incoming Hold and/or All Hold report fields. For agent B, the call is reported in Tasks Handled and Transfer In report fields.

Call Scenario 3: Consultative Conference of a Direct Call

In this example, a direct call comes into agent A's ACD extension.

Agent A selects skill group X via the ACD number and initiates a conference. The script on the ACD realizes that Agent B is available and requests that agent A's PG initiate a conference to agent B on behalf of Agent A's phone. Agent B answers the conferenced call. After consulting with Agent B, Agent A completes the conference.

Agent A disconnects from the conference. The InternalCalls and ConferenceOut and InternalCallsRvcd fields are then incremented for Agent A against the ACD-picked skill group.

Agent B or the caller disconnects. InterCallsRcvd and Conference Out are incremented against the ACD-picked skill group for agent B.

Fields incremented for Agent A against ACD-picked skill group	Fields incremented for Agent B against skill group X
InternalCallRcvd, InternalCall, ConferenceOut, Hold	CallsHandled, ConferenceIn

For agent A, the call is reported in Tasks Handled, Internal Out, Conf Out, and All Hold (Internal Hold) in report fields. For agent B, the call is reported in Tasks Handled and Conf In report fields.

Call Scenario 4: Consultative Call

In this example, agent A is presented with an ACD call for skill group Y.

Agent A selects skill group X via the dialed number and initiates a consult. The script that uses the LAA select node for skill group X realizes that Agent B is available and requests that agent A's PG initiate a conference to agent B on behalf of Agent A's phone. Agent B answers the consult call. After consulting with Agent B, Agent A activates the Reconnect button, which disconnects Agent B and Agent A resumes talking to the caller.

Agent A disconnects from the call. After wrap-up is completed, CallsHandled and Consultative Calls field are incremented for agent A against skill group Y.

Fields incremented for Agent A against skill group Y	Fields incremented for Agent B against skill group X
CallsHandled, InternalCall, ConsultativeCall, Hold	CallsHandled

For agent A, the call is reported in Tasks Handled, Internal Out, Cons Out, and Incoming Hold and/or All Hold report fields. For agent B, the call is reported in Tasks Handled report fields.

Reports that show Agent Transfers and Conferences

These are some of the reports that contain information on Agent Transfers and Conferences:

- agent05: Agent Task Detail Performance

- agtper21: Agent Peripheral Task Summary Half Hour

- agteam26: Agent Team Consolidated Daily

For the complete list of agent templates, see .

Reporting on Agent Teams

An agent team is an organizational tool that is configured to reflect the reporting structure in a contact center. Agent teams are not targets for call routing. They are valid for agent team reporting only and serve as a vehicle by which supervisors can monitor the agents for which they are responsible.

Report on agent teams to monitor the performance of a particular team. Supervisors can report on the agents in teams that they supervise.

Teams are peripheral-specific. That is, all agents on a team and the supervisor(s) for the team must reside on the same peripheral. An individual agent can be assigned to one team only.

Supervisors are a special type of agents who have been configured in the Configuration Manager with limited reporting privileges to see information in the Agent report categories, and within those categories, to see data for only those agents on teams that they supervise.

You can select 0 or 1 primary supervisor for an agent team, and you can select multiple secondary supervisors for each team. Each supervisor can be a supervisor for multiple teams.

Note: In order to use Agent Team reports, you must configure teams and supervisors in Configuration Manager. The team structure you choose is up to you. You might prefer to use your ACD configuration. You might also prefer to use your ACD reports to monitor agent teams.

See also:

Configuring Agent Teams and Supervisors (page 184).

Reports that show Agent Teams

These are some of the reports that contain information on Agent Teams:

- agteam20: Agent Team Real Time

- agteam26: Agent Team Consolidated Daily

For the complete list of agent teams templates, see Appendix A (page 162).

Chapter 6

Reporting on Customer Experience

Measuring customer experience involves monitoring how efficiently and effectively calls are treated in the system. This might include the number of calls received, the number of calls handled and abandoned, queue time, average speed of answer, and whether Service Level objectives are being met.

This section explains which reporting metrics are useful for measuring customer experience and which report templates contain these metrics.

This chapter also has cross references to sections in Appendix C (page 181) that explain how to configure and script your system so that your reports contain appropriate and accurate data.

This section contains the following topics:

What Customer Experience Data do you Want to See?

This section lists metrics that measure customer experience.

While skill group and agent reports provide some of these metrics (including ASA, Avg. Handle Time, abandons, redirects, and calls handled), the Call Type and Service reports show a more complete picture of the customer experience. They also help you review statistics organized by application.

As for all WebView reports, reports that monitor customer experience are categorized as either real-time (page 36) or historical (page 36).

Key Statistics Provided by Service and Call Type reports include:

- Average Speed of Answer (ASA)

- Number of calls received

- Number of calls handled

- Number of calls abandoned

- How long callers waited in queue

- Number of calls queued for an available agent

- Whether Service Level objectives are being met

- Whether the caller had to be transferred

- Number of callers that heard a busy signal

- Number of calls that encountered an error

The following table describes the WebView options for measuring customer experience.

Table 19: Report Categories for Measuring Customer Experience

Reporting Needs	Report Category	Who Use this Category
You want to measure a customer's experience from the initial request to the call completion.	Call Type	This category is useful to contact center administrators with global responsibility for all customer contacts. Reporting on customer experience using this category provides insight in the end-to-end customer experience for different types of call treatment. This category provides the most complete view of customer experience. **Note:** Translation routing is required for end-to-end reporting.
You want to measure a customer's experience when routed to a particular skill group.	Skill Group	This category is useful to contact center administrators or supervisors who are responsible for a certain groups of agents or skill groups. Reporting on customer experience using this category provides insight only into the operational performance of selected skill groups.
You want to measure a customer's experience with a particular agent.	Agent	This category is useful for contact center supervisors who manage agents. Reporting on customer experience using this category provides insight only into the performance of the selected agents and might identify training needs or agent expertise, but does not provide a global view of how customers are experiencing their interactions with the contact center.

Reporting Needs	Report Category	Who Use this Category
You want to measure the performance of individual peripheral services, such as Sales or Technical Support	Service	This category is useful for contact center supervisors interested in statistics on a service that is tied to a specific peripheral (ACD, PBX, IVR). Reports in this category show data such as the number of calls agents are handling, the number of calls in queue, the time in seconds for delays in queue.
You want to evaluate the performance of related services in several contact centers across the enterprise.	Enterprise Service	For a collection of related services, reports in this category give an enterprise-wide view of tasks offered, handled, abandoned, and the effect of abandoned tasks on service levels.

Service Reports

In a Unified ICM environment, calls are routed to services or skill groups. A service is a particular type of processing that the caller requires. For example, in a software company's contact center, callers having questions about installing software would be directed to the Technical Support service. Services map to applications on the ACD.

There are two categories of service reports:

• Peripheral Services (Services)

   This is a service that is tied to a specific peripheral (ACD). A single peripheral might have several services defined, such as Sales, Technical Support, and Customer Accounts.

• Enterprise Services

   This is a collection of services from several peripherals across an enterprise.

Service reports are useful to measure customer experience data:

• When call treatment is done on the ACD

• For calls not routed by the ICM

See also

• Planning for Service and Enterprise Service Reporting (page 65)

• Configuring Services and Enterprise Services (page 186)

Call Type Reports

Call Type reports are used to measure the routing performance of Unified ICM and to measure customer-experience data for calls routed by Unified ICM.

The use of Call Type reports is based on the business need for your Enterprise and is determined by how you plan to use the functionality provided by Unified ICM software.

Call Type reports can be used for the following purposes:

- Cradle-to-grave reporting for call handling statistics when calls are translation routed

- Reporting on calls grouped for the purposes of global call treatment

- Reporting on Enterprise Queuing statistics

- Providing enterprise wide routing statistics for your Call Center, such as the number of calls routed to different peripherals and the number of calls that encountered routing errors

- Reporting on statistics for a self-service VRU application, if a Network VRU is deployed

- Reporting on certain activities such as calls that are transferred, provided Call Types are configured for those activities

See also

- Planning for Call Types (page 61)

- Configuring Call Types (page 185)

Reporting on Average Speed of Answer for Call Types and Services

Average Speed of Answer (ASA) is the total wait time of a call before being answered divided by the number of answered calls.

ASA is set at these levels:

- Service

- Call Type

- Skill group

- Agent

For measuring overall customer experience, the ASA for the Call Type provides the most insight into overall call treatment.

You can also report on the ASA metric at the skill group and agent level (page 84).

ASA for the Call Type and Service

The Call Type ASA is calculated as AnswerWaitTime divided by CallsAnswered.

Call Type ASA is applicable only when calls are translation routed and includes time spent in the Enterprise Queue as well as time spent in the ACD queue.

ASA for the Service is computed based on the AnswerWaitTime as reported from the peripheral. This includes the time spent on the ACD after the call was offered up until the time the call was answered. If an Enterprise Queue is used, ASA reported for the service does not include time spent in the Enterprise Queue.

Reports that show ASA

These are some reports that contain ASA statistics for Call Types and Services:

- caltyp20: Call Type Real Time Report

- caltyp21: Call Type Half Hour

- persvc07: Peripheral Service Tasks, Averages and Service Levels Real Time Report

- entsvc08: Task and Agent Status Real Time Report

For the complete list of templates, see Appendix A (page 159).

Reporting on Abandoned Calls

A call is considered abandoned if the caller hangs up before being connected to an agent.

A high number of abandoned calls might be an indication that callers are waiting in the queue for too long.

Abandoned calls are reported against the following:

- Service

- Call Types

- Skill Groups

Service reports provide cumulative statistics for all abandoned calls. Call Type reports provide additional visibility on where calls are abandoning

Note: If a call abandons before the Abandon Call Wait Time threshold, it is considered a Short Call (page 116).

For example, if you configure the abandoned call wait time for 10 seconds, and a caller disconnects at nine seconds, that call is a short call—it is not considered offered or abandoned.

How Calls that Abandon Affect Call Type Reporting

This section explains how calls that abandon affect Call Type reporting when a Network VRU is used for enterprise queuing and translation routing.

There are three types of abandon metrics: abandons at the VRU (prompt or self service), abandons in the Enterprise queue, and abandons at the agent.

Unified ICM tracks the abandon counts for each of these abandons separately. The time spent before these calls abandoned is also tracked.

The value represented by the "Aban" column on the Call Type reports provides total abandon count for the Call Type, and includes calls that abandoned while at the VRU (prompting or self service), calls that abandon in both Enterprise queue and the ACD queue, and calls that abandoned while ringing at the agent's phone or en route to the agent's phone. This value is derived from the TotalCallsAbandToHalf database field.

Reports also provide average time spent by these abandoned calls in the "Avg Aban Delay Time" field. This field represents the average delay time of *all abandoned calls* that ended in this Call Type during the current half-hour interval. This is derived from Call_Type_Half_Hour.CallDelayAbandTimeToHalf / Call_Type_Half_Hour.TotalCallsAbandToHalf.

To separate information gathering and queuing statistics, you can also determine the time spent by a call only in the Call Type where the call abandoned. This is tracked in the CTDelayTotalAbanTimeToHalf database field. This includes only the time spent in the Call Type where the call abandoned and not all Call Types.

Consider this example:

- A call spends 30 seconds in the information gathering Call Type, "Info_Call_Type".

- The script then changes the Call Type to the queuing Call Type say Queue_Call_Type and the call is queued.

- After 15 seconds waiting in queue the call is abandoned.

In this case, the total time spent by the call before abandoning is 45 seconds. However the time spent by the call in the "Queue_Call_Type" where the call abandoned is 15 seconds. The Call Type statistics for the "Queue_Call_Type" is updated as follows:

Queue_Call_Type

- CallDelayAbandTimeToHalf = 45 seconds

- CTDelayTotalAbanTimeToHalf = 15 seconds.

How Abandoned Short Calls Affect Reporting

A short call is a call that abandons within the Abandon Wait Time threshold, as set in Configuration Manager. By defining what you believe to be a short call, you can filter out those calls that you believe did not stay in the system long enough to be counted as a real call. You can define short calls for Call Types and services. Note that short calls are configured globally for all Call Types and for services at each peripheral.

The short call timer starts as soon as the route request is received for the call. The CallsOffered field is updated when the route request is received. If the call abandons within the Abandon Wait Time threshold, the ShortCalls field is updated, but the number of calls abandoned is not updated.

Note: Since the Call Type is the highest level reporting entity, calls that abandon at the Network VRU or at the agent's phone can also be considered short calls at the Call Type if they abandon within the Call Type's Abandon Wait Time threshold.

If you do not want to count any abandoned calls as short calls regardless of how quickly they abandon, you can disable abandoned short calls by leaving the Abandon Wait Time field blank.

See also Reporting on Short Calls (page 116).

Reports that show Abandoned Calls

These are some reports that contain Abandon statistics for Call Types and Services:

- entsvc03: Effect of Abandoned Tasks on Enterprise Service Levels Report

- persvc07: Peripheral Service Tasks, Averages and Service Levels Real Time Report

- persvc04: Peripheral Service Tasks Trend Analysis Real Time Report

- caltyp05: Analysis of Calls Half Hour Report

For the complete list of templates, see Appendix A (page 159).

Reporting on Service Level

Service Levels help you to set and measure goals for answering calls. Service Levels are configurable; that is you can define them in different ways, depending on the kind of information you want them to provide.

A Service Level event occurs when one of three things happen to the call:

- The call is answered by an agent before the Service Level threshold expires. In this case, the ServiceLevelsCallsOffered and ServiceLevelCalls database fields are incremented.

- The call abandons before the Service Level threshold expires. In this case, the ServiceLevelCallsOffered and ServiceLevelAband database fields are incremented.

- The call redirects on no answer before the Service Level threshold expires. In this case, the ServiceLevelCallsOffered database field is incremented.

- The call reaches the Service Level threshold without being answered by an agent or abandoned. In this case, the ServiceLevelCallsOffered database field is incremented.

All calls that have a service level event within a specified period are considered as service level calls offered for that period. This differs from a simple call's offered value, which counts each call at the time it is first offered to the service.

Note: Service Level is not affected for calls that are neither answered nor abandoned within the Service Level time. For example, calls that encounter an error condition or are sent to non-monitored devices (using the label node) within the Service Level threshold do not affect the Service Level.

See also:

- Planning for Service Level (page 67)

- Configuring and Scripting for Service Level Threshold and Type (page 187)

How Service Levels are Calculated

These are the types of Service Levels reported:

- Peripheral Service Level

  Unified ICM tracks and reports the service level as computed by the Peripheral. This metric is available for Services only and is available and supported for some ACDs. Check your *ACD Supplement Guide*.

- ICM Service Level

  The Unified ICM software also provides a Service Level calculation as computed by Unified ICM. This is reported for both Call Types and Services.

Two important configuration parameters contribute to the calculation of Service Level:

- Service Level threshold

A Service Level threshold is the number of seconds you set as a goal to treat a call. To calculate the Service Level for a period of time, ICM software determines the number of calls that have had a Service Level event within that interval.

- Service Level type

  Service Level type determines how calls that abandon before Service Level threshold impact the Service Level. Some contact centers would like abandoned calls to positively impact the Service Level. These contact centers consider a call abandoned within the Service Level threshold time a treated call (abandoned calls positively impact the Service Level).

  Other contact centers might consider only those calls answered within the Service Level threshold time as treated calls. These contact centers might want the Service Level to be detrimentally affected by calls that abandon within the Service Level time (abandoned calls negatively impact the Service Level). Others might choose to exclude the abandoned calls from the Service Level calculation (Abandoned Calls Ignored).

There are three different ways to calculate Service Level based on the Service Level type defined for the Service Level configuration parameter. They are described in the following table.

Table 20: Service Level Formulas

Service Level Type	Formula Used to Determine Service Level
Ignore Abandoned Calls	For Call Type and service: ServiceLevelCalls/(ServiceLevelCallsOffered - ServiceLevelAband)
Negative impact of abandoned calls	For Call Type and service: ServiceLevelCalls/ (ServiceLevelCallsOffered)
Positive impact of abandoned calls	For Call Type and service (ServiceLevelCalls + ServiceLevelAband) /(ServiceLevelCallsOffered

For an example of how Call Type Service Level and Service Level are calculated, consider the following call counts:

- Answered within Service Level threshold (ServiceLevelCalls) = 70

- Abandoned within Service Level threshold (ServiceLevelAband) =10

- Exceeded Service Level threshold (ServiceLevelCallsOffered – (ServiceLevelCalls + ServiceLevelAband)) = 20

- Total Service Level events (ServiceLevelCallsOffered) = 100

The following table shows the different Service Levels calculated, based on the effect of abandoned calls on Service Level setting.

Table 21: Service Levels Based on Different Calculations

Effect of abandoned calls on Service Level setting	Calculated Service Level
Abandoned Calls ignored	70/ (100-10)=77%
Abandoned Calls negatively impact	70/100=70%
Abandoned calls positively impact	(70 + 10)/100=80%

Service Level at the Peripheral VRU Service

The service level threshold timer at the VRU service starts as soon as the call arrives at the VRU service.

There are three service level events that can occur for the peripheral VRU service:

- Call is routed to an agent before service level timer expires. In this case the ServiceLevelCallsOffered and ServiceLevelCalls database fields are incremented.

- Call abandons while in the VRU before service level timer expires. In this case the ServiceLevelAband and ServiceLevelCallsOffered database fields are incremented.

- Service level threshold timer expires. In this case the ServiceLevelCallsOffered database field is incremented.

The VRU Service does not detect abandons that happen at the peripheral agent service, so these will not be part of the service level for the VRU service. The VRU service does not detect when the call is physically answered by the agent; it only knows when the call is *routed to* the agent.

Reports that show Service Level

These are some reports that contain Abandon statistics for Call Types and Services:

- caltyp04: Task Type Service Level Real Time Report

- persvc08: Agent and Task Status Real Time Report

- entsvc03: Effect of Abandoned Tasks on Enterprise Service Levels Report

For the complete list of templates, see Appendix A (page 159).

Chapter 7

Reporting on Operations

Monitoring operations involves reviewing VRU applications, Outbound Option calls[1], script efficiency, and system and network status. This might include the number of short calls, how many outbound campaign calls are being made, how you are utilizing agents, and how customers are using self-service and information-gathering VRU applications.

This chapter explains reporting metrics that are useful for monitoring operations and which report templates contain those metrics.

This chapter also has cross references to sections in that explain how to configure and script your system so that your reports contain appropriate and accurate data.

This section contains the following topics:

What Operational Data do you Want to See?

There are several WebView categories and multiple report templates in those categories that help you analyze operational status and performance.

As for all WebView reports, reports that monitor operations are categorized as either real-time (page 36) or historical (page 36).

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1) Outbound Option is not supported on most ACDs. See your ACD Supplement Guide to find out if Outbound Option reporting is applicable in your environment.

Key operational statistics in WebView reports include:

- Current full-time equivalent (FTE) information for agents, which is the number of full-time agents required to handle the current volume of work. This information might help to identify staffing needs.

- Percent utilization of agents. This information can also identify staffing needs.

- Number of short calls, which identifies whether short calls are configured and behaving appropriately. For example, if you notice that a large number of calls are abandoning within the short call timer, you might have the timer set too low or the short call threshold set too high.

- Current Outbound Option campaign activity, including the status of campaigns, the dialer, and record import.

- Historical full-time equivalent information for agents, which is the number of full-time agents required to handled the current volume of work. This information might help to identify staffing patterns over time.

- Historical performance of Outbound Option campaigns, including trends in number of calls made and average talk time.

- Historical performance of Outbound Option dialer activity, including number of calls dialed, answered, and abandoned, and whether voice, answering machine, or SIT Tones were detected for the calls.

- Historical performance of Outbound Option import activity, including the number of good and bad record imports.

- Number of calls that are being successfully handled by VRU Self-Service applications and the number that are transferred to agents.

- Whether the VRU activity is below or over capacity.

- Queue trends, such as number of calls that abandon while in queue and the average abandon wait time.

Report Categories for Measuring Operations

The table below describes WebView options for monitoring staffing requirements, ACD-picked skill group usage, Outbound Option campaigns, queue information, VRU capacity, or Self-Service application effectiveness, status and performance of network trunks.

Table 22: Report Categories for Monitoring Operations, Configuration, and Scripting

Reporting Needs	Report Category	Who Should Use this Category
You want to view current Full-time Equivalents (FTE) and percent utilization of agents to monitor real-time operations or measure trends in FTE and percent utilization for planning purposes.	Skill Group > Peripheral Skill Group Skill Group > Enterprise Skill Group	This category is useful to contact center administrators with global responsibility for staffing and operational monitoring.
You want to view the number of short calls to determine whether the short calls configuration is correct.	Agent > By Peripheral	This category is useful to contact center administrators responsible for configuration.
You want to view current activity Outbound Option dialing campaigns or review trends in the performance of these campaigns.	Outbound Option	This category is useful to contact center administrators or supervisors who manage outbound dialing campaigns. It is also useful for Administrators responsible for the Outbound Option Dialer, query rules, and record import configuration.
You want to view current queue activity or review trends in queue performance.	Service > Peripheral Service Skill Group > Peripheral Skill Group > Enterprise **Note:** When doing Enterprise queuing, use Call Type reports in addition to Skill Group reports.	This category is useful to contact center administrators or supervisors who monitor queuing success and abandons. This information is useful to identify training or staffing needs and necessary script or configuration modifications.
You want to view historical VRU peripheral usage to identify whether the call volume is below or exceeding VRU capacity.	Peripheral	This category is useful to contact center administrators responsible for VRU performance, configuration, and scripting.
You want to view trends in VRU Self-Service application usage to identify whether these applications are successfully meeting caller's needs or require modification.	Call Type and Service > Peripheral Service	These categories are useful to contact center administrators responsible for configuring and maintaining VRU Self-Service applications. **Note:** Call Type is applicable only when there is a Network VRU.
You want to see the status of trunks in the selected network trunk groups	Trunk Group > Network	These categories are useful to contact center administrators responsible for resource allocation.

Reporting Needs	Report Category	Who Should Use this Category
You want to report on peripheral trunk group data such as the number of trunks in service or idle, or whether there was a time when all trunks in a trunk group were simultaneously busy.	Trunk Group > Peripheral	These categories are useful to contact center administrators responsible for resource allocation.

Reporting on Outbound Option Campaign Effectiveness

To determine the effectiveness of Outbound dialing campaigns, use the templates in the Outbound Option reporting category to generate reports for campaigns, query rules used in those campaigns, Outbound Option record imports, and Outbound Option Dialer activity.

Note: This section is applicable only if Outbound Option is supported for your ACD. See the *ACD Supplement Guide*.

The campaign query rule reports (page 164) are the most useful reports for measuring campaign effectiveness. These reports show you what is happening in each campaign, including the number of calls closed, number of customers contacted, average talk time, and average wrap-up time for each query in a campaign.

You can report on campaigns on a higher level using the dialer reports (page 165). Each campaign is associated with a dialer. By reporting on a dialer, you view statistics that span all of the campaigns associated with the dialer. These reports show you the number of customers dialed, the number of calls that were not answered, the number of calls that were abandoned, and detection of busy, voice, answering machine, and SITTones.

Outbound Option reports also enable you to view the success of record importation. Using the import rule reports (page 164), you can monitor whether records being added successfully (good records) or are failing (bad records). Also, you can monitor how long it takes to import the records so that you can plan for future record importation.

To view data for Outbound calls that are transferred to the VRU, use the peripheral service IVR reports (page 169).

To monitor agent talk time for Outbound Dialer calls, use Agent by Skill group reports (page 161).

Reports that show Outbound Option Activity

These are some reports that show information on Outbound Option activity:

- camqry02: Status of all Campaigns Real Time

- dialer01: Dialer Real Time

- imprul01: Import Status Real Time

- camqry01: Status of Each Query Rule within a Campaign Real Time

- camqry11: Status of All Campaigns Half Hour

- dialer10: Status of Each Dialer Half Hour

For the complete list of Outbound Option templates, see Appendix A (page 164).

Reporting on Skill Group Operations

A skill group is a collection of agents at a single contact center who share a common set of competencies and can handle the same types of requests.

Each skill group belongs to a Media Routing Domain and is also a Service Member.

Use the templates in the Skill Group category (page 171) to gain insight into operations, to see how one skill group is performing compared to other skill groups, and to track whether calls are being distributed evenly by your routing scripts and configuration.

See also:

- Planning for Skill Groups and Enterprise Skill Groups (page 69)

- Configuring Skill Groups and Enterprise Skill Groups (page 189)

- Reporting on Agent Activity in Skill Groups (page 79)

WebView organizes Skill Group reports into three categories:

- You can select and report on data for Base Skill Groups (page 171) only, when sub-skill group are configured.

  Note: If you have configured sub-skill groups, data from sub-skill groups automatically rolls up into base skill groups.

See also About Base Skill Groups and Sub-Skill Groups (page 70) and Report Statistics when Sub-Skill Groups are Configured (page 153).

- You can report on skill groups associated with a specific single peripheral (page 173) (ACD) in the contact center enterprise.

  Note: If you are not using sub-skill groups, reports run from this category are identical to reports run from the Base Skill Groups category.

- You can report on Enterprise Skill Groups (page 172).

  An enterprise skill group is a collection of skill groups, mapped across multiple ACDs.

  If you group skill groups from the same peripheral into an enterprise skill group, you might see double-counting of some metrics in your reports. See Skill Group and Enterprise Skill Group Record Comparison (page 40).

Note that you can also use the Agent by Skill group (page 161) category as a tool for monitoring agent performance (page 79) to track agent(s) in one or more skill groups.

Reports that Show Skill Group Operations

These are some of the reports that contain operational information on Skill Groups

- perskg20: ICM Peripheral Skill Group Status Real Time

- perskg29: Peripheral Skill Group Logout Real Time

- perskg22: ICM Peripheral Skill Group Task Summary Daily

- entskg22: ICM Enterprise Skill Group Task Summary Daily Report

- entskg06: Enterprise Skill Group Performance Half Hour Report

For the complete list of skill group templates, see Appendix A (page 171).

Reporting on Staffing: Full-Time Equivalents and Percent Utilization

Because agents can work on multiple media and in multiple skill groups, they typically do not spend all of their time handling tasks for a single skill group. Determining staffing needs based on agents whose time is divided among skill groups and media can be difficult.

WebView provides two types of statistics that give you a better view of how agents are being utilized and how many full-time agents would be required to handle the amount of work performed during an interval for a particular skill group.

These statistics are:

- % Utilization (percent utilization)

- FTE (full-time equivalent)

You can use these statistics when determining staffing requirements for the contact center and individual skill groups.

Percent utilization (% Utilization in reports) is computed in WebView by dividing the total time agents spend handling calls in a skill group by the total time agents were ready to handle tasks. To calculate the time that an agent was ready, WebView subtracts the Not Ready time from the total time that agents were logged on. Percent utilization shows you how well agents are being utilized within a skill group. For example, if the agent spent 20 minutes of the log on duration handling calls and was available to handle calls for 40 minutes, the percent utilization is 50%.

The **full-time equivalent** (FTE in reports) is the number of full-time agents that would be required to perform the work done during that interval for a skill group. To calculate the FTE, WebView divides the total time that work was performed by the total time in the interval. For example, if agents spent a total of 3 hours (180 minutes) handling tasks during a half-hour interval (30 minutes), the FTE for task handling during the interval is 180 minutes/30 minutes, which equals 6 full-time persons. This means that if all agents handled tasks full-time, the work could have been done by 6 agents.

Reports also provide FTE values based on an 8 hour shift calculation. It is assumed that agents work an 8 hour shift for the day. To calculate the FTE, Webview divides the total time that work was performed by 8 hours. For example, if agents spent a total of 48 hours (2880 minutes) handling tasks during an 8 hour work shift (480 minutes), the FTE for task handling during the interval is 2880 minutes/480 minutes, which equals 6 full-time persons. This means that if all agents handled tasks full-time, the work could have been done by 6 agents.

Note: If you select a report interval that is less than 8 hours, the value will be lower than expected.

Reports that show Percent Utilization and FTE metrics

These are some of the reports that contain operational information on Percent Utilization and FTE:

- perskg05: Peripheral Skill Group % Utilization of Ready Agents

- perskg04: ICM Rolling 5-minute Peripheral Skill Group Status

- perskg08: FTE for Peripheral Skill Group Half Hour

- entskg04: ICM Rolling 5-Minute Enterprise Skill Group Status Report

Reporting on Short Calls

If you have defined the thresholds for calls that are abandoned or answered too quickly to be 'counted', you can use reporting to quantify those calls. See also Planning for Short Calls (page 68) and Configuring Short Calls (page 188).

You can configure and report on two types of short calls:

- Abandoned short calls

- Answered short calls

You also have the option to not define a value for short calls.

Short calls apply only to voice calls. You do not define short calls for non-voice tasks, such as single-session chat tasks.

A number of All Fields Reports contain a Short Tasks column to enable you to track calls that are offered but are neither handled nor abandoned.

See also:

- Planning for Short Calls (page 68)

- Configuring Short Calls (page 188)

Abandoned Short Calls

A call is considered abandoned if it abandons *after* the value set for the Abandon Call Wait time threshold. This is set globally.

If the call abandons *before* the Abandon Call Wait Time threshold, the call is reported as a short call.

Abandoned short calls affect reporting because they update the CallsOffered field but not the CallsAbandon field.

Answered Short Calls

Answered short calls reflect when a caller hangs up quickly if no agent answers the phone.

Answered short calls are reported for skill groups and agent skill groups.

The short call timer starts when the agent answers the call, and the CallsAnswered metric is updated for these calls.

The ShortCalls fields within the Skill_Group_Half_Hour and Agent_Skill_Group_Half_Hour tables are incremented if the Talk Time is less than the Answered short call threshold configured for the peripheral. The call is reported both as handled and as a short call.

If auto-answer is enabled for the agent, and if there are a high number of short calls within a certain interval, reporting on short calls can be used to determine which agents were not at their station when a call was automatically answered. This assumes that the caller hangs up quickly when there is no agent on the phone.

Reporting on VRU Applications

You can use a VRU for a number of different purposes, including queuing, customer self-service, and information gathering.

See also:

- Planning for VRU Application Reporting (page 73)

- Configuration and Scripting for the VRU (page 190)

Self-Service, Information Gathering, and Queuing VRU Applications

This section is applicable only if you are using a Network VRU in your deployment.

VRU applications include Self-Service, Information Gathering, and queuing.

A self-service application is designed for callers to obtain routine information via VRU menu options. Only for exceptional cases would the call be routed to an agent.

You must be able to determine the following from an IVR service used for customer self-service:

- How many calls traversed the application

- How long each call remained in the self-service application

- How many calls did not require agent intervention

- How many calls were eventually routed to agents

Information Gathering VRU applications are used to decide what skill group to queue the call to by walking the caller through a series of voice prompts. The Caller Entered Digits (CED) are passed back from the VRU to be used within the routing script, to decide the optimal skill group to answer the call.

You must be able to determine the following from an IVR service used for information gathering:

- How many calls traversed the application

- How long each call remained in the information gathering application

- How many calls disconnected before being routed to an agent

- How many calls were eventually routed to agents

Several applications can reside on the same VRU PG; Self-Service and queuing can reside on the same VRU PG and Information Gathering and queuing can reside on the same VRU PG. This means that all of the applications on that PG belong to the same VRU service. The VRU service cannot be changed once the call is sent to the VRU. However, the Call Type can be changed via the Requalify or Call Type node. In the following script, the Call Type is changed via the Call Type node once it has been queued to separate Information Gathering (CollectDigits) and queuing.

Figure 11: Sample Routing Script for Information Gathering and Queuing
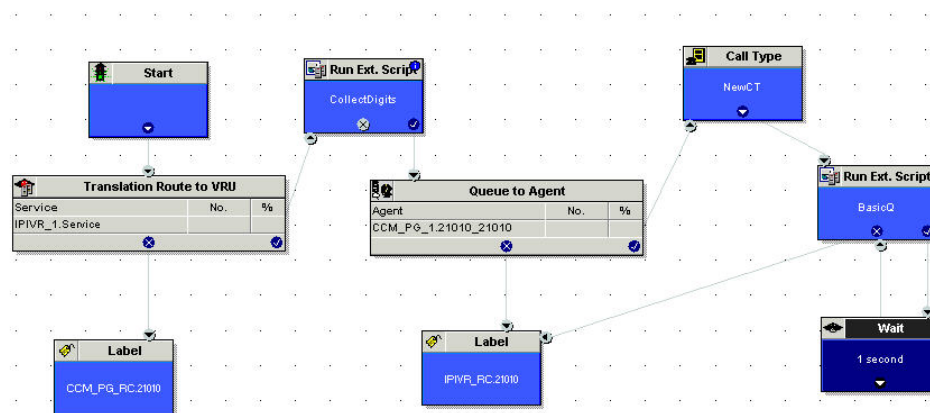
Although a service level can be defined for both Call Types, it is better to define a service level for the Call Type that has the Queue to Skill Group node in it.

Calls that disconnect while in the Self-Service or Information Gathering application are considered abandoned calls since both Service Control and Queue reporting must be turned on for VRU Queuing applications. However, you can extract queuing metrics from information-gathering metrics by defining a separate Call Type for each, and then changing the Call Type in the routing script.

Note: If the VRU performing Self-Service does not also provide queuing, you can enable Service Control reporting and disable Queue reporting. If the caller opts to speak to an agent, then the Self-Service VRU transfers the call to the IP-IVR or CVP that performs queuing and the call does not appear abandoned from the Self-Service application. This means that the call is considered answered when received by the VRU, not offered. When the call ends, it is counted as handled. If you implement this configuration, you will only be able to see in reports the number of calls that were answered and terminated, and time spent on terminated calls.

The following illustration shows how a call moves from the Information Gathering application to the queuing applications.

In this example, 20 seconds will be used to calculate ASA and decide the service level instead of 50 seconds (30+20 seconds).

Figure 12: Call Type Data for Calls that Abandon after Call Type is Changed
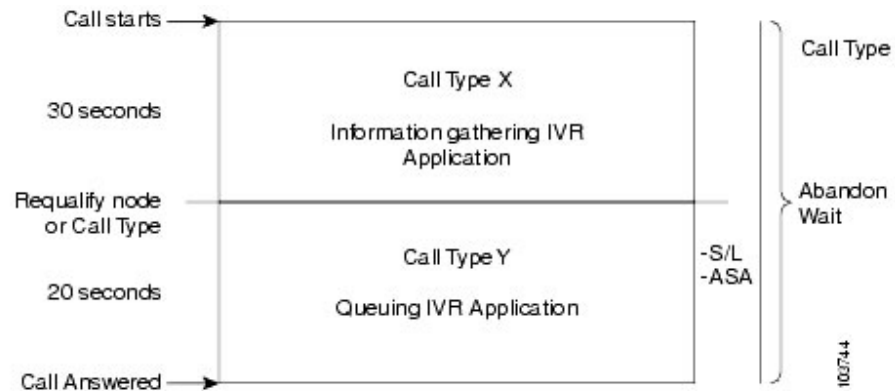
Note that if the call abandons before being requalified to the Call Type that handles queuing, the Call Abandon Wait time is not reset. Therefore, the Abandon Wait time for the information gathering Call Type starts when the call enters the first Call Type, and ends when the call abandons, as illustrated below:

Figure 13: Call Type Data for Calls that Abandon before Call Type is Changed
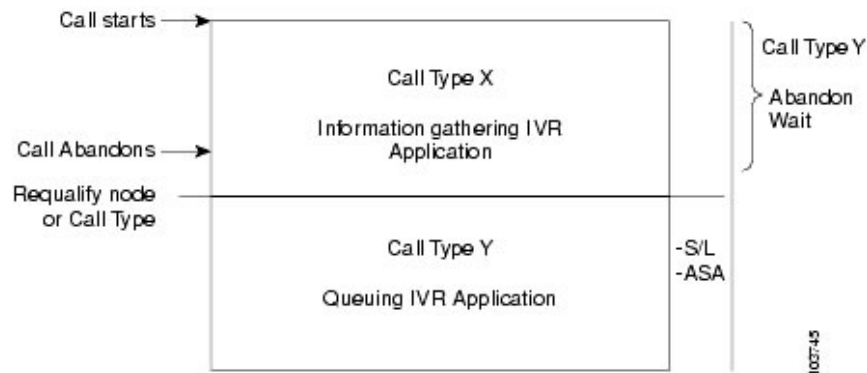
The following table illustrates how some basic metrics are broken up at the CallType and the IVR Service.

Table 23: Self-Service and Information Gathering Application Metrics

Report Metric	Call Type	VRU Service	Skill Group
Abandon Wait Time	Starts when a call first enters a Call Type and ends when it abandons.	Starts when the call enters the service.	Not Applicable

Report Metric	Call Type	VRU Service	Skill Group
Average Speed of Answer (ASA)	Starts at the first Queue to Skill Group node in the routing script.	Starts at the first Queue to Skill Group node in the routing script.	Starts at the first Queue to Skill Group node in the routing script.
Service Level	Starts as soon as the call enters the Call Type that has the service level defined.	Starts when the call enters the service.	Not Applicable

Measuring VRU Utilization

You can monitor the number of calls that are being handled by VRU services using the periph06: VRU Peripheral Capacity WebView report.

This report provide metrics including:

- Number of calls offered to the VRU.

- Average number of calls serviced by the VRU simultaneously.

- Maximum number of calls in progress simultaneously.

  If you are using CVP as the VRU and have deployed CVP in the Comprehensive Model, note that the number of calls in progress refers to the number of Routing Client ports and the number of VRU ports in use on this peripheral. See the Cisco Internet Service Node (CVP) Configuration and Administration Guide for more information about the Comprehensive Model.

- Amount of time that the VRU peripheral has been sending data.

- Amount of time that the VRU peripheral has been active as a routing client.

You can use the data in this report to determine if the VRU is capable of handling the amount of calls it is receiving or if the VRU is not being utilized effectively by your routing scripts.

Monitoring Self-Service and Information Gathering Application Progress

You might determine the effectiveness of a Self-Service application in several ways:

- Monitoring the effectiveness of the application as a whole. For example, you might only want to monitor whether a customer's need was satisfied through the VRU application and that the caller did not need to be transferred to an agent.

- Monitoring the effectiveness of individual transactions within the application. For example, in a banking application a customer might have the ability to perform multiple transactions, such as account lookup, obtaining balance information, and learning about recent payments.

You might want to see which of these transactions was used and whether the caller successfully completed the transaction.

- Monitoring failure cases in which a system error, such as a failed database lookup, caused the caller to be transferred by an agent instead of continuing through the VRU application.

Similarly, you might determine the effectiveness of an Information Gathering application in several ways:

- Monitoring whether the caller used the system prompts to be routed to an appropriate resource or used a failout path, such as pressing "0", to be routed directly to an agent.

- Monitoring failure cases in which system errors, such as a failed database lookup, caused the caller to be transferred to an agent instead of continuing through the digit collection prompts for more appropriate routing.

You can obtain information about application effectiveness a whole, effectiveness of individual transactions within the application, and failure cases using the VRUProgress variable available in the Set script node. The VRUProgress variable enables to you set the status of the VRU call at any point in the application. For example, if you consider a call handled by the VRU when the caller completes a certain node, such as an account balance lookup node, then you can set the variable to 2, indicating that the call should be reported as VRU Handled for the appropriate Call Type.

These VRUProgress variables map to columns that appear in VRU Activity WebView reports, enabling you to see how many calls were counted for each variable per Call Type. You can use this data to modify applications if needed. For example, if you see that many callers are experiencing error conditions that cause a forced transfer you could correct the function of that node. If you see that many callers are opting to be transferred to an agent before being handled by the application, you might want to add functionality to the application.

The following table describes the VRUProgress variables that you can use in your VRU script applications and how they map to report columns.

Variable Setting in Script	Show in Reports as	Description
0	Not a VRU call - does not appear in reports	Indicates that this call is not a VRU call. It is the default value.
1	VRU Unhandled	Indicates that the caller's needs have not been met at this point in the application.
2	VRU Handled	Indicates that the caller's needs have been met by this point in the application. For example, the caller successfully received an account balance.
3	VRU Assisted	Indicates that this call was transferred to an agent after the caller's needs were met with the application. For example, the caller successfully received account

Variable Setting in Script	Show in Reports as	Description
		information and then requested to speak to an agent for a different reason or for additional information not available through automatic means.
4	VRU Opt Out Unhandled	Indicates that the call was transferred to an agent at the caller's request before the caller's needs were met by the application. For example, the caller pressed "0" to be transferred to an agent before performing automated transactions or while in the process of completing a transaction.
5	VRU Scripted Transfer	Indicates that the call was transferred to an agent as part of the application design. For example, after the caller checked an account balance the application transferred the caller to agent to discuss new account options. Another example is that after a caller entered digits to request a particular type of service the call was transferred to an available agent to handle the request.
6	VRU Forced Transfer	Indicates that the caller was transferred to an agent because of a system error. For example, a failure at a particular node in the application could lead to the call being transferred to the agent.
7	VRU Other	Indicates that the call disposition does not match any of the other VRUProgress variables.

You can use the VRUProgress variable to indicate the final VRU status at the end of the application or to indicate changes in VRU status through the different transactions in the application.

The VRUProgress variable is associated with a specific Call Type. If you want to report only the final status of the call, then you can use a single Call Type in the application and set the VRUProgress variable at any point in the application. Note that while you can change the VRUProgress variable throughout the application, only the final status is reported for the Call Type. The value of the VRUProgress variable is written to the database when the routing script terminates. You can report on the VRU status of the application as a whole using the Call Type VRU Activity WebView reports by monitoring statistics for the Call Type associated with the script.

If you want to report on individual transactions within the application, change the VRUProgress variable and then the Call Type at the end of each transaction. You should have a different Call Type for each transaction with a related VRUProgress variable. This ensures that the value of the VRUProgress variable is captured for that particular transaction, not just at the end of the routing script. The value is written to the database for the Call Type associated with that transaction when the Call Types changes. You can report on individual transactions using the Call Type VRU Progress WebView reports by monitoring statistics for the Call Types associated with those transactions.

Capturing Script Application Data (CVP only)

If you have deployed CVP as the VRU in your Enterprise system, you can use two advanced features to gather additional details about calls' progress through Self-Service and Information Gathering applications: Capture microapplication and metadata ECC variable. The details provided by these microapplications can be used only in custom reports; standard WebView reports do not provide this information.

The Capture microapplication enables you to cause a Termination_Call_Detail (TCD) record to be written at any point in the script. This record includes information such as the current call variables, Router call keys, date and time, caller entered digits, and metadata ECC variables.

The metadata ECC variable captures high level details about a call's progress through a script, including whether the caller is using voice or digit dialing, percent confidence for Automatic Speech Recognition, number of attempts a user made before entering a prompt successfully, number of timeouts, number of invalid entries, microapplication duration, and the routing script used. This information is written to TCD records. If you plan to use the metadata ECC variable, you must configure the ECC variables in the configuration tools.

Using the VRUProgress variable, the Capture microapplication, and the metadata ECC variable microapplication together in a script provides you with the ability to monitor details about the transactions performed by the caller and the VRU application's interface to caller. For example, you could use the Capture microapplication to create a TCD each time the VRUProgress variable changes in the script. The TCD is written for that particular point in the application, which includes the information gathered by the metadata ECC variable. A custom report could show how many callers experienced timeouts at different points in the application, how many attempts callers made before successfully completing a transaction, and how long it took a caller to complete each transaction. This data could indicate problems with the VRU application. You could also run a custom report on an individual call to see how a particular caller used the application and whether s/he encountered difficulties.

Reports that show VRU Metrics

These are some of the reports that show metrics for VRU applications:

- caltyp35: VRU Call Type Analysis Half Hour and caltyp36: VRU Call Type Analysis Daily

- periph06: VRU Peripheral Capacity Report

- persvc20: Peripheral Service for IVR Queue Half Hour

- persvc22: Peripheral Service IVR Self-Service Half Hour

Other Operational Reports

Several report categories are useful for analyzing the efficiency of infrastructure operations and for monitoring resource demands.

Reporting on Application Gateways and Application Paths

An Application Gateway is an optional ICM feature that allows ICM to query host systems that are running other contact center applications and to base routing decisions on the results obtained from the query. You can pass data to the application and receive data is return, which you can then examine and use for routing decisions.

Reports

There are three reports related to application gateways that report on such data as the number of query requests issued to a host system and the delay involved in making queries. See Application Gateway, Application Path, and Script Queue Templates (page 163).

Configuration

Before you can use these nodes in a script, you must first configure the gateways. The application gateway requires connection information to communicate with the external application. You perform this task using the Configuration Manager.

You use the Configuration Manager to configure connection information to communicate with an Application Gateway.

Within the Configuration Manager, select **Tools > List Tools > Application Gateway List**.

Reporting on Routes and Routing Clients

A route is a value that a routing script returns. This value maps to a service and specific target at a peripheral. It represents the destination for a call and the type of service to be offered to the caller.

Unified ICM converts the route to a label and sends the label to the routing client. The routing client then delivers the call to a specific trunk group and DNIS. The peripheral is responsible for recognizing the trunk group and DNIS and delivering the call to the appropriate target.

A routing client is an entity that sends routing requests to Unified ICM software, seeking a destination (route)for a call. A routing client typically corresponds to a subsystem within an interexchange carrier or to a peripheral (ACD, VRU, PBX) that is performing Post-Routing.

Reports

You can report on many types of call statistics for routes, such as the number of calls in progress, calls in queue, or calls handled (either in real-time or over a specified period of time).

See Route Templates (page 159). and Routing Client Templates (page 167).

Configuration

To configure routes, use the Configuration Manager's Route Bulk tool to create multiple routes. To create individual routes, use the Configuration Manager's explorer tool appropriate for the route target.

To configure routing clients, from the Configuration Manager menu, select **Tools > Explorer Tools > NIC**. Click the Routing Client tab.

Reporting on Trunks and Trunk Groups

Every peripheral has one or more associated trunk groups, with each trunk group containing one or more physical trunks.

You configure trunks and trunk groups with the Configuration Manager.

Note: Not all ACDs support trunk configuration. If your ACD does, make sure the PG is accurately configured in Configuration Manager. For the ICM software to properly monitor ACD calls, all individual trunks and their corresponding Trunk Group assignments must be configured in the ICM database.

WebView groups templates for trunk reports into two subcategories:

• Network trunk groups—a group of trunks organized to reflect the routing client's view of trunks

• Peripheral trunk groups—a collection of trunks associated with a single peripheral.

You can report on data such as the number of trunks in service, number of trunks idle, and the time during which all trunks in a trunk group were simultaneously busy (All Trunks Busy).

See Networks Trunk Group templates (page 175) and Peripheral Trunk Group Templates (page 175).

Chapter 8

Reporting in a MultiChannel Environment

A decade ago, most customer contact took place by voice over the PSTN. Now, the ability to support online channels such as e-mail, web collaboration, and web chat are a major part of customer interaction.

WebView reporting provides data on task and agent activity for multichannel options, including Collaboration Server and E-Mail Manager *if they are deployed in your Unified ICM system*. To interpret report data correctly, you need to understand how Media Routing Domains and Media Classes are used, how agent availability and routability is determined, and the differences in report data for voice tasks and non-voice tasks.

This section contains the following topics:

MultiChannel Options

When Collaboration Server and E-Mail Manager are included in the Unified ICM system, agents can be configured to handle e-mail messages and online chat sessions *in addition to* voice calls.

Collaboration Server provides the ability for agents to share information with customers over the Web, such as web pages, forms, and applications, while at the same time conducting a voice conversation or a text chat.

Cisco E-Mail Manager manages high volume of customer inquiries submitted to company e-mail boxes or to a web site. E-Mail Manager selects agents and teams to receive incoming messages, categorizes and prioritizes messages, suggests response templates, and, if configured to do so, sends automatic responses.

When present in the system, these multichannel options are responsible for sending the incoming task request to ICM software for agent or skill group selection through the MR PG (which is used for routing) and an Agent PG (which ends agent status and activity to the Central Controller and places the selected agent into session with the task).

This is the flow of events when the E-Mail Manager or the Collaboration Server receive a request:

- The MultiChannel option sends the task information to the Central Controller for routing purposes.

- The Central Controller returns an agent and skill group.

- The MultiChannel option pushes the task to the agent.

- If no agent is available, the task queues logically at the E-Mail Manager or in the queue of the Web Collaboration Option until the agent becomes available. Because the task does not involve voice, physical queuing is not needed.

This architecture is illustrated in the following diagram.

Figure 14: MultiChannel Options
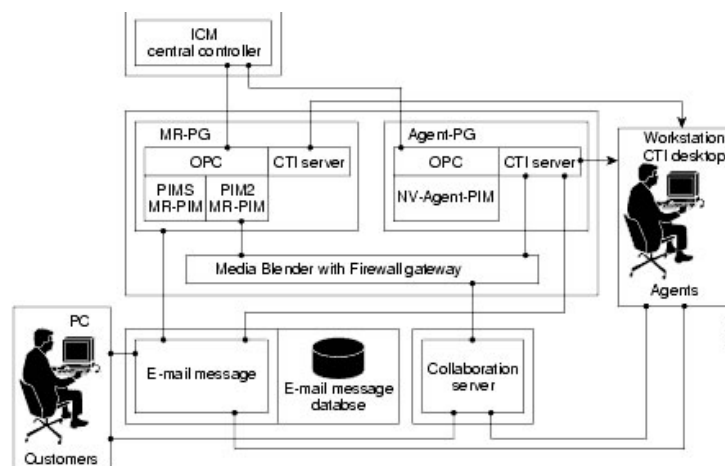
Media Classes and Media Routing Domains

A **Media Class** represents a combination, or a single instance, of media that are to be treated as a single concept for routing by Unified ICM software.

Media Classes include:

- Voice, which includes incoming and outgoing phone calls. Voice also includes Web Callback and Delayed Callback through the Web Collaboration Option

- Single-session chat, through Web Collaboration Option

- Multi-session chat, through Web Collaboration Option

- Blended Collaboration, through Web Collaboration Option

- Email, through E-Mail Manager Option

If your system is designed to handle voice-calls only, you have the Voice Media Class only.

A **Media Routing Domain (MRD)** is a collection of skill groups and services that are associated with a common media class. Unified ICM uses Media Routing Domains (MRDs) to organize how requests for different media are routed.

Each skill group is assigned to a Media Routing Domain. ICM software uses MRDs to route a task to an agent who is associated with a skill group and a particular medium.

Each Media Routing Domain belongs to a Media Class.

You can report on activity for all of the MRDs that you have configured in your system.

When configuring your system, you first configure MRDs in Configuration Manager and then enable the appropriate MRDs on the Collaboration Server and E-Mail Manager applications. MRDs have unique IDs across the enterprise.

The Voice MRD is created by default for all deployments.

Agent Availability and Routability

The ability for Unified ICM to route a call or multichannel task to an agent depends on the agent's routability and availability within the MRD of the call or task. WebView reports contain fields indicating agents' availability in the MRD.

An agent might be in Routable or Not Routable mode for each MRD to which he belongs. Routability refers to whether Unified ICM or the Web Collaboration Option or E-Mail Manager Option is configured to assign tasks to the agent. For example, your system might be configured to allow the Web Collaboration Option to select an agent to handle a task. In this case, Unified ICM gathers reporting data for those tasks, but does not perform the routing. If Unified ICM is configured to assign the task, it both routes and reports on the task.

For voice calls, Unified ICM is always configured to route the call. Therefore, the agent is always Routable.

The following table describes what it means when an agent is Routable and Not Routable.

Agent Availability and Routability

Term	Description
Routable	Unified ICM is configured to assign tasks to the agent
Not Routable	The Web Collaboration Option or E-Mail Manager Option is configured the assign tasks to the agent.

While Routability determines whether the Router is allowed to assign tasks for this MRD, the agent's Availability determines whether the agent is capable of handling new tasks.

An agent is Available, or eligible to be assigned a task in an MRD, if he or she meets all of these conditions:

• Is in any state other than Not Ready state for this MRD.

• Is not working on a non-interruptible task in another MRD. Only e-mail tasks are interruptible, meaning that Unified ICM can assign the agent another task while he is working on an e-mail. Voice calls, single-session chat sessions, multi-session chat sessions, and Blended Collaboration chat sessions cannot be interrupted.

• Has not reached the maximum task limit for this MRD. For voice, single-session chat, e-mail and Blended Collaboration MRDs, the task limit is always one task. For the multi-session chat MRD, the task limit is customized through the Web Collaboration Option administration application.

An agent is Not Available in an MRD if the agent is Not Ready, working on a voice, single-session chat, multi-session chat, or e-mail task, or has reached his or her maximum task limit.

Therefore, an agent is:

• ICM available if he is Routable and Available for the MRD. This means that the agent can be routed a task by Unified ICM.

• Application available if he is Not Routable and Available for the MRD. This means that the agent can be routed a task by the Web Collaboration Option or E-Mail Manager.

Consider the following call/task scenarios and how they affect agent mode and availability.

Table 26: Scenario 1: Not Routable - Multi-session Chat, then Voice

Scenario	Result
The agent is logged into two MRDs, multi-session chat and voice. The agent is *not routable* in the multi-session chat MRD. The agent is assigned a task in the multi-session chat MRD by the Web Collaboration Option.	Unified ICM does not assign a task to the agent from the Voice MRD, since the agent is working on a non-interruptible task in the Multi-session Chat MRD. The agent is *Not Available* in Voice.

Table 27: Scenario 2: Not Routable - Voice then E-Mail

Scenario	Result
The agent is logged into two MRDs, multi-session chat and voice. The agent is *not routable* in the e-mail MRD. The agent is assigned a call in the Voice MRD.	Unified ICM does not assign e-mail tasks to the agent. The agent is *Not Available* in the e-mail MRD. E-mail tasks can still be placed in the agent's personal queue in this scenario by the E-Mail Manager Option. E-mail tasks might also be sent to the agent's queue as a result of a customer responding to an E-Mail from the agent. See Cisco E-Mail Manager documentation for complete information on routing E-Mail tasks.

Table 28: Scenario 3: Not Routable - Voice then Single-session Chat

Scenario	Result
The agent is logged into two MRDs, single-session chat and voice. The agent is *not routable* in the single-session chat MRD. The agent is assigned a call in the Voice MRD.	Web Collaboration Option does not assign single-session chat tasks to the agent. The agent is *Not Available* in single-session chat.

Table 29: Scenario 4: Routable - Maximum task limit

Scenario	Result
The agent is logged into a multi-session chat MRD (maximum task limit for the agent in this MRD is 6). The agent is *routable* in the multi-session chat MRD. The agent is assigned a task in the multi-session chat MRD.	Unified ICM continues to assign tasks to the agent until the agent has reached his maximum task limit. The agent is *ICM Available* in the multi-session chat MRD, even though the agent is Active on a task.

Table 30: Scenario 5: Routable (busy on non-interruptible task)

Scenario	Result
The agent is logged into two MRDs, multi-session chat and voice. The agent is *routable* in the multi-session chat MRD. The agent is assigned a voice call in the voice MRD.	Unified ICM does not assign a multi-session chat task to the agent, since the agent is working on a non-interruptible task in the voice MRD. The agent is *Not Available* in the multi-session chat MRD even though the agent is Not Active in multi-session chat skill groups.

Table 31: Scenario 6: Routable (busy on interruptible task)

Scenario	Result
The agent is logged into two MRDs, e-mail and voice. The agent is *routable* in the e-mail MRD. The agent is assigned a task in the e-mail MRD	Unified ICM can assign a voice call to the agent, since the agent is working on an interruptible task in the e-mail MRD. The agent is *ICM Available* in Voice MRD.

Agent State Hierarchy for Multi-session Chat Media Routing Domain

Agent state on a task determines the agent state in a skill group, and agent state in a skill group determines agent state in the Media Routing Domain. For example, if an agent is Active on a call for Skill group A, then the agent state is Active in Skill group A and the agent state is Active for the MRD to which Skill group A belongs.

However, agents handling multi-session chat tasks can work on more than one task in the same skill group, and more than one skill group can belong to a MRD. In this case, a state hierarchy is used to determine how the agent's state in the skill group and in the MRD is reported.

The agent state hierarchy is:

1. Active

2. Work Ready

3. Paused

4. Reserved

5. Busy Other (for different skill groups in the same MRD)

6. Not Active

For an additional discussion of Agent State, see Chapter 6 (page 80).

Consider the following diagram:

Figure 15: Agent State Hierarchy
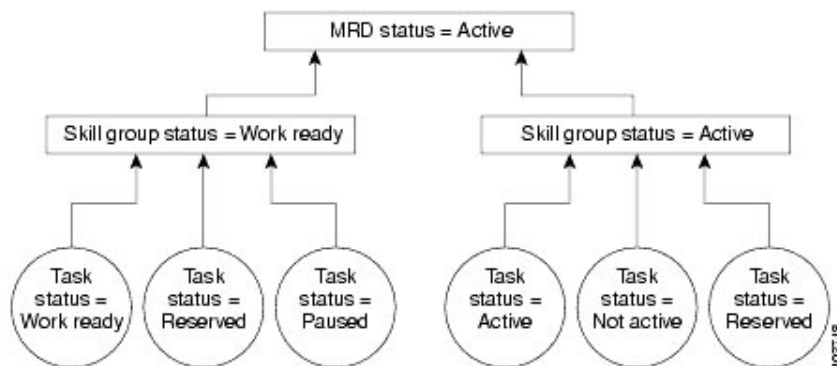
In this diagram, an agent belongs to two skill groups in the Multi-session Chat MRD and is configured to work on up to six simultaneous multi-session chat tasks in each MRD.

In the first skill group, the agent is working on three tasks. The agent's states for those tasks are Work Ready, Reserved, and Paused. Work Ready is the state reported for the agent at the skill group level, because Work Ready is higher than Reserved and Paused in the state hierarchy.

In the second skill group, the agent is working on two tasks. The agent's states for those tasks are Active and Reserved. Active is the state reported for the agent at the skill group level, because Active is higher than Reserved in the state hierarchy. For the Multi-session Chat MRD, the agent's state is Active because Active is higher than Work Ready in the hierarchy.

MultiChannel Reporting Data

Unified ICM databases store information about agent activity and tasks routed by Unified ICM, including tasks that are submitted by the Web Collaboration Option or E-Mail Manager Option. Reports contain a Media field, when appropriate, to identify the MRD of each task included in the report.

The following table describes major differences between voice and non-voice tasks in reports. Non-voice tasks include single-session chat, multi-session chat, e-mail, and Blended Collaboration.

Table 32: Report Data for Multi-Channel Options

Type of Data	Data for Voice Tasks	Data for Non-Voice Tasks
Task direction	Task direction can be both incoming (agent receives call) and outgoing (agent places call). Note that calls placed by Cisco Outbound Option appear as incoming calls because of the manner in which the Outbound	Task direction is always incoming, and values of report fields pertaining to outgoing non-voice tasks are set to null.

Type of Data	Data for Voice Tasks	Data for Non-Voice Tasks
	Option Dialer places calls between agents and customers.	
Session ownership changes	The ownership of a voice task can change through the life of the call. Agents can transfer the call or conference in another agent.	Non-voice tasks do not change session ownership. These tasks cannot be transferred or conferenced and supervisors cannot barge into or intercept the task. Note that while it is possible for a Web Collaboration agent to allow another agent to join a session and then drop the session, leaving the second agent and the caller in session together, this is not the same as a voice call transfer. Unified ICM software interprets this as two different sessions, one for the original agent and one for the second agent. Also, while E-Mail Manager agents can forward messages to other agents, this is not the same as a voice call transfer. Unified ICM interprets messaging forwarding as two different sessions, one for the original agent and one or the receiving agent.
Short calls	Voice calls are considered to be short calls if they disconnect within the time boundaries defined in the Agent Desk Settings for short tasks.	The Collaboration Server and E-Mail Manager do not enable administrators to configure a short task time boundary. Therefore, non-voice tasks are not reported as short tasks, even if they disconnect within the short task time defined in Agent Desk Settings. Values of report fields pertaining to short calls are set to zero.
Multiple tasks	Agents can handle one voice task at a time. Agents can handle a voice task and an e-mail task simultaneously. E-MAIL is an interruptible MRD and agents handling e-mail tasks can be interrupted with a voice call. Reports show the agent as Active for both the e-mail and voice task.	Agents might be configured to handle multiple non-voice tasks, such as multi-session chat, at the same time. If an agent is engaged in several non-voice tasks, the reports contain data for each of the tasks. These tasks might be from multiple skill groups. For instance, because e-mail is an interruptible MRD, an agent can be working on an e-mail tasks while also working on a task or call in any other medium. Also, an agent might be working on three multi-session chat sessions, each from a different skill group. Note that task duration fields are also affected in reporting. For instance, the half-hour duration fields might have a value greater than 30 minutes for non-voice tasks.
Service Level	You determine which Service Level type you want to use for voice tasks and this setting affects the reporting data.	The Service Level for non-voice tasks is always set to "ignore abandoned calls". The Service Level setting affects the Service Level data in reports for non-voice tasks.

Reporting Templates for Multichannel Applications

Although WebView report templates report on multichannel skill groups, agents, and tasks, WebView reports do not contain details regarding the Collaboration Server or E-Mail Manager-specific events that transpire during a Collaboration Server or E-Mail Manager task.

For example, WebView reports show that an agent handled a chat task, but do not provide the text of a sent chat message. Similarly, WebView reports show than an agent is currently Active on an e-mail task, but do not show the number of e-mails received by an agent.

Multichannel applications have separate reporting tools, available through the applications, that provide application-specific details about the sessions.

Reports that show Multichannel Activity

Many of the WebView templates provide data across media routing domains. For example, you can create a report listing all the tasks (for example, calls and e-mails) with which an agent has been involved.

These are some of the reports that contain information on multichannel activity:

- agtskg20: ICM Agent Skill Group Real Time

- agteam04: Agent Task Detail Activity

- agtper04: Agent Peripheral Task Detail Activity

For the complete list of agent templates, see .

Reports that show Multichannel Activity

Chapter 9

Reporting Implications of Data Loss and Component Failover

The Cisco Unified ICM uses sophisticated techniques in gathering and storing data. Due to the complexity of the system, the amount of data being gathered, the diversity of devices and peripherals, and the complex processes involved, it is possible that WebView historical reports might present inconsistent data.

Although these reporting inconsistencies are confusing, most can be traced to temporary effects caused by time lags between the processes involved and nature of the data itself.

This chapter identifies and explains common conditions that lead to temporary and permanent inconsistencies in historical data. It discusses the potential effect of system failover on data that appears in WebView reports and offers guidance on how to guard against data loss.

This section contains the following topics:

Data Flow from Logger to Historical Data Server

Assuming a full-duplex, fault tolerant implementation, data is sent from Router A to Logger A and from Router B to Logger B.

The Logger Central Database forwards (replicates) historical data to corresponding historical tables on the Historical Database Server in summary half-hour intervals. These data populate the historical half-hour and daily reports.

Two Distributor Admin Workstations are typically set up as HDS machines. A similar fault-tolerant strategy applies to the HDS—when the primary HDS fails, the client Admin Workstation automatically switches over to use the backup HDS.

Each Historical Data Server (HDS) is connected to a single Logger.

Sections in both Chapter 1 (page 14) and Chapter 2 (page 27) discuss the relationship between the Logger and historical data.

Understanding Recovery and Replication

Recovery Keys

The recovery key is the base key for all historical data tables. This key is always incremented by 1 before a new record is inserted into any historical table.

In a duplex configuration, the Logger that finishes initializing first is designated the primary Logger (although both the Loggers are always active and working in parallel). The recovery key is always initialized by the primary Logger. The recovery key is based on the current GMT date and time and always has a value greater than any previous value generated. This helps the recovery process to keep the Loggers in sync.

The replication process may have a latency of about one to five minutes because the Logger replicates data table-by-table on the HDS.

Temporary Tables

Each historical table on the Logger Central Database has two corresponding temporary tables that act as buffers to incoming historical data. As they have minimal indexes, the temporary tables speed up the process of inserting data into the corresponding actual table in the Logger Central Database.

Recovery Process

As the incoming historical data is written to the corresponding temporary tables by the Logger, the Recovery process reads the data from the temporary tables and performs a bulk insert operation of up to 2000 records into the actual historical tables.

In a duplex configuration, the recovery process keeps the historical data on the two Loggers in sync, using the Recovery Keys. The historical data between the Loggers is synced directly using actual tables; temporary tables are not used by the recovery process.

Replication

The Replication process is responsible for replicating data that has been committed to the Logger Central database to the HDS database.

The Replication mechanism consists of two processes: the Replication Server Process that runs on the Logger and the Replication Client Process that runs on the Distributor on which HDS has also been installed.

The Replication Client sends a request to the Replication Server requesting historical data that have associated Recovery Keys higher than those currently on corresponding historical table. The Replication server sends the requested data back as a set of 2000 records each time.

The Replication server reads the historical data from the actual tables on the Logger and sends it to the Replication Client which writes the historical data to the actual corresponding tables in the HDS database. Temporary tables are not used to replicate the data from the Logger to the HDS.

Possible Points of Delay or Inconsistency

If the Logger connected to the HDS goes offline, the HDS does not connect to a different Logger. For example, if the HDS is connected to Logger B and Logger B fails, the HDS does not connect to Logger A. When Logger B comes back up, it recovers data from Logger A and begins to receive current historical information. Once the Logger has recovered all of the data from Logger A, it begins to replicate this data to the HDS.

If reports are run from this HDS for recent intervals while the Logger is offline or while the Logger is in the process of recovering or replicating data, you might not see data for those intervals in reports. This is temporary, and you will see the data once the replication process for the tables used by the reports is complete. If you are using a fault-tolerant system with two HDS Distributor Admin Workstations, you can run reports using the backup HDS while the primary HDS is not receiving data.

If the HDS goes offline and you are using a fault-tolerant system with two HDS Distributor Admin Workstations, you can run reports using the backup HDS. When the HDS comes back up, it recovers data from the last HDS data backup and also replicates data from the Logger for the most recent data not available in the backup.

The recovery data replication is faster than regular Logger-HDS data replication. Once the HDS has recovered to its typical Logger-HDS latency of one to five minutes, data replication proceeds as usual.

If you are not using a fault-tolerant system, you will not see data in historical reports until the HDS is restored. You might also notice missing data as the replication process is in progress. This is temporary and you will see the data once the replication process for the tables utilized by the reports is complete.

Preventing Data Loss from Logger and HDS Failure

Data loss manifests as 'data holes', which are one or more missing records in an historical database table.

There are two types of data loss: temporary and permanent:

- A temporary data hole can happen during the Logger recovery process. For example, LoggerA goes down, then comes back up and contacts LoggerB to synchronize and recover historical data that was written while it was down.

While this recovery process is going on, the reporting database on Logger A up may have temporary data holes, which will be filled when the recovery process completes.

- A permanent data hole can happen during an Emergency Purge. For example, there can be permanent data loss if an emergency purge deletes records on one Logger that have not been sent to the other Logger or to the HDS.

It is possible to monitor and tune Unified ICM to minimize the occurrence of data loss.

Fault Tolerance

One way to protect your system is to follow Best Practices for duplexed Unified ICM fault tolerance, as presented in the *ICM Administrator Guide*.

Data Retention and Backups

Another way to safeguard against loss is to configure the amount of time that data is stored on the Logger Central Database and in the HDS in relation to the schedule for HDS backups.

The Central database stores data for less time than the HDS. For example, you might store two weeks of data on the Logger and a year of data on the HDS.

When the HDS recovers after going offline, it retrieves all of the data on the Logger for the interval for which data is missing from the backup. You must manually restore the rest of the data from the last HDS backup.

The amount of data retained on the Logger should cover, at a minimum, the time period between HDS backups. For example, if the Logger stores data for two weeks, then you need to back up at least every other week to ensure that you can recover all historical data.

CPU Utilization

It is possible that the process on one of the Loggers is slow because of space issues or an overload of the SQL Server. In this situation, the data on the Logger with the slower SQL Server will lag in persistence of the historical data with respect to the other Logger. This causes the HDS on the corresponding side to lag as well.

As a consequence, if both the sides have an HDS set up and the same reports are run from both HDSs, the reports might differ. This is usually a temporary inconsistency, since the condition that causes the SQL server process to slow might be remedied. Autogrowing of the database and load conditions often remediate. The Loggers and the HDSs eventually catch up and are in sync. Running the reports later will result in consistent reports.

However, it the database server runs of disk space, the situation is quite serious and might cause data to be out of sync for a longer duration until the problem is remedied. A permanent loss of data can occur when data is purged from the peer Logger and never replicated on the slower side.

Scheduled Purge and Retention Settings on Loggers

The goal of the scheduled purge is to free up database space by purging the oldest data.

There are several reasons for data loss during a scheduled purge:

- **Retention Settings on Loggers**

  Data inconsistencies and permanent data loss can occur if the number of days to retain the data differs on the Loggers.

  Assume that LoggerA is set to retain 7 days' worth of data, while LoggerB is set to retain 15 days worth of data.

  If LoggerB is down for 6 days, a temporary data discrepancy exists when it is brought back up, until the Recovery process synchronized the data from Logger A. However, if Logger B is down for 10 days, when it comes back up, it can synchronize only the last 7 days worth of data, based on LoggerA's retention setting. Three days are lost permanently from LoggerB.

  Note that the data might be lost from the system permanently, if the historical data was copied to the HDS database associated with LoggerA. Although this appears as a discrepancy in the reports that are run from HDS servers that connect to side B, the system is functioning in a predictable manner. This can be considered as an issue of perception.

  To avoid this situation, make sure that the retention settings are the same on both Loggers are the same.

- **Scheduled Purge and Peripheral Gateway Failure**

  If multiple Peripheral Gateways (PGs) are configured, and if one of the PG goes down for a brief period, then it is possible to lose historical data permanently.

  Assume that there are three Peripheral Gateways (PGs) in the system and that one goes down for a day and then comes back online. When that PG comes back online, it sends historical data for activity that occurred prior to it going offline.

  If the scheduled purge mechanism activates and determines that the oldest one hour of data needs to be purged, it is possible that the purge will delete data that was sent by the PG after it came online but before it was replicated to the HDS.

  Permanent data loss can occur the HDS is down and the scheduled purge on the Logger deletes data that has not yet been replicated to the HDS.

Emergency Purge

The emergency purge mechanism is triggered when the Logger Central Database becomes full or reaches a configured threshold size. Its objective is to free up space by purging data from the historical tables so that the database has more free space than the allowed minimum.

The emergency purge goes through each historical table in a predefined order one at a time and purges one hour's worth of data from the table. As data is purged from each historical table, a check is made to verify if the free space is more than the minimum threshold value. Once adequate space has been recovered, the emergency purge procedure stops. Otherwise, it continues through to the next historical table and keeps looping as necessary.

Permanent loss of historical data can occur if the emergency purge removes historical data that has not yet made it to an HDS and has also not replicated to the peer Logger that is 'down' or in the recovery process.

Database used percentage is displayed as a normal status message in the replication process every few minutes. You can occasionally monitor this value to make sure that is does not grow too often or too fast. Emergency purge occurs when the percentage used is greater than the configured value (usually 90%).

See also Troubleshooting Historical Data Server (page 147).

Data Loss from PIM Failure

The Peripheral Interface Manager (PIM) is the process on the Peripheral Gateway responsible for the actual connection to the peripheral and for normalizing the CTI interface on behalf of Unified ICM.

If a PIM fails, if the link between the PIM and the ACD goes down, or if the ACD goes down, then all of the reporting data that has been gathered for the peripheral associated with the PIM is deleted.

The state of all agents on that peripheral is set to logged out and is reported as such to the Router.

The Router has no way of determining what was going on at the ACD while the PIM was out of contact with the ACD. When the PIM reconnects to the ACD, the ACDS do not send the PIM sufficient information to allow the recording of accurate historical reporting data for the half hour(s) in which the disconnect took place.

Note when the PIM reconnects to the ACD, most ACDs do pass information to the PIM about each agent's state and duration in that state. While this is not enough to allow accurate historical reporting data to be recorded, it is enough to allow the Router to make accurate call routing decisions.

When the PG is duplexed, either the Side A or Side B PIM is active for each peripheral. If one side loses connection, the other comes up and activates.

Other Possible Points of Failover

Peripheral Gateway/CTI Manager Service Fail-over

If the agent's PG shuts down or the CTI Manager service shuts down, the agent is momentarily logged out. The agent might be logged in again automatically once the backup PG or CTI Manager comes into service. The agent Media Logout Status reports for the agent, agent skill group, agent team, and agent peripheral show a logout reason code of 50002.

Table 33: Agent State Before and After Peripheral Gateway/CTI Manager Service Fail-over

Agent State at Fail-Over	Agent State after Fail-over
Available	Available
Not Ready	Not Ready
Wrap-up	Available, if in Available state before the call. Otherwise, the agent reverts to Not Ready.

Agent Desktop/CTI OS Server Fail-over

If the agent desktop (CTI OS or Cisco Agent Desktop) shuts down or loses communication with CTI OS Server, or if the CTI OS Server shuts down, the agent is logged out of all Media Routing Domains supported by the peripheral that has lost communication with Unified ICM software.

The agent is logged in again automatically when one of the following occurs:

• The agent desktop comes back up or resumes communication with CTI OS Server

• The agent is connected to the backup CTI OS server

The agent Media Logout Status reports for the agent, agent skill group, agent team, and agent peripheral show a logout reason code of 50002.

The state to which the agent reverts after fail-over depends on the agent's state when the fail-over occurred, as described in the following table.

Table 34: Agent State Before and After Agent Desktop/CTI OS Server Fail-over

Agent State at Fail-Over	Agent State after Fail-over
Available	Available
Not Ready	Not Ready
Reserved	Available
Wrap-up	Available, if in Available state before the call. Otherwise, the agent reverts to Not Ready.

Application Instance/MR PG Fail-over

If the connection between the Application Instance and MR PG shuts down or either component shuts down, the Central Controller discards all pending NEW_TASK requests received from the application.

The Application Instance waits for the connection to be restored and continues to send messages regarding existing tasks and new tasks assigned by the Application Instance to the Agent PG CTI server. When the connection, MR PIM, or Application Instance is restored, the Application Instance resends any pending NEW_TASK requests for which it has not received a response from the Central Controller. The tasks that are assigned to the agent by the Application Instance while the connection is down and completed before the connection is restored do not appear in WebView reports.

Note: If the Application Instance shuts down, this also affects Agent PG CTI server connections.

If the connection between the MR PIM and the Central Controller shuts down or the Central Controller shuts down, the MR PIM sends a ROUTING_DISABLED message to the Application Instance that causes the Application Instance to stop sending routing requests to the Central Controller.

Any request sent while the connection is down is rejected with a NEW_TASK_FAILURE message. The Application Instance continues to send messages regarding existing tasks and new tasks assigned by the Application Instance to the Agent PG CTI server.

When the connection or Central Controller is restored, the MR PIM sends the Application Instance a ROUTING_ENABLED message that causes the Application Instance to start sending routing requests to the Central Controller again. The tasks that are assigned to the agent by the Application Instance while the connection is down and completed before the connection is restored do not appear in reports. If the connection between the Central Controller and the MR PG fails, the Router deletes all pending new tasks. When the connection is restored, the application connected to MR PG will resubmit all the tasks.

Note: If the Central Controller shuts down, this also affects the application instance/ Agent PG CTI server interface.

Application Instance/Agent PG CTI Server/ PIM Fail-over

If the connection between the Application Instance and Agent PG CTI server shuts down or either component shuts down, agents stay logged in. Tasks remain for a time, based on the task life attribute of the MRD. If the task life expires while the connection is down, tasks are terminated with the disposition code of 42 (DBCD_APPLICATION_PATH_WENT_DOWN).

Note: For the E-Mail MRD, agents are not logged out automatically when the Agent PG CTI server or connection to CTI server shuts down. Instead the E-Mail Manager continues to record agent state and assign tasks to agents. When the connection is restored, the E-Mail Manager sends the updated agent state information on the peripherals serviced by the Agent PG CTI server to the CTI server, which sends the information to Unified ICM software. The software attempts to recreate historical data and corrects current agent state. If the connection or Agent

PG CTI server is down for more than the time limit configured for the MRD, reporting on tasks might be ended prematurely and restarted with the connection is reestablished

The application instance can assign tasks to agents while the connection or CTI server is down and, if the connection to the MR PG is up, can continue to send routing requests to the central controller and receive routing instructions. However, no reporting data is stored for the tasks while the connection is down. Also, any tasks that are assigned and completed while the connection or CTI server is down do not appear in reports. If the connection between the Agent PG CTI server and the Router shuts down or if the Router shuts down, the application instance continues to send messages to the CTI server and agent activity is tracked. However, this information is not sent to the Router until the connection or the Router is restored, at which time the cached reporting information is sent to the central controller.

Note: If the central controller shuts down, this also affects the application instance/MR PG interface.

If the PIM shuts down, voice media routing is unavailable for agents associated with the PIM. However, the Central Controller can continue to assign non-voice tasks to agents associated with the PIM, and the CTI server can continue to process messages and requests about agents associated with the PIM for non-voice Media Routing Domains. When the connection is restored, voice media routing is available again.

Troubleshooting

Troubleshooting Report Data

Troubleshooting Agent Reporting

Agent data does not appear in reports

Symptom:

Agent data does not appear in WebView agent reports.

Message:

None

Cause:

This might occur if the **enable agent reporting** option is disabled for the peripheral.

See Configuring Agent Data and Agent State Trace (page 182).

Action:

N/A

Note: Agent reporting is not supported for all deployments.

Agent Not Ready reason code text does not appear in reports

Symptom:

The WebView Agent Not Ready reports (agent30: Agent Not Ready Summary and agent31: Agent Not Ready Detail) show only the numeric Not Ready reason code, not the textual code.

Message:

None

Cause:

This might occur if you either have not configured the Not Ready reason codes with associated text in the configuration tool or if the agent event detail option is disabled for the peripheral.

Action:

See Configuring Agent Not Ready Reason Codes (page 183).

Agent state does not appear in Agent State Trace reports

Symptom:

Agent state information does not appear in WebView real-time agent state trace report.

Message:

None

Cause:

This might occur if the **agent state trace** option is disabled for the agent.

Action:

See Configuring Agent Data and Agent State Trace (page 182).

Troubleshooting Application Gateway Reporting

Application Gateway requests reported larger than number Router Call Detail records

Symptom:

The number of Application Gateway requests shown in the WebView Application Gateway Half Hour Status report is larger than the number of Router Call Detail (RCD) records in the database.

Message:

None

Cause:

This might occur if the Router has sent an Application Gateway request and has not yet received a response. An RCD record is written when a call completes routing according to the Router. The Application Gateway request is incremented when the Router sends an Application Gateway

request. For these calls, the number of Application Gateway requests has been incremented, but the RCD has not been written.

Action:

If you run the report at the end of the day, the two numbers should be very close, if the contact center does not receive calls 24 hours a day.

Troubleshooting Call Type and Skill Group Reporting

Call Type ErrorCount incremented if Caller disconnects when call is translation routed

Symptom:

During a transfer, the caller hangs up while the call is being transferred.

IP IVR cannot notify Unified ICM that the call abandoned because it does not yet have the call object information. For reporting, the call is reported as an error, and a Route_Call_Detail record is cut for the call.

Message:

None

Cause:

IPIVR cannot notify Unified ICM that the call abandoned because it does not yet have the call object information.

The call flow was that the call was translation routed to the IVR, but it did not get there. The Router encountered a translation route time out.

Action:

None required.

Call Type reports and Overflow Out Column

Symptom:

Call Types reports, both real time and Historical, might seem to not peg correctly, based on the call counts in the "flow out" column.

The reports affected are caltyp20, caltyp21, caltyp22, caltyp23, caltyp24, caltyp35, and caltyp36.

Message:

None

Cause:

Overflow Out is incremented when one of the following occurs:

1. The Call Type associated with the current call is changed through use of a Call Type or Requalify node.

2. The call is redirected.

   When a call is redirected, the PIM no longer can receive events for the call and has no way of referencing or tracking the call. For example, the call might have been redirected to a non-ICM monitored device and then returned to the switch with a different call ID. The ICM generates the termination call detail record with only the data originally tracked for the call. Calls marked as Redirected are counted as OverflowOut calls in the ICM service and route tables.

3. The call is sent to a label using a label node. The call was not default-routed, and the label was not a ring, busy, or announcement label.

4. The call hits a release node.

Action:

Consider these conditions by which Overflow Out is incremented when you analyze the Overflow Out columns in Call Type reports.

Calls Offered for Call Type does not seem correct over a half-hour interval

Symptom:

Calls Offered for the Call Type WebView reports is calculated as Calls Handled + Calls Abandoned + Return Busy + Return Ring + Default Treatment + Network Routed + Overflow Out + Call Errors + Announcement Calls + Short Calls. However, in a half-hour interval, this equation might not provide the report value for Calls Offered.

Message:

None

Cause:

Calls might change state in different half-hour intervals. For example, if a call is offered at 10:59 AM but is not handled until 11:01 AM, the Call Type data for the 10:30:00 to 10:59:59 interval is incremented for calls offered, but not calls handled. Calls handled is incremented in the next half-hour interval.

Note: Some of the call statistics (such as Handled) are incremented only if the call is translation-routed.

Action:

None required

Total calls queued to each skill group is greater than calls offered for the day

Symptom:

The total number of calls queued to each skill group is greater than the number of calls offered to the skill groups over a day. For example, 800 calls are queued to skillgroup1 and 700 calls queued to skillgroup2, but the total number of calls queued is 900, not 1500.

Message:

None

Cause:

When a call is queued to more than one skill group, the call is counted as queued in each skill. Therefore, it appears that the call is being counted more than once. At the Call Type service level, these calls are correctly counted as only one call. Similarly, if the call abandons while queued, it is counted as an abandon in each skill group to which it is queued but is counted correctly as one call at the Call Type service level.

Action:

None required

Calls counted as errors in Call Type reports

Symptom:

Call Type reports show calls being counted as errors.

Message:

None

Cause:

This is expected behavior. The error count for the call type is incremented for three events.

These events include:

- An error occurs in the script and a default route is not configured.

  Examples of script errors include:

  – The calls enters a loop in the script and is executed in more script nodes than the configuration allows and a default label does not exist.

- A call is queued for longer than the maximum queue time configured and a default label does not exist.

- A terminating node does not lead to a label and a default label does not exist.

- A TCD record is written with a CallTypeID that has a Call Disposition that is unexpected or not counted elsewhere (The CallDispositionFlag will be 4). For Router errors, this includes calls with RouterErrorCode in RCD which is greater than 0 but not 448. For Agent errors, this includes Call Dispositions 1, 4, 8-12, 16-18, 20-27, 31-33, 39, 42, 44-51.

- An error occurs at the VRU or CallManager that causes the call to fail before the Router has completed the call routing.

Action:

To avoid script errors from being reported as errors of the Call Type, configure default labels and default routes for scripts.

Calls offered to the Call Type is greater than total calls offered to skill group

Symptom:

Two Call Types, Call Type 1 and Call Type 2, are configured. All of the calls for these Call Types are offered to the same skill group. The total number of calls offered to Call Type 1 and Call Type 2 is greater than the total calls offered to the skill group.

Message:

None

Cause:

Skill group Calls Offered and Call Type Calls Offered are not equivalent, even if all calls for the Call Types are sent to the same skill group. If a call disconnects for any reason before it reaches the Queue to Skill Group script node, Calls Offered is incremented for the Call Type, but is not incremented for the skill group.

Action:

None required

Calls that abandon while ringing for the skill group does not equal calls that abandon for the Call Type

Symptom:

A Call Type report displays a larger number of calls that abandon than the number of calls that are shown as abandon ring in a skill group report.

Message:

None

Cause:

There is no correlation between calls that abandon and calls that abandon while ringing. Abandon Ring calls are calls that are routed to a skill group and were abandoned while ringing at an agent's phone. Abandon Ring is incremented only when this specific event occurs. The Call Type Calls Abandoned is incremented every time a call abandons, including while the call is in queue and at any point in the routing script before the call rings at an agent.

Action:

None required

Report Statistics when Sub-Skill Groups are Configured

Symptom:

Data in agent and peripheral reports is affected when sub-skill groups are configured.

Message:

None

Cause:

If sub-skill groups are configured in your enterprise, **agent reports** show data for sub-skill groups only.

If sub-skill groups are not configured, the reports will show data for base skill groups.

If sub-skill groups are configured in your enterprise, please note the following with respect to **skill group reports**:

- Skill Group By Peripheral reports will show only data for the sub-skill groups only, since they allow customers to select only sub-skills as report items.

- Skill Group By Base Only reports are correct: they show only the data for base skill groups, since the report selection items are base skill groups. However, the statistics for base skill will be double counted when calls are queued to both the primary and secondary sub-skills.

- Skill Group By Enterprise reports show data based on which skill groups are part of the enterprise skill group.

  If you configure sub-skill groups from several peripherals or from different media, group only the sub-skill groups into the Enterprise Skill Group and not both base and sub-skills.

  Note: If you queue to multiple sub-skills, and group them in an Enterprise Skill Group, you will see double counting

Action:

None

See also About Base Skill Groups and Sub-Skill Groups (page 70) and Reporting on Skill Group Operations (page 113)

Troubleshooting Historical Data Server Data

Historical Data Server is losing the oldest data

Symptom:

Historical Data Server (HDS) data that is within the data retention time set for the HDS is being purged from the database.

Message:

None

Cause:

This could occur because the database has reached 80% capacity and is therefore performing purge adjustment each night to reduce the size to 80%. Unlike scheduled purges, in which data is purged nightly to remove all records older than the data retention time you specified, purge adjustment removes the last record from each table in the database until 80% capacity is reached. Purge adjustment continues to reduce the size of the database to 80% until the database size is increased.

Action:

To correct this, increase the size of the database.

Historical report is missing data for a recent interval

Symptom:

A historical report is missing data for a recent interval.

Message:

None

Cause:

This could occur because you are running the report at the end of the last interval (for example it is 12:31 and you are running a report from the 12:00:00 to 12:29:59 interval). Data replication

from the Logger to the Historical Data Server can be delayed by 1 to 5 minutes. The data for the last interval might not be in the HDS yet.

This could also be because the Logger connected to the HDS has gone offline or because the Logger went offline and is now in the process of recovering. When the Logger fails, the HDS does not switch to the back up Logger. Instead, it waits for its Logger to recover. When the Logger recovers, it begins receiving current data and recovers data from the back up Logger for the time it was down. Once data recovery is complete, the Logger begins to send the recovery data to the HDS. Report data for the selected interval is available once the Logger has completed recovery and the data is replicated to the HDS.

This problem could also occur if the HDS has gone offline or because the HDS went offline and is now in the process of recovering. If it is recovering, data for the selected interval will be available when recovery for that interval is complete. If the HDS has failed, the data for that interval will be available when the HDS comes back up and completes recovery for that interval. In either case the data is still on the Logger and is not lost.

Action:

No action is necessary; the data will appear in reports when the recovery and/or replication processes are complete. Try running the report again in several minutes.

Data is missing from the Historical Data Server after it has recovered from a failure

Symptom:

Historical data is missing from the HDS.

Message:

None

Cause:

This could be because your Logger data retention and Historical Data Server backup schedule are not in sync. You should plan these two schedules together so that you retain data on the Logger for the period in which the HDS is not backed up. For example, if you are retaining data on the Logger for 2 weeks, you should back up the HDS, at the minimum, once every two weeks. This way, if the HDS fails, it can recover past data up to the last two weeks from a previous HDS back up and data for the last two weeks from the Logger. If you are backing up the HDS every two weeks but storing data on the Logger for only a week, you will be missing a week of historical data if the HDS fails or the database has become corrupted.

Action:

Change the data retention on the Logger or backup schedule for the HDS to avoid this issue

Troubleshooting Queue Information

Queue information does not appear in reports

Symptom:

Data relating to queued calls does not appear in reports; fields related to queued tasks are 0.

Message:

None

Cause:

This can occur if you have not enabled Queue reporting for the VRU peripheral.

Action:

In the Configuration Manager, open the VRU peripheral. Select the **Queue reporting** option.

Missing call in queue information in the WebView Service real-time and historical templates

Symptom:

In the WebView Service templates, the value of "Calls Q Now" and "Calls Q Now Time" are 0.

Message:

None

Cause:

This can occur when the route links to the skill group because it causes a lack of visibility for the "Longest Call Queued" values.

Action:

Troubleshooting Trunk Group and VRU Reporting

VRU Application information does not appear in Call Type or Service reports

Symptom:

Data relating to VRU applications, such as the number of VRU Handled tasks or data for VRU services, does not appear in reports; fields related to VRU applications are 0.

Message:

None

Cause:

This can occur if you have not enabled Service Control reporting for the VRU peripheral.

Action:

In the Configuration Manager, open the VRU peripheral. Select the **Service Control** option.

Information for Trunk Groups associated with VRU ports not in trunk group reports

Symptom:

Data relating to VRU ports does not appear in trunk group reports.

Message:

None

Cause:

This can occur if you have not enabled Service Control reporting and queue reporting for the VRU peripheral.

Action:

In the Configuration Manager, open the VRU peripheral. Select the **Service Control** option and the **Queue reporting** option.

Appendix A

List of All Unified ICM Report Templates

Agent Templates

Agent reports provide metrics that enable supervisors and call center managers to monitor real-time agent activity and review historical agent performance.

The Agent Reports category in WebView has four subcategory options. Each subcategory provides the same types of data, organized appropriately to subcategory option you chose.

Agent by Agent

Use Agent By Agent reports to view current activity for an individual agent or to measure an individual agent's performance trends.

Report Name	Historical or Real-Time	Description
agent20: Agent Real Time	R	Current agent states for selected agents.
agent28: Agent Real Time All Fields	R	All the report data available from the Agent_Real_Time table. ICM software generates Agent_Real_Time records for each agent. This report is for online viewing or for exporting to Excel. It is not formatted for printing.
agent03: Agent Media Logout Status	H	Logon duration and logout date and time for each agent.
agent04: Agent Task Detail Activity	H	Agent task detail activity on incoming, outgoing, and internal tasks, callback messages, and wrap-up work.
agent05: Agent Task Detail Performance	H	Agent task detail performance on abandoned, assistance, hold, and conference tasks.
agent06: Agent State Trace Detail By Events	H	Agent states and task detail events for agents with agent state trace enabled. Displays data on the event that changed an agent's state, the new agent state, and the reason for the state change.
agent21: Agent Task Summary Half Hour	H	Agent task summary for selected agents, organized by the selected half hour(s).
agent22: Agent Task Summary Daily	H	Agent task summary for selected agents, organized by the selected day(s).
agent23: Agent Performance Summary Half Hour	H	Agent state summary for selected agents, organized by the selected half hour(s).
agent24: Agent Performance Summary Daily	H	Agent state summary for selected agents, organized by the selected day(s).
agent25: Agent Consolidated Half Hour	H	Agent half-hour activity and performance for all the agents connected to the selected peripheral(s) during the selected half-hour interval(s).
agent26: Agent Consolidated Daily	H	Agent half-hour activity and performance for all the agents connected to the selected peripheral(s) during the selected day interval(s).
agent27: Agent Half Hour All Fields	H	All the report data available from the Agent_Skill_Group_Half_Hour table. ICM software generates Agent_Skill_Group_Half_Hour records for each logged on agent. This report is for online viewing or for exporting to Excel. It is not formatted for printing.
agent30: Agent Not Ready Summary	H	An overall summary of the not ready status of selected agents in a given time period.
agent31: Agent Not Ready Detail	H	Summary details of the not ready status of selected individual agent sessions in a given time period.

Agent by Peripheral

Use these templates to view current activity for agents on a common peripheral or to measure/compare agents' performance trends for a common peripheral.

Template Name	Historical or Real-Time	Description
agtper20: Agent Peripheral Real Time	R	Table of real time Agent Statistics by Peripheral
agtper28: Agent Peripheral Real Time All Fields	R	Table of Agent real time statistics by Peripheral
agtper03: Agent Peripheral Media Logout Status	H	Table showing logon duration, logout date-time for each agent by peripheral.
agtper04: Agent Peripheral Task Detail Activity	H	Table of agent call detail activity on incoming, outgoing, internal calls and callback messages by peripheral.
agtper05: Agent Peripheral Task Detail Performance	H	Table of agent call detail performance on abandon, assistance, hold and conference calls by peripheral.
agtper21: Agent Peripheral Task Summary Half Hour	H	Table of Call Statistics for Agent by Peripheral by Half Hour
agtper22: Agent Peripheral Task Summary Daily	H	Table of Call Statistics for Agent by Peripheral by Day
agtper23: Agent Peripheral Performance Summary Half Hour	H	Table of Agent Statistics by Peripheral by Half Hour
agtper24: Agent Peripheral Agent Performance Summary Daily	H	Table of Agent Statistics by Peripheral by Day
agtper25: Agent Peripheral Consolidated Half Hour	H	Table of Consolidated Call and Agent Statistics by Peripheral by Half Hour
agtper26: Agent Peripheral Consolidated Daily	H	Table of Consolidated Call and Agent Statistics by Peripheral by Day
agtper27: Agent Peripheral Historical All Fields	H	Table of all fields for Agent by Peripheral by Half Hour

Agent by Skill Group

Generate Agent By Skill Group reports to view current activity for agents in a skill group or to measure and compare agent performance trends for a skill group.

Template Name	Historical or Real-Time	Description
agtskg06: Outbound Option (Blended Agent)	R	Status Table that shows agent activity. Specifically, if the agent is handling an Outbound Option Call.
agtskg20: ICM Agent Skill Group	R	Real Time Table showing current agents within a specified skill group
agtskg28: Agent Skill Group Real Time All Fields	R	Table showing all fields available from the Skill_Group_Real_Time table.
agtskg03: Agent Logout	H	Status Table showing logon duration, logout date-time for each agent by skill group.
agtskg04: Agent Task Detail Activity	H	Table of agent call detail activity on incoming, outgoing, internal calls and callback messages by skill group.

Agent Templates

Template Name	Historical or Real-Time	Description
agtskg05: Agent Task Detail Performance	H	Table of agent call detail performance on abandon, assistance, hold and conference calls by skill group.
agtskg07: Agent Task Analysis	H	Table showing analysis of all the calls handled by an agent in a skill group
agtskg10: Outbound Option (Blended Agent) Predictive and Progressive Calls Detail Performance	H	Table of Outbound Option call detail performance on predictive and progressive calls by skill group.
agtskg11: Outbound Option (Blended Agent) Preview Call Detail Performance	H	Table of Outbound Option call detail performance on preview calls by skill group.
agtskg12: Outbound Option (Blended Agent) Reservation Call Detail Performance	H	Table of Outbound Option task detail performance on reservation calls by skill group.
agtskg21: Agent Skill Group Task Summary Half Hour	H	Table showing incoming and outgoing call counts and call treatments in half hour increments.
agtskg22: Agent Skill Group Task Summary Daily	H	Table showing daily totals for incoming and outgoing call counts and call treatments.
agtskg23: Agent Skill Group Performance Summary Half Hour	H	Table of Agent Performance Statistics by Skill Group by Half Hour
agtskg24: Agent Skill Group Performance Summary Daily	H	Table of Agent Performance Statistics by Skill Group by Day
agtskg25: Agent Skill Group Consolidated Half Hour	H	Table showing call statistics and agent time allocations by half-hour interval.
agtskg26: Agent Skill Group Consolidated Daily	H	Table showing daily totals for call statistics and agent time allocations by skill and agent.
agtskg27: Agent Skill Group Historical All Fields	H	Table showing all fields available from the Agent_Skill_Group_Half_Hour table.

Agent by Team

Use these reports to view current activity for agents in a team or to measure and compare agent performance trends for a team.

Template Name	Historical or Real-Time	Description
agteam02: Agent Skill Group Status	R	Table showing current logon datetime, state and last state change for agents in a team by skill group.
agteam20: Agent Team Real Time	R	Table of Agent Real Time Statistics.
agteam28: Agent Team Real Time All Fields	R	Table of Agent Real Time Statistics by Agent Team
agteam29: Agent Team Skill Group Assignment Real Time	R	Table showing the number of skill groups assigned to the agents for a given team.

Template Name	Historical or Real-Time	Description
agteam32: Agent Team State Counts Real Time	R	Table showing number of agents in each state for a given team.
agteam03: Agent Logout Status	H	Table showing logon duration, logout date-time for each agent by team.
agteam04: Agent Task Detail Activity	H	Table of agent call detail activity on incoming, outgoing, internal calls and callback messages by team.
agteam05: Agent Task Detail Performance	H	Table of agent call detail performance on abandon, assistance, hold and conference calls by team.
agteam21: Agent Team Task Summary Half Hour	H	Table of Call Statistics for Agent by Agent Team by Half Hour
agteam22: Agent Team Task Summary Daily	H	Table of Call Statistics for Agent by Agent Team by Day
agteam23: Agent Team Performance Summary Half Hour	H	Table of Agent Performance Statistics by Agent Team by Half Hour
agteam24: Agent Team Performance Summary Daily	H	Table of Agent Performance Statistics by Agent Team by Day
agteam25: Agent Team Consolidated Half Hour	H	Table of Consolidated Call and Agent Statistics by Agent Team by Half Hour
agteam26: Agent Team Consolidated Daily	H	Table of Consolidated Call and Agent Statistics by Agent Team by Day
agteam27: Agent Team Historical All Fields	H	Table of all fields for Agent by Agent Team by Half Hour
agteam33: Agent Team Incoming/Outgoing Task Durations With Agent Detail Half Hour	H	Table of task durations for Incoming and Outgoing tasks handled by Agents in a Team by Half Hour.
agteam34: Agent Team Incoming/Outgoing Task Durations With Agent Detail Daily	H	Table of task durations for Incoming and Outgoing tasks handled by Agents in a Team by Day.
agteam35: Agent Team Incoming/Outgoing Task Durations Half Hour	H	Table of task durations for Incoming and Outgoing tasks handled by Agent Teams by Half Hour.
agteam36: Agent Team Incoming/Outgoing Task Durations Daily	H	Table of task durations for Incoming and Outgoing tasks handled by Agent Teams by Day.

Application Gateway, Application Path, and Script Queue Templates

The Application Gateway allows Unified ICM to query host systems that are running other contact center applications.

The Application Gateway is implemented by a node in the Script Editor. A routing script that contains an Application Gateway node can query an application running on a host system to

obtain data to use in call routing. Unified ICM software can then base subsequent routing decisions on the results obtained from the query.

Use these templates to generate reports on such data as the number of query requests issued to a host system and the delay involved in making queries.

Template Name	Historical or Real-Time	Description
apgate11: Application Gateway Status Half Hour Report	H	Tabular report that shows data on requests made by the application gateway to a host system.
appath01: Application Path Real Time	R	Tabular report that shows data on application paths defined in the system.
scrque01: Script Queue Node Real Time Report	R	Tabular report that shows list of pending tasks.

Outbound Option Templates

The Outbound Option is an application that provides outbound dialing functionality along with the existing inbound capabilities of Unified ICM software. With the Outbound Option, contact centers can be configured for automated outbound activities. This option allows agents who are not busy with inbound calls to perform outbound calls, thereby maintaining high agent productivity. All Outbound option reports are voice-only reports.

Import Rule

Template Name	Historical or Real-Time	Description
imprul01: Import Status Real Time	R	Table that shows the number of good, bad and total records imported or to be imported
imprul10: Import Rule	H	Table that shows the number of good, bad and total records imported by time range.

Campaign Query Rule

Template Name	Historical or Real-Time	Description
camqry01: Call Counts Of Query Rule Within Campaign	R	Table that shows each Query Rule within a Campaign.
camqry02: Call Counts per Campaign Real Time	R	Table that shows the current status of all campaigns records.
camqry03: Valid Campaign Dialing Times	R	Table that shows the dialing status of each Campaign
camqry04: Valid Query Rule Dialing Times	R	Table that shows the dialing status of a Campaign and its Query Rules

Template Name	Historical or Real-Time	Description
camqry05: Call Summary Count Of Query Rule Within Campaign	R	Table that shows each Query Rule within a Campaign.
camqry06: Call Summary Count per Campaign	R	Real Time Table that shows the current status of all campaigns records.
camqry10: Call Counts of Query Rule Within Campaign Half Hour	H	Table by half hour that shows each Query Rule within a Campaign.
camqry11: Summary of Call Counts per Campaign Half Hour	H	Table by half hour that shows the current status of all campaigns records.

Dialer and Dialer Port

Template Name	Historical or Real-Time	Description
dialer01: Dialer Real Time	R	Table that shows contacts, busy, voice, answer machine, SITTone, detects for each dialer.
dialer10: Status of each Dialer Half Hour	H	Table by half hour that shows contacts, busy, voice, answer machine, SITTone, detects for each dialer.
dialpr01: Dialer Port Status Real Time	R	Table that shows dialer activity on a port by port basis

Call Type Templates

These reports show statistics for the Call Types defined in the system.

Report Name	Historical or Real-Time	Description
caltyp01: Call Type Status	R	Table that shows routing and script data on Call Types defined in the system.
caltyp02: Call Type Counts	R	Stacked bar graph that tracks busy and default routed calls for Call Types for the current day.
caltyp04: Call Type Service Levels	R	Bar graph of service levels since the end of last 5 minute and half-hour intervals, and since midnight.
caltyp20: Call Type Real Time	R	Table summary of Call Type real time fields.
caltyp24: Call Type Real Time All Fields	R	Table summary of all real time fields.
caltyp25: Call Type Queue Status	R	Stacked Bar Graph of the number of tasks in queue within service level and tasks in queue outside service level.
caltyp26: Call Type Tasks Offered Over Half Hour	R	Bar chart of tasks offered to CallTypes since the end of the last half-hour interval.
caltyp27: Call Type Queue Delay Status Real Time	R	Bar graph of time (in seconds) for average delay in queue, longest call in queue, and ASA over last 5 minutes.

Report Name	Historical or Real-Time	Description
caltyp28: Call Type Queue Tasks Status Now Real Time	R	Bar graph of number of tasks in queue, tasks at VRU, and tasks with agents.
caltyp05: Analysis of Tasks Half Hour	H	Table of analysis of routing and queuing details of calls during half-hour interval.
caltyp21: Call Type Half Hour	H	Table summary of half-hour Call Type activity.
caltyp22: Call Type Daily	H	Table daily summary of all Call Type activity.
caltyp23: Call Type Historical All Fields	H	Table summary of all half-hour fields.
caltyp35: VRU Call Type Analysis Half Hour	H	Table that shows aggregate behavior of calls to VRU applications by half hour
caltyp36: VRU Call Type Analysis Daily	H	Table that shows aggregate behavior of calls to VRU applications by day

Peripheral Templates

Use the peripheral reports to measure the performance of switch-specific hardware and software status and some types of call and agent information.

Template Name	Historical or Real-Time	Description
periph01: Peripheral Real Time	R	Table of switch status, call and agent status, and service levels (for use with all peripheral types).
periph02: Switch Node Software Status Display Real Time	R	Table that shows ATB, calls in progress, SWT TRMS and DIGroups status (for Galaxy ACDs only).
periph03: Time Switch Node Hardware Status Display Real Time	R	Table of data on processor, data receive, control, and switch clock status (for Galaxy ACDs only).
periph04: Peripheral Real Time All Fields	R	Table of all fields Peripheral Real Time Statistics.
periph05: Peripheral Historical All Fields	H	Table of all fields for Peripheral by Half Hour.
periph06: VRU Peripheral Capacity Report	H	Table that shows statistics about the number of simultaneous calls in progress over time, for VRU peripherals only.

Route Templates

Use these templates to report on many types of task statistics for routes, such as the number of tasks in progress, tasks in queue, or tasks handled (either in real-time or over a specified period of time).

Template Name	Historical or Real-Time	Description
routes01: Route Queue Delay Status Real Time	R	Bar graph of time (in seconds) for delays in queue, longest call in queue, and ASA over last 5 minutes.
routes02: Route Status Real Time	R	Bar graph showing the number of calls in progress versus the number of calls in queue.
routes03: Effect of Abandoned Tasks on Route Service Levels Real Time	R	Table of calls offered, handled, abandoned, and the effect of abandoned calls on service levels.
routes04: Route Tasks Trend Analysis Real Time	R	Table of call counts and service levels (since end of last 5-minute and half-hour intervals, and since midnight).
routes05: Route Tasks Offered Over Half Hour	R	Pie chart of the distribution (percentage) of calls offered to routes (since end of the last half-hour interval).
routes06: Route Service Levels Real Time	R	Bar graph of service levels since the end of the last 5-minute and half-hour intervals, and since midnight.
routes07: Route Tasks, Averages and Service Levels Real Time	R	Table that shows call counts, queue status, and service levels in real-time and for the last 5 minutes.
routes08: Route Real Time All Fields	R	Table showing all fields available from the Route_Real_Time table.
routes11: Tasks Analysis of Routes Daily	H	Table of call count daily totals, queue delay time daily totals, and service level daily averages.
routes12: Tasks Analysis of Routes Half Hour	H	Table of call count and queue delay time half-hour totals, and service level half-hour totals.
routes13: Route Historical All Fields	H	Table showing all fields available from the Route_Half_Hour table.

Routing Client Templates

A routing client is an entity that sends routing requests to the Unified ICM system. Routing clients typically correspond to a subsystem within the interexchange carrier (IXC) or to a peripheral (ACD or PBX) that is performing Post-Routing.

Use the routing client reports to report on statistics for the different routing clients defined in your ICM system, such as the maximum delay of route responses to the routing client for a specified interval.

Template Name	Historical or Real-Time	Description
rtecli11: Routing Client Performance	H	Table report that shows routing client requests/responses for the current five-minute interval.
rtecli12: Routing Client Historical All Fields	H	Routing Client Historical All Fields Report

Service Templates

Enterprise

Template Name	Historical or Real-Time	Description
entsvc01: Enterprise Service Queue Delay Status Real Time	R	Bar graph of time (in seconds) for delays in queue, longest task in queue, and ASA over last 5 minutes.
entsvc02: Enterprise Service Status Real Time	R	Stacked bar graph of the number of tasks on which agents are talking and the number of tasks in queue.
entsvc03: Effect of Abandoned Tasks on Enterprise Service Levels	R	Table of tasks offered, handled, abandoned, and the effect of abandoned tasks on service levels.
entsvc04: Enterprise Service Tasks Trend Analysis Real Time	R	Table of task counts and service levels (since end of last 5-minute and half-hour intervals, and since midnight).
entsvc05: Enterprise Service Tasks Offered Over Half Hour	R	Pie chart of the percentage distribution of tasks offered since the end of the last half-hour interval.
entsvc06: Enterprise Service Service Levels Real Time	R	Bar graph of service levels since the end of the last 5-minute and half-hour intervals, and since midnight.
entsvc07: Enterprise Service Tasks, Averages and Service Levels Real Time	R	Table that shows task counts, queue status, and service levels in real-time and for the last 5 minutes.
entsvc08: Task and Agent Status Real Time	R	Table that shows task and queue status in real-time where service/skillgroup mapping is available.
entsvc09: Service Array Tasks, Averages and Service Levels Real Time	R	Table that shows Service Array task counts, queue status, and service levels in real-time and for the last 5 minutes.
entsvc23: Enterprise Service Real Time All Fields	R	Table summary of all real time enterprise service fields
entsvc11: Tasks Analysis of Enterprise Services Daily	H	Table of task count daily totals, queue delay time daily totals, and service level daily averages.
entsvc12: Tasks Analysis of Enterprise Services Half Hour	H	Table of task count and queue delay time half-hour totals, and service level half-hour totals.
entsvc13: Enterprise Service Tasks Offered Daily	H	Overlapped bar graph that shows the number of tasks offered per day.
entsvc14: Enterprise Service Tasks Handled Daily	H	Overlapped bar graph that shows the number of tasks handled per day.
entsvc15: Enterprise Service Tasks Abandoned Daily	H	Overlapped bar graph that shows the number of tasks abandoned per day.
entsvc16: Enterprise Service History Daily	H	Line graph of tasks abandoned, handled, and offered per day (for use with a single enterprise service).

Template Name	Historical or Real-Time	Description
entsvc17: Enterprise Service Tasks Offered Half Hour	H	Overlapped bar graph showing the distribution (number) of tasks offered at a half-hour sample rate.
entsvc18: Enterprise Gate Analysis Half Hour	H	Table report that shows historical task handling data for a collection of gates.
entsvc24: Enterprise Service Historical All Fields	H	Table summary of all historical enterprise service fields

Peripheral

Template Name	Historical or Real-Time	Description
persvc01: Peripheral Service Queue Delay Status Real Time	R	Bar graph of time (in seconds) for delays in queue, longest task in queue, and ASA over last 5 minutes.
persvc02: Peripheral Service Status Real Time	H	Stacked bar graph of the number of tasks on which agents are talking and the number of tasks in queue.
persvc03: Effect of Abandoned Tasks on Peripheral Service Service Levels	R	Table of tasks offered, handled, abandoned, and the effect of abandoned tasks on service levels.
persvc04: Peripheral Service Tasks Trend Analysis Real Time	R	Table of task counts and service levels (since end of last 5-minute and half-hour intervals, and since midnight).
persvc05: Peripheral Service Tasks Offered Over Half Hour	R	Pie chart of the percentage distribution of tasks offered since the end of the last half-hour interval.
persvc06: Peripheral Service Service Levels Real Time	R	Bar graph of service levels since the end of the last 5-minute and half-hour intervals, and since midnight. persvc07: Peripheral Service Tasks, Averages and Service Levels Real Time
persvc08: Task and Agent Status Real Time	R	Table that shows tasks and queue status in real-time where service/skill group mapping is available.
persvc27: Peripheral Service Real Time All Fields	R	Table summary of all real time peripheral service fields.
persvc13: Peripheral Service Tasks Offered Daily	H	Overlapped bar graph that shows the number of tasks offered per day.
persvc14: Peripheral Service Tasks Handled Daily	H	Overlapped bar graph that shows the number of tasks handled per day.
persvc15: Peripheral Service Tasks Abandoned Daily	H	Overlapped bar graph that shows the number of tasks abandoned per day.
persvc16: Peripheral Service History Daily	H	Line graph of tasks abandoned, handled, and offered per day (for use with a single peripheral service).
persvc17: Peripheral Service Tasks Offered Half Hour	H	Overlapped bar graph showing the distribution (number) of tasks offered at a half-hour sample rate.
persvc18: Peripheral Gate Analysis Half Hour	H	Table that shows half-hour status information for a Rockwell Galaxy gate (ICM peripheral service).

Service Templates

Template Name	Historical or Real-Time	Description
persvc20: Peripheral Service for IVR Queue Half Hour	H	Table summary of IVR half-hour service activity.
persvc21: Peripheral Service IVR Queue Daily	H	Table summary of daily activity in the IVR service.
persvc22: Peripheral Service IVR Self-Service Half Hour	H	Table summary of IVR half-hour self-service activity.
persvc23: Peripheral Service IVR Self-Service Daily	H	Table summary of daily IVR self-service activity.
persvc24: Peripheral Service Agent Half Hour	H	Table summary of agent task activity.
persvc25: Peripheral Service Agent Daily	H	Table summary of daily agent task activity
persvc26: Peripheral Service Historical All Fields	H	Table summary of all peripheral service fields.

Array

Template Name	Historical or Real-Time	Description
entsvc01: Enterprise Service Queue Delay Status Real Time	R	Bar graph of time (in seconds) for delays in queue, longest task in queue, and ASA over last 5 minutes.
entsvc02: Enterprise Service Status Real Time	R	Stacked bar graph of the number of tasks on which agents are talking and the number of tasks in queue.
entsvc03: Effect of Abandoned Tasks on Enterprise Service Service Levels	R	Table of tasks offered, handled, abandoned, and the effect of abandoned tasks on service levels.
entsvc04: Enterprise Service Tasks Trend Analysis Real Time	R	Table of task counts and service levels (since end of last 5-minute and half-hour intervals, and since midnight).
entsvc05: Enterprise Service Tasks Offered Over Half Hour	R	Pie chart of the percentage distribution of tasks offered since the end of the last half-hour interval.
entsvc06: Enterprise Service Service Levels Real Time	R	Bar graph of service levels since the end of the last 5-minute and half-hour intervals, and since midnight.
entsvc07: Enterprise Service Tasks, Averages and Service Levels Real Time	R	Table that shows task counts, queue status, and service levels in real-time and for the last 5 minutes.
entsvc08: Task and Agent Status Real Time	R	Table that shows task and queue status in real-time where service/skillgroup mapping is available.
entsvc09: Service Array Tasks, Averages and Service Levels Real Time	R	Table that shows Service Array task counts, queue status, and service levels in real-time and for the last 5 minutes.
entsvc23: Enterprise Service Real Time All Fields	R	Table summary of all real time enterprise service fields

Template Name	Historical or Real-Time	Description
entsvc11: Tasks Analysis of Enterprise Services Daily	H	Table of task count daily totals, queue delay time daily totals, and service level daily averages.
entsvc12: Tasks Analysis of Enterprise Services Half Hour	H	Table of task count and queue delay time half-hour totals, and service level half-hour totals.
entsvc13: Enterprise Service Tasks Offered Daily	H	Overlapped bar graph that shows the number of tasks offered per day.
entsvc14: Enterprise Service Tasks Handled Daily	H	Overlapped bar graph that shows the number of tasks handled per day.
entsvc15: Enterprise Service Tasks Abandoned Daily	H	Overlapped bar graph that shows the number of tasks abandoned per day.
entsvc16: Enterprise Service History Daily	H	Line graph of tasks abandoned, handled, and offered per day (for use with a single enterprise service).
entsvc17: Enterprise Service Tasks Offered Half Hour	H	Overlapped bar graph showing the distribution (number) of tasks offered at a half-hour sample rate.
entsvc18: Enterprise Gate Analysis Half Hour	H	Table report that shows historical task handling data for a collection of gates.
entsvc24: Enterprise Service Historical All Fields	H	Table summary of all historical enterprise service fields

Skill Group Templates

Skill group reports provide performance metrics on a collection of agents who share a common set of skills, such as all agents who are skilled to handle English speaking callers.

Base Only

The base skill group reports are the same as the peripheral skill group reports, except that all base skill group tabular reports allow you to launch drill-down reports from within the current report window.

A drill-down report is a detailed sub-report from within the current report window.

Template Name	Historical or Real-Time	Description
perskg01: Peripheral Skill Group Status Real Time	R	Stacked bar graph showing numbers of agents in talking, idle, available, and wrap-up states.
perskg03: Peripheral Skill Group Agent State Status	R	Stacked bar graph showing the percentage of agents in available, idle, talking, and wrap-up states.
perskg04: ICM Rolling 5-minute Peripheral Skill Group Status	R	Rolling 5-minute table showing agent states in full-time equivalent (FTE) counts and the number of tasks queued.
perskg05: Peripheral Skill Group % Utilization of Ready Agents	R	Bar graph of percent utilization of agents (ratio between time logged on and time handling calls).

Skill Group Templates

Template Name	Historical or Real-Time	Description
perskg11: Outbound Option (Blended Agent) Statistics	R	Table that shows all skill groups and their associated Outbound Option Stats.
perskg20: ICM Peripheral Skill Group Status Real Time	R	Table of real time Peripheral Skill Group Statistics
perskg28: Peripheral Skill Group Real Time All Fields	R	Table of all fields Skill Group Real Time Statistics
perskg29: Peripheral Skill Group Logout Real Time	R	Table of Logout Real Time Statistics for Skill Group
perskg08: FTE for Peripheral Skill Groups Half Hour	H	Table of half-hour FTE counts for agents signed on, idle, available, talking, and in wrap-up.
perskg09: Peripheral Skill Group Normalized Agent State	H	Stacked bar graph showing a normalized percentage of agent-states over specified range of time.
perskg12: Outbound Option (Blended Agent) Call Detail Performance in Skill Groups Half Hour	H	Table of half-hour outbound option counts for agents signed on, handle, talk and hold.
perskg21: ICM Peripheral Skill Group Task Summary Half Hour	H	Table of Call Statistics for Peripheral Skill Group by Half Hour
perskg22: ICM Peripheral Skill Group Task Summary Daily	H	Table of Call Statistics for Peripheral Skill Group by Day
perskg23: ICM Peripheral Skill Group Performance Summary Half Hour	H	Table of Peripheral Skill Group Statistics by Half Hour
perskg24: ICM Peripheral Skill Group Performance Summary Daily	H	Table of Peripheral Skill Group Statistics by Day
perskg25: ICM Peripheral Skill Group Consolidated Half Hour	H	Table of Consolidated Call and Skill Group Statistics by Half Hour
perskg26: ICM Peripheral Skill Group Consolidated Daily	H	Table of Consolidated Call and Skill Group Statistics by Day
perskg27: Peripheral Skill Group Historical All Fields	H	Table of all fields for Skill Group by Half Hour

Enterprise

An enterprise skill group is a collection of peripheral skill groups. They can be from the same contact center or from several contact centers. All enterprise skill group tabular reports have drill-down reports available.

Template Name	Historical or Real-Time	Description
entskg01: Enterprise Skill Group Status Real Time	R	Stacked bar graph showing numbers of agents in talking, idle, available, and wrap-up states.
entskg03: Enterprise Skill Group Agent State Status	R	Stacked bar graph showing the percentage of agents in available, idle, talking, and wrap-up states.

Template Name	Historical or Real-Time	Description
entskg04: ICM Rolling 5-minute Enterprise Skill Group Status	R	Rolling 5-minute grid showing agent states in full-time equivalent (FTE) counts and the number of tasks queued.
entskg05: Enterprise Skill Group % Utilization of Ready Agents	R	Bar graph of percent utilization of agents (ratio between time logged on and time handling calls).
entskg20: ICM Enterprise Skill Group Status Real Time	R	Table of real time Skill Group Statistics by Enterprise Skill Group
entskg28: Enterprise Skill Group Real Time All Fields	R	Table of all fields Skill Group Real Time Statistics by Enterprise Skill Group
entskg29: Enterprise Skill Group Logout Real Time	R	Table of Logout Real Time Statistics for Skill Group by Enterprise Skill Group
entskg06: Enterprise Skill Group Performance Half Hour	H	Table showing half-hour data on calls handled, calls made, and average agent times in handle, active, hold, and wrap-up.
entskg07: Enterprise Skill Group Performance Daily	H	Table of per-day FTE number of agents, calls counts, and average agent handling times for handle, active, hold and wrap-up
entskg08: FTE for Enterprise Skill Groups Half Hour	H	Table of half-hour FTE counts for agents signed on, idle, available, talking, and in wrap-up.
entskg09: Enterprise Skill Group Normalized Agent State	H	Stacked bar graph showing a normalized percentage of agent-states over specified range of time.
entskg21: ICM Enterprise Skill Group Task Summary Half Hour	H	Table of Call Statistics for Skill Group by Enterprise Skill Group by Half Hour
entskg22: ICM Enterprise Skill Group Task Summary Daily	H	Table of Call Statistics for Skill Group by Enterprise Skill Group by Day
entskg23: ICM Enterprise Skill Group Performance Summary Half Hour	H	Table of Skill Group Statistics by Enterprise Skill Group by Half Hour
entskg24: ICM Enterprise Skill Group Performance Summary Daily	H	Table of Skill Group Statistics by Enterprise Skill Group by Day
entskg25: ICM Enterprise Skill Group Consolidated Half Hour	H	Table of Consolidated Call and Skill Group Statistics by Enterprise Skill Group by Half Hour
entskg26: ICM Enterprise Skill Group Consolidated Daily	H	Table of Consolidated Call and Skill Group Statistics by Enterprise Skill Group by Day
entskg27: Enterprise Skill Group Historical All Fields	H	Table of all fields for Skill Group by Enterprise Skill Group by Half Hour

Peripheral

A peripheral skill group is a skill group associated with a specific single peripheral (ACD, PBX, IVR) in the contact center enterprise. Peripheral skill group templates are the same templates as base skill group templates with one exception: they do not have drill-down reports available, while base skill group tabular templates do.

Skill Group Templates

Template Name	Historical or Real-Time	Description
perskg01: Peripheral Skill Group Status Real Time	R	Stacked bar graph showing numbers of agents in talking, idle, available, and wrap-up states.
perskg03: Peripheral Skill Group Agent State Status	R	Stacked bar graph showing the percentage of agents in available, idle, talking, and wrap-up states.
perskg04: ICM Rolling 5-minute Peripheral Skill Group Status	R	Rolling 5-minute table showing agent states in full-time equivalent (FTE) counts and the number of tasks queued.
perskg05: Peripheral Skill Group % Utilization of Ready Agents	R	Bar graph of percent utilization of agents (ratio between time logged on and time handling calls).
perskg11: Outbound Option (Blended Agent) Statistics	R	Table that shows all skill groups and their associated Outbound Option Stats.
perskg20: ICM Peripheral Skill Group Status Real Time	R	Table of real time Peripheral Skill Group Statistics
perskg28: Peripheral Skill Group Real Time All Fields	R	Table of all fields Skill Group Real Time Statistics
perskg29: Peripheral Skill Group Logout Real Time	R	Table of Logout Real Time Statistics for Skill Group
perskg08: FTE for Peripheral Skill Groups Half Hour	H	Table of half-hour FTE counts for agents signed on, idle, available, talking, and in wrap-up.
perskg09: Peripheral Skill Group Normalized Agent State	H	Stacked bar graph showing a normalized percentage of agent-states over specified range of time.
perskg12: Outbound Option (Blended Agent) Call Detail Performance in Skill Groups Half Hour	H	Table of half-hour outbound option counts for agents signed on, handle, talk and hold.
perskg21: ICM Peripheral Skill Group Task Summary Half Hour	H	Table of Call Statistics for Peripheral Skill Group by Half Hour
perskg22: ICM Peripheral Skill Group Task Summary Daily	H	Table of Call Statistics for Peripheral Skill Group by Day
perskg23: ICM Peripheral Skill Group Performance Summary Half Hour	H	Table of Peripheral Skill Group Statistics by Half Hour
perskg24: ICM Peripheral Skill Group Performance Summary Daily	H	Table of Peripheral Skill Group Statistics by Day
perskg25: ICM Peripheral Skill Group Consolidated Half Hour	H	Table of Consolidated Call and Skill Group Statistics by Half Hour
perskg26: ICM Peripheral Skill Group Consolidated Daily	H	Table of Consolidated Call and Skill Group Statistics by Day
perskg27: Peripheral Skill Group Historical All Fields	H	Table of all fields for Skill Group by Half Hour

Trunk Group Templates

In WebView, you can report on peripheral trunk group and network trunk group data, such as the number of trunks in service, number of trunks idle, and the time during which all trunks in a trunk group were simultaneously busy (All Trunks Busy).

A network trunk group is a group of trunks organized to reflect the routing client's view of trunks. A network trunk group can map to one or more trunk groups.

A peripheral trunk group is a collection of trunks associated with a single peripheral. Often, the trunks in a peripheral trunk group are used for a common purpose.

Network

Template Name	Historical or Real-Time	Description
nettrk01: Network Trunk Group Status Real Time	R	Table that shows the status of trunks in selected network trunk groups.
nettrk02: Network Trunk Group Performance Real Time	R	Table that shows network trunk group status for the current interval.
nettrk03: Network Trunk Group Real Time All Fields	R	Table of all fields real time data for trunks in selected network trunk groups.
nettrk12: Network Trunk Group Report Half Hour	H	Table that shows half-hour historical data of trunks in selected network trunk groups.
nettrk13: Network Trunk Group Historical All Fields	H	Table of all fields data for trunks in selected network trunk groups by Half Hour

Peripheral

Template Name	Historical or Real-Time	Description
trkgrp01: All Trunks Busy Real Time	R	Bar graph of the time (in seconds) that all trunks were busy since the end of the last half-hour interval.
trkgrp02: Trunks Idle & In Service Real Time	R	Overlapped bar graph of the current number of idle trunks versus the current number of in-service trunks.
trkgrp03: Trunk Group Status Real Time .	R	Table showing counts of trunks in-service, trunks idle, and time in seconds that all trunks are busy
trkgrp04: Trunks Real Time All Fields	R	Table of all fields real time data for trunk groups.
trkgrp11: Trunk Group Performance Half Hour	H	Table of half-hour counts of trunks in-service, trunks idle, and the seconds that all trunks were busy.
trkgrp12: Trunks Historical All Fields	H	Table of all fields data for trunk groups by Half Hour.

Appendix B

Reporting Entities and Databases

Configured Entities that Capture Reporting Data

For each call routed by Unified ICM software, information about the call is tracked by several reporting entities and stored in database tables.

The table below lists entities that are configured for reporting.

Reporting Entities
Agents
Application Gateways
Call Types
Enterprise Services
Enterprise Skill Groups
Labels
Media Routing Domains
Network VRUs
Outbound Option (Dialers, Import Rules, Query Rules, Campaigns)
Peripherals
Reason Codes
Routes, Routing Targets, and Routing Clients
Services
Skill Groups
Translation Routes
Trunks, Trunk Groups, Network Trunk Groups

Database Tables that hold Reporting Data

The table below lists the database tables that store reporting data.

Database Tables for Reporting
Agent
Agent_Event_Detail
Agent_Half_Hour
Agent_Logout
Agent_Real_Time
Agent_Skill_Group_Half_Hour
Agent_Skill_Group_Real_Time
Agent_State_Trace
Agent_Team
Agent_Team_Member
Application_Gateway
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Appendix C

Configuration and Scripting for Reporting

This appendix has configuration procedures and scripting guidelines for reporting entities.

For full details on configuration, see the *ICM Configuration Guide for Cisco ICM Enterprise Edition*. For full details on scripting, see the *ICM Scripting and Media Routing Guide for Cisco ICM Enterprise & Hosted Editions*.

Note: All configuration that you perform in Configuration Manager must synchronize and comply with configuration on the ACD, as outlined in the specific *ACD Supplement Guide*. See Planning for Configuration and Scripting (page 58).

Configuration for Agent Reporting

This section has configuration directions for agent reporting.

See also

- Planning for Agent Reporting (page 61)

- Chapter 5: Reporting on Agents (page 77)

Note that Unified ICM does not support agent reporting for some Peripheral Gateways and for very large enterprise deployments. Refer to the *Cisco ICM/IPCC Enterprise & Hosted Editions Release 7.1(1) Hardware and System Software Specifications (Bill of Materials)* for details.

If you choose to use ACD Agent reports, or if your ACD does not support Unified ICM agent reporting, the information in this section is not relevant for you.

Autoconfiguring Agents

You can set an autoconfiguration option to avoid having to manually configure agents in Configuration Manager.

If this option is set, then when agents log on and are 'noticed' by the PIM, they are dynamically created permanently in the Unified ICM database.

Note: When you auto-configure, agent names are auto-generated by the Unified ICM. You might prefer to manually update Configuration Manager to change the auto-generated names into names that are meaningful for you.

To enable the **Autoconfigure Agents** option:

1. From the Configuration Manager, select **Explorer Tools > PG Explorer.**

2. Click **Retrieve** and select the peripheral.

3. Click the **Advanced** tab.

4. Check **Agent auto-configuration**.

Configuring Agent Data and Agent State Trace

To view **agent data** in WebView reports:

1. From the Configuration Manager, select **Tools > Explorer Tools > PG Explorer.**

2. Click **Retrieve** and select the peripheral.

3. Click the **Agent Distribution** tab.

4. Check **Enable Agent Reporting**.

5. Specify the AW with which the WebView instance is associated.

To enable the **agent state trace** option:

1. From the Configuration Manager, select **Tools > Explorer Tools > Agent Explorer.**

2. Click **Retrieve** and select the agent.

3. Click the **Advanced** tab.

4. Check **Agent state trace**.

Note: Enabling the agent state trace option can have a substantial performance impact on your system. I is usually turned on an agent-by-agent basis. Before you enable this option, consider the performance impact.

Configuring Agent Not Ready Reason Codes

The codes that agents select when entering the Not Ready state are configured in both the Configuration Manager and in the agent desktop software.

• Not Ready reason codes configured in the Configuration Manager are system-level codes.

• Not Ready reason codes configured on the agent desktop software are peripheral-specific.

To interpret reports consistently, configure reason codes to have the *same meaning* in Configuration Manager and the agent desktop software.

The Configuration Manager allows you to specify alphanumeric reason codes *and* their numeric equivalent. For example, you might configure Break and Lunch reason codes with numeric values of 1 and 2, respectively. Both the number and the text appear in WebView reports.

To configure agent Not Ready Reason codes

1. Configure the Not Ready reason codes in the agent desktop software (CTI OS or Cisco Agent Desktop).

2. Using the exact same reason codes as in the desktop software, configure the Not Ready reason codes in Configuration Manager.

   To do this, from Configuration Manager, select **Tools > List Tools > Reason Code List.**

   Note: Use this tool to enter Not Ready Reason Codes with text descriptions. If no text descriptions are configured, then the Agent30 and Agent31 reports display the numeric code only.

3. Ensure that the Agent Reporting and Agent Event Detail are both enabled on the PG.

   To do this:

   – From Configuration Manager, select **Tools > Explorer Tools > PG Explorer.**

   – Retrieve and select the PG.

   – Click the **Agent Distribution** tab.

   – Check both **Enable agent reporting** and **Agent event detail**.

See also Reporting on Agent Not Ready Reason Codes (page 86).

Configuring Agent Logout Reason Codes

To configure agent Logout Reason codes:

1. Configure the Logout reason codes in the agent desktop software (CTI OS or Cisco Agent Desktop).

   Some codes are generated automatically by the system for situations in which the agent is logged out automatically by the software.

   These automatic codes are listed in Chapter 5 (page 85).

2. Configure the Logout non-activity time in the Agent Desk Settings tool.

   To do this:

   – From Configuration Manager, click **Tools > List Tools > Agent Desk Settings List.**

   – Click **Retrieve**. Then select an existing code, or click **Add** to define a new one.

   – On the **Attributes** tab, enter a value in seconds for **Logout non-activity time**.

   See also Reporting on Agent Logout Reason Codes (page 85).

Configuring Agent Teams and Supervisors

An **agent team** is an organizational tool that is configured to reflect the reporting structure in a contact center.

Agent teams are peripheral-specific: all agents on a team and the supervisor(s) for the team must reside on the same peripheral.

An individual agent can be assigned to one team only.

The team configuration in Configuration Manager needs to match the team configuration on the ACD.

To add an agent team or to add agent members to an existing team:

1. From Configuration Manager, click **Tools > List Tools > Agent Team List.**

2. Click **Retrieve**. Then select an existing team, or click **Add** to define a new one.

3. Work in the appropriate tabs to configure attributes, to add members, and to assign a supervisor.

Supervisors are agents who are configured to have supervisor status.

With this status, they can generate reports and view data for their team(s) only.

Agents who are specified as supervisors in the Agent Explorer tool and who are also created Users in the User List tool are treated as supervisors when they log into WebView and are restricted as such.

Note: Although you are able to define supervisors in Configuration Manager, you might prefer to use your ACD configuration to designate supervisors.

To configure a selected agent to be a supervisor:

1. From Configuration Manager, click **Tools > Explorer Tools > Agent Explorer**.

2. Click **Retrieve** and select the agent.

3. Click the **Supervisor** tab.

4. Check Supervisor Agent.

Maintain supervisor data from **Tools > List Tools > Supervisor List.**

See also Reporting on Agent Teams (page 97).

Configuring Call Types

To configure a Call Type:

1. From the Configuration Manager, select **Tools > List Tools > Call Type List**.

2. Click **Retrieve**. Then select an existing Call Type, or click **Add** to define a new one.

See also:

Planning for Call Types (page 61)

Call Type Reports (page 101)

Configuration and Scripting for Conferences and Transfers

Follow these guidelines when configuring and scripting for transfers and conferences to **skill groups**:

- Configure the dialed numbers in the Configuration Manager.

From the Configuration Manager, select **Tools > List Tools >Dialed Number / Script Selector List**.

- Create new Call Types (page 185) or identify existing Call Types and associate the Call Types with the Dialed Numbers.

- Create a routing script for transferring to skill groups that includes a Queue to Skill Group node. This script ensures that transferred and conferenced calls are queued to the correct skill group.

- Associate the Call Type with the routing script.

See also:

Planning for Transfer and Conference Reporting (page 71)

Reporting on Agent Call Transfers and Conferences (page 93)

Configuring Services and Enterprise Services

To configure a Service and its associated routes, peripheral targets, and labels:

1. From the Configuration Manager, select **Tools > Explorer Tools > Service Explorer**.

2. Click **Retrieve**. Then select an existing Service, or click **Add** to define a new one.

3. Complete the **Service** and **Advanced** tabs to define the properties of the selected service.

4. Complete the **Service Member** tab to add and delete the Skill Groups as service members.

   Note: It is important to configure Service Members in Configuration Manager to accurately reflect their scripting in the ACD. If the configuration is not correct, certain service statistics will not be reflected correctly.

See also:

Planning for Service and Enterprise Service Reporting (page 65)

Service Reports (page 101)

Configuring Enterprise Services

To configure an Enterprise Service:

1. From the Configuration Manager, select **Tools > List Tools > Enterprise Service List**.

2. When the Enterprise Service List window appears, in the Select filter data box, select the filters you want and click **Retrieve**.

This enables the **Add** button.

3. Complete the **Attributes** tab.

Configuring and Scripting for Service Level Threshold and Type

Configuring and scripting for service level reporting involves configuring the service level type and the service level and creating routing scripts that gather the correct statistics.

You can configure Service Levels in different ways, depending on the kind of information you want them to provide.

Service Levels are defined at a system level and are also configured for peripherals and for services. These settings have a hierarchical relationship.

For example, you can configure the Service Level settings for all services on a peripheral and override these settings for individual services. If you do this, the service level defined at the service takes precedence over the service level defined at the peripheral.

System defaults for Service Level configuration are as follows:

- Call Type Service Level Threshold: 20

- Call Type Service Level Type: Ignore Abandoned calls

- Service Level Threshold: -1

  This means the value for Media_Routing_Domain.ServiceLevelThreshold for the same MRDomainID as the service is used.

- Service Level Type: Default

  This means the software uses the default specified for the associated peripheral.

To set the service level for a service:

1. From the Configuration Manager, select **Tools > Explorer Tools > Service Explorer**.

2. Click **Retrieve** and select a Service.

3. On the **Service** tab, enter the values you want for Service Level Threshold and Service Level Type.

Consider these guidelines when configuring and scripting service level:

- Service level time begins as soon as the call enters a Call Type. Therefore set up Call Types/scripts used specifically to collect queue and agent statistics such that service level

time begins once a call is queued to a skill group. Define service levels only for Call Types that point to a script that includes a Queue to Skill Group Node.

- Set up a one Call Type to collect statistics prior to the queue (that is, the initial Call Type designated for the script via Call Type mapping.

- Set up other Call Types used specifically to collect queue and agent statistics.

- In your routing scripts, include the Requalify or Call Type nodes to submit the call to the Call Type used to collect queuing information.

- Calls can queue to more than skill group and service level metrics are updated for each skill group to which a single call queues.

  Service Levels could be adversely affected if calls abandon within or outside the service level threshold in such cases. Consider queuing to a single skill group if you include abandons in your Service Level calculations and don't want abandons to affect Service Levels adversely.

If you follow these recommendations, the first Call Type to which the call was initially mapped will gather statistics before the call is queued to the skill group. The script will then pass the call to the Call Type set up specifically to collect information after the call is queued to the skill group.

See also:

Configuring Short Calls

A short call is a call that is either abandoned or answered very quickly.

You can configure the number of seconds for an abandoned short call and the number of seconds for an answered short call.

To configure abandoned short calls:

1. Select **Tools > Explorer Tools > PG Explorer**.

2. Click **Retrieve** and select a peripheral.

3. Click the **Peripheral** tab.

4. Set **Abandoned Call Wait Time** to a value in seconds.

   This value is the length of time during which terminated calls are considered abandoned.

Note: If you do not want to track abandoned calls, leave this field blank.

To configure answered short calls:

1. Select **Tools > Explorer Tools > PG Explorer**.

2. Click **Retrieve** and select a peripheral.

3. Click the **Advanced** tab.

4. Set **Answered Short Calls Threshold** to a value in seconds less than your Service Level Threshold but greater than zero.

   This value is the length of time during which answered calls are considered abandoned.

See also:

Configuring Skill Groups and Enterprise Skill Groups

To configure a Skill Group:

1. From Configuration Manager, select **Tools > Explorer Tools > Skill Group Explorer**.

2. When the Skill Group Explorer window appears, click **Add** to create a new Skill Group, or click **Retrieve** and select an existing Skill Group.

3. Complete the configuration fields on all tabs.

Note: If you have configured sub-skill groups from several peripherals or from different media, group only the sub-skill groups into the Enterprise Skill Group and not both base and sub-skill groups.

To configure a Sub-Skill Group:

1. From Configuration Manager, select **Tools > Explorer Tools > Skill Group Explorer**.

2. When the Skill Group Explorer window appears, click **Add** to create a new Skill Group, or click **Retrieve** and select an existing Skill Group.

3. Complete the **Subgroup Mask** tab and the **Sub Skill Groups** tab.

   These tabs are available only if you have maintenance access and only if the selected peripheral can have subskill groups.

   See the *ICM Configuration Guide for Cisco ICM Enterprise Edition* for details.

Note: Not all ACDs support sub-skill groups/

To configure an Enterprise Skill Group:

1. From Configuration Manager, select **Tools > List Tools > Enterprise Skill Group List.**
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2. When the Enterprise Skill Group List window appears, click **Add** to define a new Enterprise Skill Group or click **Retrieve** and select an existing one.

3. On the **Attributes** tab, click **Add** to add Skill Groups as members.

See also:

Planning for Skill Groups and Enterprise Skill Groups (page 69)

Reporting on Skill Group Operations (page 113)

Reporting on Agent Activity in Skill Groups (page 79)

Configuration and Scripting for the VRU

Follow these guidelines when configuring Self-Service applications, Information Gathering applications, and queue applications:

- Enable Service Control and Queue Reporting at the VRU peripheral.

- Use the VRUProgress variable in the Set node of the routing script to indicate the status of the call at different points in the routing script. You can set the status to VRU unhandled, VRU handled, VRU assisted, VRU opt out unhandled, VRU script handled or VRU forced transfer.

  For each transaction in the VRU Self-Service or Information Gathering application for which you plan to change the VRUProgress variable, create a separate Call Type. In the script, change the Call Type when a call reaches the end of a transaction and then change the VRUProgress variable. This enables you to report on each transaction separately using the Call Type VRU Activity reports.

- Optionally, if you are using CVP as your VRU and want to perform advanced custom reporting on VRU application details, configure the following:

  – Capture microapplication, which you can include in a script to trigger the creation of a TCD record at any point in a routing script. Configure the Capture microapplication as a VRU script; execute the application using the RunExternalScript node. You must name the script "CAP" or "CAP, xxx", where xxx is any string that makes the script name unique. (For example CAP, bankingApplication).

  – Metadata ECC variable microapplication, which collects high-level details about the script application. Configure an ECC variable in the Expanded Call Center Variables configuration

tool. The variable length should normally be 62 bytes but can be as low as 21 bytes to save space.

  – Use these microapplications in your scripts to trigger TCD creation at points in the script for which you want to capture data, such as when a transaction completes. Using the metadata ECC variable in conjunction with the Capture microapplication enables you to capture additional details about the performance of the script and the customer's experience for each point in the script for which a TCD record is created.

- There might be cases when a call is not queued, but instead sent to the agent directly (via the LAA Select node) from the VRU. Ensure the VRU PG is configured correctly to ensure that such a call is considered answered at the VRU service rather than abandoned.

- If you are using IP-IVR as the VRU, set the Configuration parameter in the VRU PG record to /ASSUME_ANSWERED to ensure that calls sent from the VRU to an agent without being queued are reported as Answered.

- Configure services with peripheral IDs that match the information sent from the VRU.

  The peripheral ID that you enter depends on whether you are using IP-IVR or CVP as the VRU.

  – If you are using IP-IVR, you configure a service with a peripheral ID that matches the ID you entered in CRS Application Administration as the post routing ID. Remember the post routing ID that you configure for use when creating services.

  – If you are using CVP, the peripheral ID that you enter depends on the VRU type.

    If the CVP is a routing client that handles new calls (VRU type 5), the peripheral service ID should be 1.

    If the CVP receives pre-routed calls (VRU types 2, 3, 7, or 8), the peripheral service ID should be 2.

See also:

Planning for VRU Application Reporting (page 73)

Reporting on VRU Applications (page 117)

Configuring Translation Routes

To create translation routes, use the Translation Route Wizard in Configuration Manager.

You can also use the Translation Route Wizard to view configuration or integrity reports on translation routes, update existing translation routes, or to delete translation routes and their associated entities.

To create a translation route:

1. In the Configuration Manager, select **Tools > Wizards > Translation Route Wizard**.

2. When the Translation Route Wizard introductory dialog box opens, click **Next**.

3. At the Select Configuration Task dialog box, choose **Create New** and click **Next**.

4. Complete the wizard.

   See the *ICM Configuration Guide for Cisco ICM Enterprise Edition*

   for details on the procedure.

See also:

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