

IPCM Database Reference

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(Jan. 2004) (H8313005)

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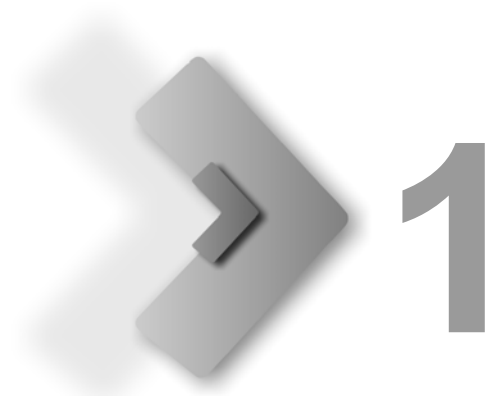
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IPCM Database Setup

Overview

IPCM uses a SQL Server database for storing information such as statistical values and interaction data. The IPCM topology refers to this database as the IPCM database. Follow the instructions in this topic to set up a SQL Server database to use as the IPCM database, and configure the IPCM server to connect to the database.

The IPCM log is always stored in the database. The system can be configured to use the same database for all data (including log, statistics, etc.) or you can configure a separate database exclusively for the IPCM log.

IMPORTANT: This topic only discusses instructions specific to the IPCM database setup, and assumes readers are expert-level SQL Server users. For details on specific SQL tasks, refer to the Microsoft documentation.

Planning

Before setting up the SQL Server database, note the following:

- FrontRange recommends but does not require dedicating a SQL Server database for IPCM to use as its database.
- Use a reliable connection between the IPCM server and the IPCM database. The IPCM server opens connections to the database during startup and periodically writes statistical values to the database. The database connection is idle between writes, but IPCM keeps the connection open. If you configure IPCM to connect to a database and IPCM cannot establish that connection afterwards, IPCM generates an error message every time it attempts to write data to the database. These error messages may clog IPCM logs.

Microsoft SQL Server Setup

Install and configure Microsoft SQL Server 2000 with service pack 3 as described in this section. IPCM supports all editions of SQL Server 2000, including SQL Server 2000 Desktop Engine (MSDE) and SQL Server for Windows CE.

MSDE

Microsoft SQL Server 2000 Desktop Engine (MSDE) is a free version of SQL Server 2000 intended for use as a desktop database or in small workgroups. MSDE has most of the features that come with a full version of SQL Server, but its scalability is limited and it lacks management and development tools.

Note: FrontRange Solutions recommends you use MSDE for demo or evaluation purposes only.

SQL Server Setup

Set up a Microsoft SQL Server database:

- Create a new database named **IPCM**.
- Create a new server login named **IPCM** and assign a password.
- Create a user named **IPCM** attached to the IPCM login in the IPCM database, and grant the **db_owner** role to the user.

IPCM Database Connection Strings

IPCM uses Microsoft ActiveX Data Objects (ADO) connection strings to connect to databases. These connection strings identify the data source, database, and authentication properties necessary to access a database.

Note: MS SQL 2000 connections can be authenticated through Integrated Security or SQL user accounts created by a SQL administrator on the SQL Server instance.

The following are sample ADO connection strings using the OLE DB Provider for MS SQL 2000.

For Standard Security:

```
Provider=SQLOLEDB.1;Data Source=myServerName; Initial
Catalog=myDatabaseName; User Id=myUsername;Password=myPassword
```

For a Trusted Connection:

```
Provider=SQLOLEDB.1;Data Source=myServerName;Initial
Catalog=myDatabaseName;Integrated Security=SSPI
```

To Connect to a Named Instance:

```
Provider=SQLOLEDB.1; Data Source=myServerName\myInstanceName; Initial
Catalog=myDatabaseName; User Id=myUsername; Password=myPassword
```

Note: In order to connect to a SQL Server 2000 named instance, you must have MDAC 2.6 (or greater) installed.

To Connect to SQL Server via an IP Address:

```
Provider=SQLOLEDB.1; Data Source=xxx.xxx.xxx.xxx; Initial
Catalog=myDatabaseName; User ID=myUsername; Password=myPassword
```

To obtain the ADO connection string for your database:

1. Configure your database host machine to display file extensions.
 - a. Select **Start>>Settings>>Control Panel>>Folder Options>>View**.
 - b. Deselect the **Hide extensions for known file types** option.
 - c. Click **Apply**, then **OK**.
2. Right-click the desktop of the database host machine and select **New>>Shortcut**. The **Create Shortcut** window appears.
3. Move the **Create Shortcut** window so you can see the shortcut (**New Shortcut**) on your desktop. **Do not close the Create Shortcut window**.
4. Rename the shortcut to **IPCM.udl**.
5. Close the **Create Shortcut** window.
6. Double-click the **IPCM.udl** shortcut. The **Data Link Properties** window appears.
7. In the **Data Link Properties** window, click the **Provider** tab.
8. Select **Microsoft OLE DB Provider for SQL Server** from the list and click **Next**. The **Connection** tab appears.
9. Select the name of the database server in the **Select or enter a server name** drop-down list.
10. Select the **Use a specific user name and password** radio button and enter your SQL Server login credentials in the **User name** and **Password** field.
11. Select the **Allow saving password** check box.
12. Select the IPCM database in the **Select the database on the server** drop-down list.
13. Click **Test Connection**. A message appears that reads "Test connection succeeded." Click **OK**.
14. Click **OK** to close the **Data Link Properties** window. A prompt appears asking if you want to save your password in an unencrypted format. Click **Yes**.
15. Open the **IPCM.udl** shortcut in Notepad. The file contains the ADO connection string in OLEDB format. Save this string.

IPCM Database Connection Settings

To use the Management Portal to connect IPCM to the database:

1. Select **Start>>Programs>>FrontRange Solutions>> Communications Management>>Management Portal**. The **Enter Network Password** dialog box appears.
2. Enter a user name and password with administrator privileges.
3. Click **OK**. The menu window appears.
4. Click **System Configuration>>Host>>Database**. The **Database** page appears.
5. In the **Database Connection: Database (OLEDB Source String)** field, enter the ADO connection string (in OLEDB format) in the text box.

The screenshot shows a web-based configuration interface for a database connection. The main heading is "Database". Below it, there is a section titled "Database Connection:". This section contains two input fields. The first field is labeled "Database (OLEDB Source String)*:" and contains the text "Provider=SQLOLEDB;Data Source=(Local);Initial Catalog=Northwind;User ID=sa;Password=sa". The second field is labeled "Log Database (OLEDB Source String):" and also contains the same text. Between these two fields, there is a checked checkbox with the label "Use same connection for log". At the bottom right of the form, there is a blue button labeled "Update".

6. To use the ADO connection string for the log, click the **Use same connection for log** check box; the **Log Database** field is populated with the same ADO connection string.
7. Click the **Update** and **Commit Changes** buttons. IPCM connects to the database.

IPCM creates the database structure (including tables, constraints, indexes, and stored procedures) when you either restart IPCM or the **Aggregation Interval** expires.

Note: If you enable the agent auditing functionality, the system writes agent audit data to the database after the agent changes states 500 times, or the time you specify in the **Aggregation Interval** field expires. Refer to "[Statistics](#)" for information.

Refer to "[IPCM Database Details](#)" for information on the database structure.

Viewing Historical Reports with External Applications

The system includes the Historical Reporting interface to display historical reports. In addition, you can create external applications that access data in the database and display reports. Refer to "[IPCM Database Details](#)" for information on the database structure.



IPCM Database Details

Overview

This appendix describes the structure and tables IPCM creates when you connect the IPCM server to the IPCM database. The information in this appendix is useful for developers creating external applications that access the IPCM historical reporting functionality.

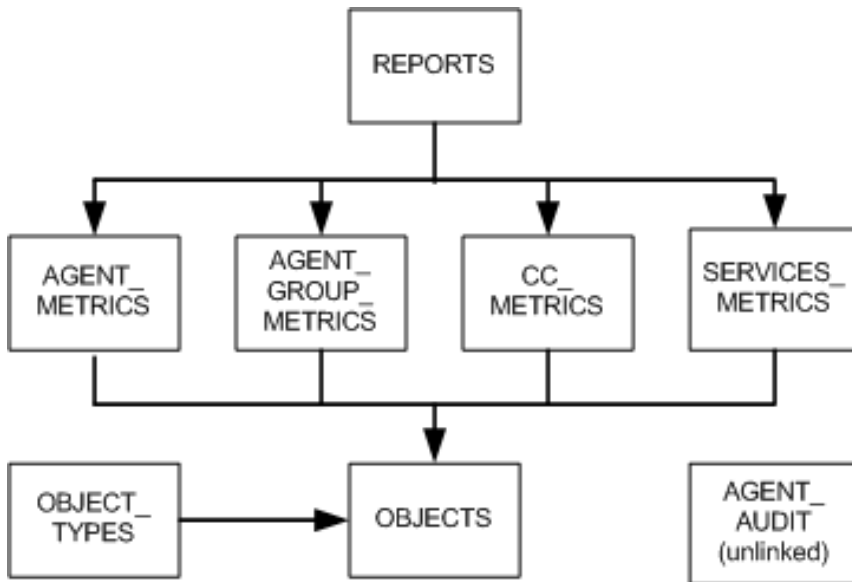
Refer to "[IPCM Database Setup](#)" instructions for setting up the database and connecting it with the IPCM server. Refer to the "[Reports](#)" and "[Statistics](#)" for information on historical reporting and statistics.

Historical Reports Database Structure

This section describes IPCM database information related to the storage of statistical data for historical reports, including the historical report tables, SQL statements, and database associations.

Historical Reports Database Tables

The following diagram shows the historical reports tables and their relationships IPCM automatically creates the first time IPCM connects to the IPCM database.



Note: The **AGENT_AUDIT** table is part of the database structure, but is not linked to any of the other tables.

The following subsections describe the contents of each database table.

REPORTS Table

The root table to which all other tables are linked either directly or indirectly. The configuration defines one or more historical reports, each of which is a collection of metric values, stored in the metric tables (CC_METRICS, AGENT_METRICS, etc.)

Note: The default configuration defines only one report named Default. FrontRange Solutions does not recommend defining more than one report.

Column	Type	Description
ID	int	The unique identifier of the report.
NAME	nvarchar (64)	The unique name of the report. The name is copied from the configuration.

OBJECT_TYPES Table

A list that defines readable names for integer object type identifiers. This table reduces the database space needed for records in the OBJECTS table.

Column	Type	Description
ID	int	The unique identifier of the object type. This ID points to object types in another table.
NAME	nvarchar (64)	The display name of the object type (either agent, agent group, contact center, or service).

OBJECTS Table

A list of objects for which metric values are written in the database. One record is created in this table for each agent, agent group, service or contact center. The record defines a unique integer identifier of the object and gives the object a readable name that is shown in historical reports. The table also refers to the OBJECT_TYPES table so the display name of the object type may be shown in historical reports, built for the object.

Column	Type	Description
ID	int identity	The unique identifier of the object.
DISPLAY_NAME	nvarchar (128)	The display name of the object.
OBJECT_TYPE	int	The reference to the object type (OBJECT_TYPES.ID).

AGENT_METRICS Table

Stores the recorded values of statistics for all agents. Each record in this table contains a reference to the object for which values are written, and the begin and end times for the interval for which IPCM collected the values. The table stores all time values in milliseconds.

Column	Type	Description
REPORT_ID	int	The unique identifier of the report.
OBJECT_ID	int	The unique identifier of the object.
BEGIN_TIME	date/ time	The beginning time of the interval. This value uses coordinated universal time (UTC).

Column	Type	Description
END_TIME	date/ time	The ending time of the interval. This value uses coordinated universal time (UTC).
V_CALLS_ANSWERED	bigint	The values of the Number of calls answered statistic.
V_WRAPUP_TIME	bigint	The values of the Total after call work time statistic.
V_READY_TIME	bigint	The values of the Total ready time statistic.
V_NOT_READY_TIME	bigint	The values of the Total not ready time statistic.
V_WORK_TIME	bigint	The values of the Total working time statistic.
V_TOTAL_BUSY_TIME	bigint	The values of the Total busy time statistic.
V_HELD_TIME	bigint	The values of the Total held time statistic.
V_TOTAL_HANDLING_TIME	bigint	The values of the Total handling time statistic.
V_LOGON_TIME	bigint	The values of the Total logon time statistic.
V_INT_RETURNED	bigint	The values of the Number of returned interactions statistic.
V_TRANSFERS_ORIGINATED	bigint	The values of the Number of originated transfers statistic.
V_TRANSFERS_ACCEPTED	bigint	The values of the Number of accepted transfers statistic.

Column	Type	Description
V_TRANSFERS_REJECTED	bigint	The values of the Number of rejected transfers statistic.
V_ANSWERED_RETURNS	bigint	The values of the Number of answered returned interactions statistic.
V_EI1_ANSWERED	bigint	The number of calls answered on escalation interval 1.
V_EI2_ANSWERED	bigint	The number of calls answered on escalation interval 2.
V_EI3_ANSWERED	bigint	The number of calls answered on escalation interval 3.
V_EI4_ANSWERED	bigint	The number of calls answered on escalation interval 4.
V_EI5_ANSWERED	bigint	The number of calls answered on escalation interval 5.
V_EIR_ANSWERED	bigint	The number of calls answered after all escalation intervals.
V_OUT_CALLS_MADE	bigint	The number of outbound calls made.
V_OUT_TOTAL	bigint	The values of the Total Outbound Time statistic.
V_OUT_HANDLING	bigint	The values of the Outbound Handling Time statistic.
V_OUT_WRAP_UP	bigint	The values of the Outbound Wrap-up Time statistic.
V_TIME_TO_ANSWER	bigint	The values of the Time to Answer statistic.

Column	Type	Description
V_DELIVERY_ATTEMPTS	bigint	The values of the Delivery Attempts statistic.

AGENT_GROUP_METRICS Table

Stores the recorded values of statistics for all agent groups. Each record in this table contains a reference to the object for which values are written, and the begin and end times for the interval for which IPCM collected the values. The table stores all time values in milliseconds.

Column	Type	Description
REPORT_ID	int	The unique identifier of the report.
OBJECT_ID	int	The unique identifier of the object.
BEGIN_TIME	date/ time	The beginning time of the interval. This value uses coordinated universal time (UTC).
END_TIME	date/ time	The ending time of the interval. This value uses coordinated universal time (UTC).
V_CALLS_ANSWERED	bigint	The values of the Number of calls answered statistic.
V_WRAPUP_TIME	bigint	The values of the Total after call work time statistic.
V_READY_TIME	bigint	The values of the Total ready time statistic.
V_NOT_READY_TIME	bigint	The values of the Total not ready time statistic.
V_WORK_TIME	bigint	The values of the Total working time statistic.
V_TOTAL_BUSY_TIME	bigint	The values of the Total busy time statistic.

Column	Type	Description
V_HELD_TIME	bigint	The values of the Total held time statistic.
V_HANDLING_TIME	bigint	The values of the Total handling time statistic.
V_LOGON_TIME	bigint	The values of the Total logon time statistic.
V_INT_RETURNED	bigint	The values of the Number of returned interactions statistic.
V_TRANSFERS_ORIGINATED	bigint	The values of the Number of originated transfers statistic.
V_TRANSFERS_ACCEPTED	bigint	The values of the Number of accepted transfers statistic.
V_TRANSFERS_REJECTED	bigint	The values of the Number of rejected transfers statistic.
V_ANSWERED_RETURNS	bigint	The values of the Number of answered returned interactions statistic.
V_MIN_LOGGED_IN_AGENTS	bigint	The maximum number of logged-in agents.
V_MAX_LOGGED_IN_AGENTS	bigint	The minimum number of logged-in agents.
V_MAX_QUEUED_TIME	bigint	The maximum time an interaction spent in the queue.
V_EI1_ANSWERED	bigint	The number of calls answered on escalation interval 1.
V_EI2_ANSWERED	bigint	The number of calls answered on escalation interval 2.

Column	Type	Description
V_EI3_ANSWERED	bigint	The number of calls answered on escalation interval 3.
V_EI4_ANSWERED	bigint	The number of calls answered on escalation interval 4.
V_EI5_ANSWERED	bigint	The number of calls answered on escalation interval 5.
V_EIR_ANSWERED	bigint	The number of calls answered after all escalation intervals.
V_OUT_CALLS_MADE	bigint	The number of outbound calls made.
V_OUT_TOTAL	bigint	The values of the Total Outbound Time statistic.
V_OUT_HANDLING	bigint	The values of the Outbound Handling Time statistic.
V_OUT_WRAP_UP	bigint	The values of the Outbound Wrap-up Time statistic.
V_TIME_TO_ANSWER	bigint	The values of the Time to Answer statistic.
V_DELIVERY_ATTEMPTS	bigint	The values of the Delivery Attempts statistic.

CC_METRICS Table

Stores the recorded values of statistics for the entire contact center. Each record in this table contains a reference to the object for which values are written, and the begin and end times for the interval for which IPCM collected the values. The table stores all time values in milliseconds.

Column	Type	Description
REPORT_ID	int	The unique identifier of the report.
OBJECT_ID	int	The unique identifier of the object.
BEGIN_TIME	date/ time	The beginning time of the interval. This value uses coordinated universal time (UTC).
END_TIME	date/ time	The ending time of the interval. This value uses coordinated universal time (UTC).
V_CALLS_ANSWERED	bigint	The values of the Number of calls answered statistic.
V_TOTAL_WRAPUP_TIME	bigint	The values of the Total after call work time statistic.
V_READY_TIME	bigint	The values of the Total ready time statistic.
V_NOT_READY_TIME	bigint	The values of the Total not ready time statistic.
V_WORK_TIME	bigint	The values of the Total working time statistic.

Column	Type	Description
V_TOTAL_BUSY_TIME	bigint	The values of the Total busy time statistic.
V_TOTAL_HANDLING_TIME	bigint	The values of the Total handling time statistic.
V_LOGON_TIME	bigint	The values of the Total logon time statistic.
V_INT_RETURNED	bigint	The values of the Number of returned interactions statistic.
V_TRANSFERS_ORIGINATED	bigint	The values of the Number of originated transfers statistic.
V_TRANSFERS_ACCEPTED	bigint	The values of the Number of accepted transfers statistic.
V_TRANSFERS_REJECTED	bigint	The values of the Number of rejected transfers statistic.
V_ANSWERED_RETURNS	bigint	The values of the Number of answered returned interactions statistic.
V_SERVICE_FACTOR	bigint	The values of the Service factor statistic.
V_CALLS_RECEIVED	bigint	The values of the Number of calls received statistic.
V_CALLS_ABANDONED	bigint	The values of the Number of calls abandoned statistic.

Column	Type	Description
V_CALLS_SHORT_ABANDONED	bigint	The values of the Number of calls short-abandoned statistic.
V_CALLS_QUEUED	bigint	The values of the Calls queued statistic.
V_TOTAL_QUEUED_TIME	bigint	The values of the Total time in queue statistic.
V_ABANDON_TIME	bigint	The values of the Total abandon time statistic.
V_INT_IVR_DISCONNECTED	bigint	The values of the Number of disconnected in IVR interactions statistic.
V_MIN_LOGGED_IN_AGENTS	bigint	The maximum number of logged-in agents.
V_MAX_LOGGED_IN_AGENTS	bigint	The minimum number of logged-in agents.
V_MAX_QUEUED_TIME	bigint	The maximum time an interaction spent in the queue.
V_EI1_ANSWERED	bigint	The number of calls answered on escalation interval 1.
V_EI2_ANSWERED	bigint	The number of calls answered on escalation interval 2.
V_EI3_ANSWERED	bigint	The number of calls answered on escalation interval 3.

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Column	Type	Description
V_EI4_ANSWERED	bigint	The number of calls answered on escalation interval 4.
V_EI5_ANSWERED	bigint	The number of calls answered on escalation interval 5.
V_EIR_ANSWERED	bigint	The number of calls answered after all escalation intervals.
V_EI1_ABANDONED	bigint	The number of calls abandoned on escalation interval 1.
V_EI2_ABANDONED	bigint	The number of calls abandoned on escalation interval 2.
V_EI3_ABANDONED	bigint	The number of calls abandoned on escalation interval 3.
V_EI4_ABANDONED	bigint	The number of calls abandoned on escalation interval 4.
V_EI5_ABANDONED	bigint	The number of calls abandoned on escalation interval 5.
V_EIR_ABANDONED	bigint	The number of calls abandoned after all escalation intervals.
V_OUT_CALLS_MADE	bigint	The number of outbound calls made.

Column	Type	Description
V_OUT_TOTAL	bigint	The values of the Total Outbound Time statistic.
V_OUT_HANDLING	bigint	The values of the Outbound Handling Time statistic.
V_OUT_WRAP_UP	bigint	The values of the Outbound Wrap-up Time statistic.
V_CALLS_UNQUEUED	bigint	Number of calls that had exited queues.
V_MIN_QUEUED_TIME	bigint	The values of the Queued Time statistic.
V_MIN_IVR_TIME	bigint	Minimum time in IVR.
V_MAX_IVR_TIME	bigint	Maximum time in IVR.
V_AVG_CALL_DURATION	bigint	Average call duration.
V_DIVERTED	bigint	Number of inbound calls diverted to destinations other than agents, without putting the calls in queue.
V_QUEUED_DIVERTED	bigint	Number of inbound calls diverted to destinations other than agents, after putting the calls in queue.
V_DIVERTED_FAIL	bigint	Number of inbound calls diverted to destinations other than agents, but disconnected before being answered.
V_IN_TOTAL	bigint	The values of the Total Time statistic.

Column	Type	Description
V_DELIVERY_ATTEMPTS	bigint	The values of the Delivery Attempts statistic.

SERVICE_METRICS Table

Stores the recorded values of statistics for all services. Each record in this table contains a reference to the object for which values are written, and the begin and end times for the interval for which IPCM collected the values. The table stores all time values in milliseconds.

Column	Type	Description
REPORT_ID	int	The unique identifier of the report.
OBJECT_ID	int	The unique identifier of the object.
BEGIN_TIME	date/ time	The beginning time of the interval. This value uses coordinated universal time (UTC).
END_TIME	date/ time	The ending time of the interval. This value uses coordinated universal time (UTC).
V_CALLS_ANSWERED	bigint	The values of the Number of calls answered statistic.
V_TRANSFERS_ORIGINATED	bigint	The values of the Number of originated transfers statistic.
V_TRANSFERS_ACCEPTED	bigint	The values of the Number of accepted transfers statistic.

Column	Type	Description
V_TRANSFERS_REJECTED	bigint	The values of the Number of rejected transfers statistic.
V_ANSWERED_RETURNS	bigint	The values of the Number of answered returned interactions statistic.
V_SERVICE_FACTOR	bigint	The values of the Service factor statistic.
V_CALLS_ABANDONED	bigint	The values of the Number of calls abandoned statistic.
V_CALLS_SHORT_ABANDONED	bigint	The values of the Number of calls short-abandoned statistic.
V_TOTAL_QUEUED_TIME	bigint	The values of the Total time in queue statistic.
V_CALLS_QUEUED	bigint	The values of the Calls queued statistic.
V_MAX_QUEUED_TIME	bigint	The maximum time an interaction spent in the queue.
V_EI1_ANSWERED	bigint	The number of calls answered on escalation interval 1.
V_EI2_ANSWERED	bigint	The number of calls answered on escalation interval 2.
V_EI3_ANSWERED	bigint	The number of calls answered on escalation interval 3.

Column	Type	Description
V_EI4_ANSWERED	bigint	The number of calls answered on escalation interval 4.
V_EI5_ANSWERED	bigint	The number of calls answered on escalation interval 5.
V_EIR_ANSWERED	bigint	The number of calls answered after all escalation intervals.
V_EI1_ABANDONED	bigint	The number of calls abandoned on escalation interval 1.
V_EI2_ABANDONED	bigint	The number of calls abandoned on escalation interval 2.
V_EI3_ABANDONED	bigint	The number of calls abandoned on escalation interval 3.
V_EI4_ABANDONED	bigint	The number of calls abandoned on escalation interval 4.
V_EI5_ABANDONED	bigint	The number of calls abandoned on escalation interval 5.
V_EIR_ABANDONED	bigint	The number of calls abandoned after all escalation intervals.
V_OUT_CALLS_MADE	bigint	The number of outbound calls made.

Column	Type	Description
V_OUT_TOTAL	bigint	The values of the Total Outbound Time statistic.
V_OUT_HANDLING	bigint	The values of the Outbound Handling Time statistic.
V_OUT_WRAP_UP	bigint	The values of the Outbound Wrap-up Time statistic.
V_CALLS_RECEIVED	bigint	The values of the Calls Received statistic.
V_CALLS_UNQUEUED	bigint	Number of calls that had exited queues.
V_TOTAL_BUSY_TIME	bigint	The values of the Busy Time statistic.
V_SERVICE_FACTOR	bigint	The values of the Service Factor statistic.
V_ANSWERED_RETURNS	bigint	The values of the Answered Returns statistic.
V_MIN_QUEUED_TIME	bigint	The values of the Queued Time statistic.
V_MIN_IVR_TIME	bigint	Minimum time in IVR.
V_MAX_IVR_TIME	bigint	Maximum time in IVR.
V_TOTAL_HANDLING_TIME	bigint	The values of the Total Handling Time statistic.
V_DIVERTED	bigint	Number of inbound calls diverted to destinations other than agents, without putting the calls in queue.

Column	Type	Description
V_QUEUED_DIVERTED	bigint	Number of inbound calls diverted to destinations other than agents, after putting the calls in queue.
V_DIVERTED_FAIL	bigint	Number of inbound calls diverted to destinations other than agents, but disconnected before being answered.
V_DELIVERY_ATTEMPTS	bigint	The values of the Delivery Attempts statistic.
V_IN_TOTAL	bigint	The values of the Total Time statistic.

AGENT_AUDIT Table

Records the state changes for agents with the auditing functionality enabled. IPCM adds a record to the table every time an agent changes state.

Enable auditing for an agent using the **Audited** radio buttons on the **Agent Properties** dialog box for that agent in the Management Portal. Refer to the online help topic "Agent Audit Options" for details.

Note: The Contact Center server does not write audit records or create the tables until at least 500 agent state changes occur or you reboot IPCM.

The following table lists the columns each record in the database includes.

Column	Type	Description
AGENT	nvarchar (32)	The unique identifier of the agent.
TIME_STAMP	date/ time	The date and time the record was created.
OLD_STATE	int	The previous state of the agent. Refer to the previous table for the state that corresponds to each integer.
NEW_STATE	int	The new state of the agent. Refer to the previous table for the state that corresponds to each integer.
LAST_NAME	nvarchar (64)	The agent's last name.
FIRST_NAME	nvarchar (64)	The agent's first name.
REASON	nvarchar (64)	The Not Ready reason the agent gave for entering the Not Ready state. This value is relevant only if the agent enters the Not Ready state.

The following table shows the integers IPCM uses to represent each state.

Integer	State	Description
0	Unknown	The Contact Center server does not know the state of the agent. The Contact Center server reports this state as the old state in the first audit record for the agent.
1	Logged-out	The agent is not logged into the contact center.
2	Not ready	The agent is not ready to receive calls. The reason of the state may be reported in the REASON column.
3	Ready	The agent is ready to receive calls.
4	Reserved	The agent has been reserved for the delivery of a call.
5	Busy	The agent is on the phone with a caller.
6	After Call Work	The agent is done talking to the caller and is doing after call work.

NOT_READY_REASONS Table

Stores a dictionary of all **Not Ready** reasons. IPCM populates the table with each **Not Ready** reason an agent reports.

Column	Type	Description
ID	int	The unique identifier of the Not Ready reason. Values for this column are allocated automatically by the server. This column is the primary key of the table. The name of the primary key index is PK_NOT_READY_REASONS.
NAME	nvarchar (64)	The unique display name of the Not Ready reason.

NOT_READY_TIME Table

A **Not Ready** reason data for all agents. IPCM populates the table with each **Not Ready** reason the agent reports, along with the following data:

- The time the agent entered the **Not Ready** state.
- The time the agent left the **Not Ready** state.
- The number of milliseconds the agent spent in the **Not Ready** state.

Column	Type	Description
REPORT_ID	int	The unique identifier of the report record in the REPORTS table.
OBJECT_ID	int	The unique identifier of the object for which the Not Ready time is stored in the record.
BEGIN_TIME	date/ time	The beginning time of the interval for which time in the Not Ready state is stored in the record.
END_TIME	date/ time	The ending time of the interval for which time in the Not Ready state is stored in the record.
REASON_ID	int	The identifier of the Not Ready reason.
REASON_TIME	int	The total number of milliseconds the agent spent in the Not Ready state.

SQL Statements for Historical Reports

The following tables list the SQL statements for each historical report.

AGENT_METRICS and AGENT_GROUP_METRICS SQL Statements

Report	SQL Statements
Average Busy Time	<p>MS SQL: CASE WHEN sum(V_CALLS_ANSWERED)>0 THEN sum(V_TOTAL_BUSY_TIME/60)/ sum(V_CALLS_ANSWERED)/1000 WHEN sum(V_CALLS_ANSWERED)<=0 THEN 0 END as 'Average Busy Time, min'</p> <p>JET SQL: IIF(sum(V_CALLS_ANSWERED)>0, sum(V_TOTAL_BUSY_TIME/60)/ sum(V_CALLS_ANSWERED)/1000, 0) as 'Average Busy Time, min'</p>
Number of Accepted Transfers	sum(V_TRANSFERS_ACCEPTED) as 'Number of Accepted Transfers'
Number of Answered Returned Interactions	sum(V_ANSWERED_RETURNS) as 'Number of Answered Returned Interactions'
Number of Calls Answered	sum(V_CALLS_ANSWERED) as 'Number of Calls Answered'
Number of Originated Transfers	sum(V_TRANSFERS_ORIGINATED) as 'Number of Originated Transfers'
Number of Rejected Transfers	sum(V_TRANSFERS_REJECTED) as 'Number of Rejected Transfers'

Report	SQL Statements
Number of Returned Interactions	sum(V_INT_RETURNED) as 'Number of Returned Interactions'
Total After Call Work Time	sum(V_WRAPUP_TIME/60)/1000 as 'Total After Call Work Time, min'
Total Busy Time	sum(V_TOTAL_BUSY_TIME/60)/1000 as 'Total Busy Time, min'
Total Handling Time	sum(V_TOTAL_HANDLING_TIME/60)/1000 as 'Total Handling Time, min'
Total Held Time	sum(V_HELD_TIME/60)/1000 as 'Total Held Time, min'
Total Logon Time	sum(V_LOGON_TIME/60)/1000 as 'Total Logon Time, min'
Total Not Ready Time	sum(V_NOT_READY_TIME/60)/1000 as 'Total Not Ready Time, min'
Total Ready Time	sum(V_READY_TIME/60)/1000 as 'Total Ready Time, min'
Total Working Time	sum(V_WORK_TIME/60)/1000 as 'Total Working Time, min'
Work Timing Chart	sum(V_TOTAL_BUSY_TIME/60)/1000 as 'Total Busy Time, min', sum(V_WRAPUP_TIME/60)/1000 as 'Total After Call Work Time, min', sum(V_READY_TIME/60)/1000 as 'Total Ready Time, min', sum(V_NOT_READY_TIME/60)/1000 as 'Total Not Ready Time, min'

CC_METRICS SQL Statements

Report	SQL Statements
Average Abandon Time	<p>MS SQL: CASE WHEN sum(V_CALLS_ABANDONED)>0 THEN sum(V_ABANDON_TIME/60)/ sum(V_CALLS_ABANDONED)/1000 WHEN sum(V_CALLS_ABANDONED)<=0 THEN 0 END as 'Average Abandon Time, min'</p> <p>JET SQL: IIF(sum(V_CALLS_ABANDONED)>0, sum(V_ABANDON_TIME/60)/ sum(V_CALLS_ABANDONED)/1000, 0) as 'Average Abandon Time, min'</p>
Average Busy Time	<p>MS SQL: CASE WHEN sum(V_CALLS_ANSWERED)>0 THEN sum(V_TOTAL_BUSY_TIME/60)/ sum(V_CALLS_ANSWERED)/1000 WHEN sum(V_CALLS_ANSWERED)<=0 THEN 0 END as 'Average Busy Time, min'</p> <p>JET SQL: IIF(sum(V_CALLS_ANSWERED)>0, sum(V_TOTAL_BUSY_TIME/60)/ sum(V_CALLS_ANSWERED)/1000, 0) as 'Average Busy Time, min'</p>
Average Time in Queue	<p>MS SQL: CASE WHEN sum(V_CALLS_QUEUED)>0 THEN sum(V_TOTAL_QUEUED_TIME/60)/ sum(V_CALLS_QUEUED)/1000 WHEN sum(V_CALLS_QUEUED)<=0 THEN 0 END as 'Average Time in Queue, min'</p> <p>JET SQL: IIF(sum(V_CALLS_QUEUED)>0, sum(V_TOTAL_QUEUED_TIME/60)/ sum(V_CALLS_QUEUED)/1000, 0) as 'Average Time in Queue, min'</p>
Calls Queued	sum(V_CALLS_QUEUED) as 'Calls Queued'

Report	SQL Statements
Number of Accepted Transfers	sum(V_TRANSFERS_ACCEPTED) as 'Number of Accepted Transfers'
Number of Answered Returned Interactions	sum(V_ANSWERED_RETURNS) as 'Number of Answered Returned Interactions'
Number of Calls Abandoned	sum(V_CALLS_ABANDONED) as 'Number of Calls Abandoned'
Number of Calls Answered	sum(V_CALLS_ANSWERED) as 'Number of Calls Answered'
Number of Calls Received	sum(V_CALLS_RECEIVED) as 'Number of Calls Received'
Number of Calls Short-Abandoned	sum(V_CALLS_SHORT_ABANDONED) as 'Number of Calls Short-Abandoned'
Number of Disconnected in IVR Interactions	sum(V_INT_IVR_DISCONNECTED) as 'Number of Disconnected in IVR Interactions'
Number of Originated Transfers	sum(V_TRANSFERS_ORIGINATED) as 'Number of Originated Transfers'
Number of Rejected Transfers	sum(V_TRANSFERS_REJECTED) as 'Number of Rejected Transfers'
Number of Returned Interactions	sum(V_INT_RETURNED) as 'Number of Returned Interactions'

Report	SQL Statements
Percent Calls Abandoned	<p>MS SQL: CASE WHEN sum(V_CALLS_QUEUED)>0 THEN sum(V_CALLS_ABANDONED)*100/ sum(V_CALLS_QUEUED) WHEN sum(V_CALLS_QUEUED)<=0 THEN 0 END as 'Percent Calls Abandoned'</p> <p>JET SQL: IIF(sum(V_CALLS_QUEUED)>0, sum(V_CALLS_ABANDONED)*100/ sum(V_CALLS_QUEUED), 0) as 'Percent Calls Abandoned'</p>
Total Handling Time	sum(V_CALLS_ANSWERED) as 'Number of Calls Answered', sum(V_CALLS_ABANDONED) as 'Number of Calls Abandoned', sum(V_CALLS_SHORT_ABANDONED) as 'Number of Calls Short-Abandoned'
Total Handling Time	sum(V_SERVICE_FACTOR*V_CALLS_ANSWERED)/ sum(V_CALLS_ANSWERED) as 'Service Factor'
Total After Call Work Time	sum(V_WRAPUP_TIME/60)/1000 as 'Total After Call Work Time, min'
Total Busy Time	sum(V_TOTAL_BUSY_TIME/60)/1000 as 'Total Busy Time, min'
Total Handling Time	sum(V_TOTAL_HANDLING_TIME/60)/1000 as 'Total Handling Time, min'
Total Held Time	sum(V_HELD_TIME/60)/1000 as 'Total Held Time, min'
Total Logon Time	sum(V_LOGON_TIME/60)/1000 as 'Total Logon Time, min'
Total Not Ready Time	sum(V_NOT_READY_TIME/60)/1000 as 'Total Not Ready Time, min'

Report	SQL Statements
Total Ready Time	sum(V_READY_TIME/60)/1000 as 'Total Ready Time, min'
Total Working Time	sum(V_WORK_TIME/60)/1000 as 'Total Working Time, min'
Work Timing Chart	sum(V_TOTAL_BUSY_TIME/60)/1000 as 'Total Busy Time, min', sum(V_TOTAL_WRAPUP_TIME/60)/1000 as 'Total After Call Work Time, min', sum(V_READY_TIME/60)/1000 as 'Total Ready Time, min', sum(V_NOT_READY_TIME/60)/1000 as 'Total Not Ready Time, min'

SERVICE_METRICS SQL Statements

Report	SQL Statements
Average Time in Queue	<p>MS SQL: CASE WHEN sum(V_CALLS_QUEUED)>0 THEN sum(V_TOTAL_QUEUED_TIME/60)/ sum(V_CALLS_QUEUED)/1000 WHEN sum(V_CALLS_QUEUED)<=0 THEN 0 END as 'Average Time in Queue, min'</p> <p>JET SQL: IIF(sum(V_CALLS_QUEUED)>0, sum(V_TOTAL_QUEUED_TIME/60)/ sum(V_CALLS_QUEUED)/1000, 0) as 'Average Time in Queue, min'</p>
Calls Queued	sum(V_CALLS_QUEUED) as 'Calls Queued'
Number of Accepted Transfers	sum(V_TRANSFERS_ACCEPTED) as 'Number of Accepted Transfers'
Number of Calls Abandoned	sum(V_CALLS_ABANDONED) as 'Number of Calls Abandoned'
Number of Calls Answered	sum(V_CALLS_ANSWERED) as 'Number of Calls Answered'
Number of Calls Short-Abandoned	sum(V_CALLS_SHORT_ABANDONED) as 'Number of Calls Short-Abandoned'
Number of Originated Transfers	sum(V_TRANSFERS_ORIGINATED) as 'Number of Originated Transfers'
Number of Rejected Transfers	sum(V_TRANSFERS_REJECTED) as 'Number of Rejected Transfers'

Report	SQL Statements
Percent Calls Abandoned	<p>MS SQL: CASE WHEN sum(V_CALLS_QUEUED)>0 THEN sum(V_CALLS_ABANDONED)*100/ sum(V_CALLS_QUEUED) WHEN sum(V_CALLS_QUEUED)<=0 THEN 0 END as 'Percent Calls Abandoned'</p> <p>JET SQL: IIF(sum(V_CALLS_QUEUED)>0, sum(V_CALLS_ABANDONED)*100/ sum(V_CALLS_QUEUED), 0) as 'Percent Calls Abandoned'</p>
Total Handling Time	sum(V_CALLS_ANSWERED) as 'Number of Calls Answered', sum(V_CALLS_ABANDONED) as 'Number of Calls Abandoned', sum(V_CALLS_SHORT_ABANDONED) as 'Number of Calls Short-Abandoned'
Total Handling Time	sum(V_SERVICE_FACTOR*V_CALLS_ANSWERED)/ sum(V_CALLS_ANSWERED) as 'Service Factor'
Total Working Time	sum(V_WORK_TIME/60)/1000 as 'Total Working Time, min'

Database Associations

The following table lists the statistics that store values in the database, and the columns and database tables in which they store the values. The table uses the following abbreviations:

- A=AGENT_METRICS table
- AG=AGENT_GROUP_METRIC table
- CC=CC_METRICS table
- S=SERVICE_METRICS table

Statistic	Column	A	AG	CC	S
Calls Queued	V_CALLS_QUEUED			X	X
Number of Accepted Transfers	V_TRANSFERS_ACCEPTED	X	X	X	X
Number of Answered Returned Interactions	V_ANSWERED_RETURNS	X	X	X	X
Number of Calls Abandoned	V_CALLS_ABANDONED			X	X
Number of Calls Answered	V_CALLS_ANSWERED	X	X	X	X
Number of Calls Received	V_CALLS_RECEIVED			X	
Number of Calls Short-Abandoned	V_CALLS_SHORT_ABANDONED			X	X
Number of Disconnected in IVR Interactions	V_INT_IVR_DISCONNECTED			X	X
Number of Originated Transfers	V_TRANSFERS_ORIGINATED	X	X	X	X

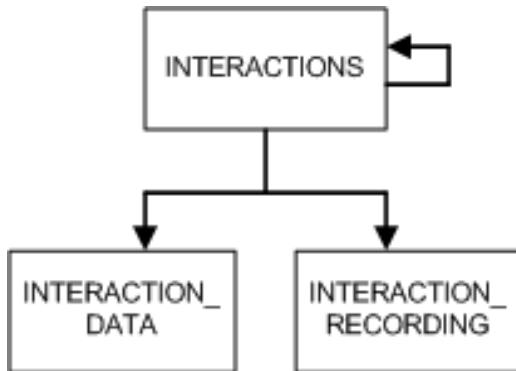
2-34 IPCM Database Details

Statistic	Column	A	AG	CC	S
Number of Rejected Transfers	V_TRANSFERS_REJECTED	X	X	X	X
Number of Returned Interactions	V_INT_RETURNED	X	X	X	X
Service Factor	V_SERVICE_FACTOR			X	X
Total After Call Work Time	V_WRAPUP_TIME	X	X	X	
Total Busy Time	V_TOTAL_BUSY_TIME	X	X	X	
Total Handling Time	V_TOTAL_HANDLING_TIME	X	X	X	
Total Held Time	V_HELD_TIME	X	X	X	
Total Logon Time	V_LOGON_TIME	X	X	X	
Total Not Ready Time	V_NOT_READY_TIME	X	X	X	
Total Ready Time	V_READY_TIME	X	X	X	
Total Time in Queue	V_TOTAL_QUEUED_TIME			X	X
Total Working Time	V_WORK_TIME	X	X	X	

Interaction Reports Database Structure

This section describes IPCM database information related to the storage of interaction data.

The following diagram shows the interaction reports tables and their relationships.



Note: Records in the Interactions table may be related to each other. For example, if a call is transferred, the second interaction will be related to the first interaction by the PREV_ID column.

Interactions Table

Contains static interaction data, which is interaction data that does not change over the interaction lifecycle. Each record contains information about a single interaction.

Column	Type	Description
ID	string(128)	The unique identifier of the report.
FIRST_ID	string(128)	The ID of the first interaction in the chain (for SQL reports).
PREV_ID	string(128)	The ID of the previous interaction in the chain, if there was one.
CREATION_TIME	DateTime	The Interaction creation timestamp.
COMPLETE_TIME	DateTime	The Interaction completion timestamp.
QUEUE_TIME	int	The amount of time in seconds this interaction was queued.
CRN	nvarchar	The identifier of the inbound call leg that initiated the interaction. This identifier is unique only during one IPCM start session; it can repeat if you restart the voice server.
ANI	nvarchar	The caller ID of the calling party.
DNIS	nvarchar	The phone number dialed.
AGENT_ID	nvarchar	The unique identifier of the agent who handled the interaction.

Interaction_Data Table

Contains dynamic interaction data, which is interaction data that changes over the interaction lifecycle. Each record contains information about a single piece of dynamic interaction data.

Column	Type	Description
REF_ID	string(128)	The reference to the interaction ID.
DATA_NAME	string(64)	The name of the data.
DATA_VALUE	string(256)	The value of the data.
SET_TIME	DateTime	The timestamp of the data change.
DATA_OLD_VALUE	nvarchar	The previous value of this data property.
SEQ_NUMBER	int	The sequence of interaction data for a given interaction.

Interaction_Recording Table

Contains data about recorded conversations. Each database record contains information about one recording.

Column	Type	Description
REF_ID	string(128)	The reference to the interaction ID.
PATH	string(260)	The path to the audio file containing the recording.
INITIATOR	string(64)	The user ID of the recording initiator. The value may be NULL if the recording was a scheduled recording.
START_TIME	DateTime	The time when the recording started.
RATING01 - RATING10	int	The ratings a manager or supervisor gave the recording after reviewing it (refer to "Reports").

Instant Messaging Database Table: IM_MESSAGES

This section describes IPCM database **IM_MESSAGES** table, which stores instant messages exchanged in IPCM.

Column	Type	Description
TIME_STAMP	DateTime	The timestamp of the message.
USER_FROM	nvarchar	The ID of the user who sent the message.
USER_TO	nvarchar	The ID of the user who received the message.
CONTENT	nvarchar	The content of the message.
REF_SESSION_ID	nvarchar	The unique session ID.
TS_FRACTION	int	The millisecond remainder of a time stamp.

Instant Messaging Database Table: IM_SESSIONS

This section describes IPCM database **IM_SESSIONS** table, which stores information about instant messages exchanged in IPCM.

Column	Type	Description
TIME_STAMP	datetime	The timestamp of the message.
USER_FROM	nvarchar	The ID of the user who sent the message.
USER_TO	nvarchar	The ID of the user who received the message.
REF_SESSION_ID	nvarchar	The unique session ID.
TS_FRACTION	int	The millisecond remainder of a time stamp.

Note: The **IM_MESSAGES** and **IM_SESSIONS** tables are created dynamically once the first IM session occurs in IPCM.

IPCM Log Database Table: LOG_RECORDS

This section describes the IPCM database **LOG_RECORDS** table, which stores all IPCM log messages.

Column	Type	Description
ID	Bigint	The unique ID of the record.
SYNCMAJOR	Int	Major part of the synchronization ID.
SYNCMINOR	Int	Minor part of the synchronization ID.
LOGTEXT	Nvarchar (1024)	The content of the log message.
CODE	Int	Numeric code of the message.
LOGLEVEL	Int	The level of the message (0 – Debug, 1 – Information, 2 – Warning, 3 – Error, 4 – Panic).
CLIENTLOGDATE	Datetime	Message timestamp in the client coordinates.
CLIENTDATEMS	Int	Milliseconds part of the client timestamp.
LOGDATE	Datetime	Message timestamp in the server coordinates.
LOGDATEMS	Int	Milliseconds part of the server timestamp.
HRESULT	Int	HRESULT code of the COM method (if applicable).
OPERID	Nvarchar (255)	Operation ID.
PID	Int	Client process's ID.

Column	Type	Description
TID	Int	Client process thread's ID.
MODULENAME	Nvarchar (255)	Path to the client executable file.
VERSION_0 – VERSION_3	Int	Client version number (X.X.X.X).
THIS	Int	Internal pointer to the log message sender.
CLSID	Nvarchar (255)	COM ClassID of the sender.
INSTANCEID	Nvarchar (255)	ID of the sender instance.
HOST	Nvarchar (255)	Computer name of the sender.
APPNAME	Nvarchar (255)	Application name.
METHODNAME	Nvarchar (255)	Internal method name.



Statistics

Overview

IPCM displays statistical data on the Statistics Console (refer to the online help topic "Statistics Console"). This topic explains how to:

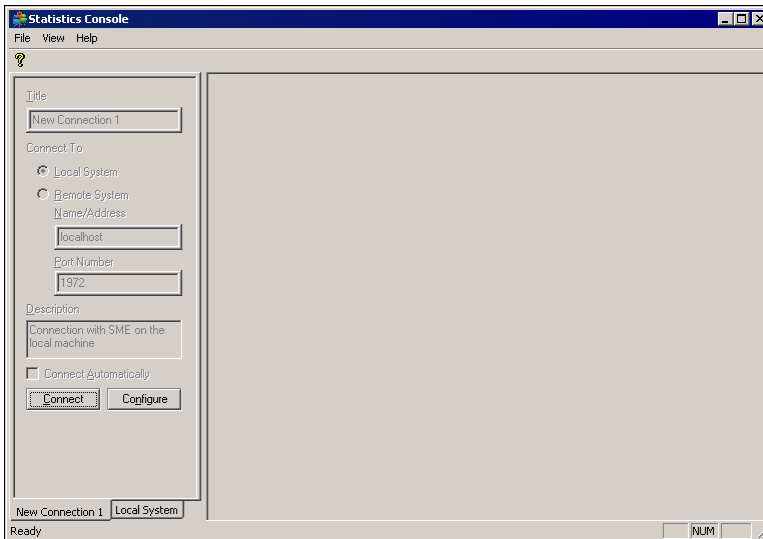
- Connect the Statistics Console to one or more IPCM deployments, enabling you to view statistical data from each.
- Use the Statistics Console to view statistics.
- Configure statistics.
- Customize the Statistics Console.

This topic also defines each statistic, and explains the methodology IPCM uses to calculate statistical values.

Connecting the Statistics Console

The Statistics Console automatically detects a local IPCM installation. To establish a connection between a remote Statistics Console and the Contact Center server, or add a new Contact Center server connection to the Statistics Console:

1. Launch the Statistics Console.
2. On the Statistics Console, select **File>>New Connection**. The **New Connection** screen appears and a **New Connection** tab is added to the left pane.



3. Click the **Configure** button to activate the fields on the **New Connection** screen, and complete the fields:
 - **Title** - Enter the name of the new connection as you want it to display on the tab in the left pane of the Statistics Console.
 - **Connect To** section - Select the **Remote System** radio button, which activates the **Name/Address** and **Port Number** fields.
 - **Name/Address** - Enter the IP address or resolvable domain name of the Contact Center server host machine to which you want to connect.
 - **Port Number** - Enter the port number of the Contact Center server to which you want to connect (usually **1972**).
 - **Description** - Enter a description of the connection.
 - **Connect Automatically**- Select this check box if you want this connection to occur every time you start the Statistics Console.
4. Click the **Connect** button. The Statistics Console attempts to connect to the Contact Center server you specified.

If the Statistics Console cannot connect, error messages display in the left pane. Select **Control Panel>>Administrative Tools>>Services** and restart the **IPCMessage Bus** and **IPCStatistics and Metrics Engine** services to correct the problem.

If necessary, you can close a connection by selecting the tab for the connection in the left pane, and selecting **File>>Disconnect**. To delete the connection, select **File>>Delete Connection**.

Note: When the IPCStatistics and Metrics service is down, all real-time statistics reset to zero.

Viewing Statistics

Use the Statistics Console to view statistics for an agent, agent group, or service by selecting the agent, agent group, or service in the hierarchy on the left. The statistics pertaining to the object you select appear on the right. For example, to view the statistics for an individual agent, expand the hierarchy until the name of the agent appears, then select the agent's name. Select **All Agents** to view a compilation of the statistics for all agents. Select **Contact Center** to view a compilation of the statistics for the entire contact center. Select a service to view the statistics pertaining to that service.

One Statistics Console can monitor multiple IPCM deployments. Use the tabs at the bottom of the hierarchy on the left to choose the IPCM deployment you want to monitor.

The screenshot displays the Statistics Console interface. On the left, a tree view shows the hierarchy: Contact Center > All Agents > ag06 (Delivery error). The main area is divided into three sections:

- Agent Summary:** Shows 'ag06' with status 'Ready 0:00' and 'Last answer: 2:48'.
- Agent's Work Timing:** A table of performance metrics.
- Work Timing Charts:** Two pie charts showing 'today' and 'last hour' data for not ready, ready, and busy times.
- Agent's Performance:** A table of call handling statistics.
- Agent's Performance Timing:** A table of average timing metrics.

At the bottom, there are tabs for 'Overview', 'Staging', and 'Outbound', and a status bar showing 'z00w003'.

Agent's Work Timing	
Current logon time	23:30:22
Total logon time on interval	1:00:00
Total logon time	14:50:55
Total busy time on interval	54:23
Total after call work time on interval	1:24
Total held time on interval	0:00
Total handling time on interval	55:48
Total ready time on interval	3:34
Total not ready time on interval	0:31
Total working time on interval	59:28
Total busy time	13:26:53
Total after call work time	20:51
Total held time	0:00
Total handling time	13:47:45
Total ready time	53:41
Total not ready time	8:11
Total working time	14:42:45
Average busy time	2:36
Average after call work time	0:04
Average held time	0:00
Average handling time	2:40
Average time on agent	2:36
Minimum time on agent	2:02
Maximum time on agent	3:42
Relative agent load	100.0%
Minimum time on agent on interval	2:25
Maximum time on agent on interval	2:40
Relative agent load on interval	100.0%

Agent's Performance	
Number of calls answered	308
Number of returned interactions	0
Number of originated transfers	0
Number of accepted transfers	0
Number of rejected transfers	0
Number of answered returned interactions	0
Number of calls answered on interval	20
Number of returned interactions on interval	0
Number of originated transfers on interval	0
Number of accepted transfers on interval	0
Number of rejected transfers on interval	0
Number of answered returned interactions on interval	0

Agent's Performance Timing	
Average busy time on interval	2:35
Average after call work time on interval	0:04
Average held time on interval	0:00
Average time on agent on interval	2:35
Average handling time on interval	2:39

The tabs at the bottom of the right pane of the Statistics Console let you view different types of statistics as well as statistics from different time periods. The tabs change depending on the object you select in the hierarchy on the left. The possible tabs are:

- **Last hour** - Displays statistics IPCM calculates using data recorded between 60 minutes ago and the present.
- **Outbound** - Displays outbound call statistics (refer to "[Outbound Statistics](#)").
- **Overview** - Displays a combination of statistics IPCM calculates using data recorded since midnight, and data recorded between 60 minutes ago and the present.
- **Staging** - Displays statistics based on queue stages (refer to "[Queue Stages](#)").
- **Today** - Displays statistics IPCM calculates using data recorded since midnight, or another time you specify in the configuration (refer to "[Statistics and Metrics Engine \(SME\) Scheduled Updates](#)").
- **Services** - Displays services statistics IPCM calculates using data recorded since midnight, and data recorded between 60 minutes ago and the present.
- **Inbound** - Displays inbound call statistics.

Service Factor Threshold

IPCM has a timer called the **Service Factor Threshold** useful for tracking the performance of an agent and the handling of calls for a service. The timer starts when a call goes into a queue; the timer stops when after the number of seconds you specify in the **Service Factor Threshold** expire.

The default **Service Factor Threshold** is 20 seconds.

To change the default:

1. Access the **SME** configuration page (**Management Portal>>System Configuration>>Contact Center Server>>SME**) and click the **Configuration** tab.

The screenshot shows the 'Configuration' tab of the SME configuration page. It features two sections: 'General parameters' and 'Call Interval Duration for Statistics'. The 'General parameters' section includes 'Service Factor Threshold(seconds)' set to 20 and 'Short Abandon Threshold' set to 5. The 'Call Interval Duration for Statistics' section includes five intervals (Interval 1 to Interval 5) with values 30, 60, 90, 120, and 150 respectively. Below these are 'Aggregation Interval (minutes)*' set to 15 and 'Service factor report decimal places' set to 0. An 'Update' button is located at the bottom right of the form.

General parameters:	
Service Factor Threshold(seconds):	20
Short Abandon Threshold:	5
Call Interval Duration for Statistics:	
Interval 1:	30
Interval 2:	60
Interval 3:	90
Interval 4:	120
Interval 5:	150
Aggregation Interval (minutes)*:	15
Service factor report decimal places:	0

2. In the **Service Factor Threshold** field, enter the number of seconds you want to use as the threshold.
3. You can also specify the number of decimal places on the service factor report by selecting the number in the **Service factor report decimal places** field.
4. Click the **Update** and **Commit Changes** buttons to enact your changes.
5. Restart the SME server to enact the changes to the service factor threshold.

Interaction Reporting Interval

To specify the interval for database updates:

1. Access the **SME** configuration page (**Management Portal>>System Configuration>>Contact Center Server>>SME**) and click the **Configuration** tab.
2. In the **Aggregation Interval** field, select the interval (in minutes) for database updates. The interval must be between 1 and 60, and there must be a complete number of intervals in an hour.
3. Click the **Update** and **Commit Changes** buttons.
4. Restart the SME server to enact the changes to the interaction reporting interval.

Abandon and Short Abandon Threshold

Callers often hang up while waiting in a queue for one of two reasons:

- The caller does not want to wait in the queue at all.
- The caller grows tired of waiting in the queue.

The Statistics Console distinguishes between these types of hang ups using the **Short Abandon Threshold**, which is a timer that starts when a call enters the **Queued** state.

- If the caller hangs up before the **Short Abandon Threshold** expires (i.e., the call changes from the **Queued** or **Delivery Pending** states to the **Completed** state within the Short Abandon Threshold), IPCM classifies the call as short abandoned.
- If the **Short Abandon Threshold** expires before the caller hangs up (i.e., the call changes from the **Queued** or **Delivery Pending** states to the **Completed** state beyond the Short Abandon Threshold), IPCM classifies the call as abandoned.

Note: The term abandon only applies to calls in a queue; it does not apply to calls that disconnect while on hold (i.e., calls that change from the **Held** state to the **Completed** state).

The default **Short Abandon Threshold** is **5** seconds. You can change the default:

1. Access the **SME** configuration page (**Management Portal>>System Configuration>>Contact Center Server>>SME**) and click the **Configuration** tab.
2. In the **Short Abandon Threshold** field, enter the number of seconds you want use as the Service Factor.
3. Click the **Update** and **Commit Changes** buttons to enact your changes.
4. Restart the SME server to enact the changes to the short abandon threshold.

Excluding Short Abandoned Calls

By default, IPCM does not factor short abandoned calls when calculating the following statistics:

- **Average Time in Queue** (MT_SCD_AVG_QUEUED_TIME and MT_INT_AVG_QUEUED_TIME)
- **Maximum Time in Queue** (MT_SCD_MAX_QUEUED_TIME and MT_INT_MAX_QUEUED_TIME)
- **Minimum Time in Queue** (MT_SCD_MIN_QUEUED_TIME and MT_INT_MIN_QUEUED_TIME)
- **Total Time in Queue** (MT_SCD_TOTAL_QUEUED_TIME and MT_INT_TOTAL_QUEUED_TIME)

Note: The above list contains the internal names of the statistic in parentheses. Each statistic has two internal names that IPCM components use when transferring data internally. An internal name beginning with **MT_SCD** is the version of the statistic IPCM calculates on a since midnight. An internal name beginning with **MT_INT** is the version of the statistic IPCM calculates on a sliding scale, (i.e., the last 60 minutes).

XML experts can configure IPCM to factor in short abandoned calls when calculating the above statistics:

1. On the IPCM server host machine, open the **HostConfiguration.xml** file (**C:\Program Files\FrontRange Solutions\IP Communications Management\Data\HostConfiguration.xml**). The **<SME>** element in the **HostConfiguration.xml** file contains the statistics configuration.
2. Using the internal statistic names (shown above in parentheses), locate each **<Metric Type>** element of the statistic you want to edit, and remove the **Threshold** attribute of each element. The **<Metric Type>** element is nested under the **<SME><Monitoring><Object Type>** elements. Be sure to only edit **<Metric Type>** elements and not **<Metric Id>** elements. There are multiple **<Metric Type>** elements for each statistic, so keep searching and removing the **Threshold** attributes of each until your search finds no new results.
3. Save and close the **HostConfiguration.xml** file, then restart the IPCM server.

Queue Stages

Queue stages are a series of timers that begin when an initiating event occurs, and end a configurable number of seconds later. The initiating event for the first queue stage is the answering of a call or a call entering the Queued state. The initiating event for subsequent queue stages is the expiration of the preceding interval (i.e., the second queue stage begins when the first queue stage expires, the third begins when the second expires, etc.). After the fifth queue stage expires, the Beyond escalation period begins and continues indefinitely.

The default queue stages are 30 seconds each:

- The first queue stage starts when the initiating event occurs and ends 30 seconds later.
- The second queue stage starts at 30 seconds after the initiating event and ends 60 seconds later.
- The third queue stage starts at 60 seconds after the initiating event and ends 90 seconds later.
- The fourth queue stage starts at 90 seconds after the initiating event and ends ninety 120 later.

- The fifth queue stage starts at 120 seconds after the initiating event and ends 150 seconds later.

To configure queue stages:

1. Access the **SME** configuration page (**Management Portal>>System Configuration>>Contact Center Server>>SME**).

Schedules		Configuration	
General parameters:			
Service Factor Threshold(seconds):		20	
Short Abandon Threshold:		5	
Call Interval Duration for Statistics:			
Interval 1:		30	
Interval 2:		60	
Interval 3:		90	
Interval 4:		120	
Interval 5:		150	
Aggregation Interval (minutes)*:		15	
Service factor report decimal places:		0	▼
Update			

2. In the interval fields below the **Call Interval Duration for Statistics** heading, enter the number of seconds you want IPCM to wait, after the initiating event, before ending each queue stage. You do not configure when queue stages start; only when they stop.

CAUTION: Increase the number of seconds for each interval. For example, if the first queue stage stops at 20 seconds, configure the second interval to stop at 21 seconds or later. Configuring a subsequent interval to stop sooner than a preceding interval will result in a failure to report values for the subsequent interval.

3. Click the **Update** and **Commit Changes** buttons to enact your changes.
4. Restart the SME server to enact the changes to staging intervals.

To view escalation statistics, click the **Staging** tab at the bottom of the right pane of the Statistics Console. The **Staging** tab is available if you select an individual agent, agent group, or service in the hierarchy, and displays the escalation statistics for the object you select in the hierarchy.

IPCM bases the following statistics on queue stages:

- Calls in queue on queue stages
- Calls answered on queue stages
- Calls abandoned on queue stages

Calls in Queue on Queue Stages

The number of calls waiting in the queue for the duration of each queue stage. For example, if you are using the default queue stages:

- Queue stage 1 of this statistic displays the number of calls in the Queued or Delivery Pending states for up to 30 seconds.
- Queue stage 2 of this statistic displays the number of calls in the Queued or Delivery Pending states from 30 to 60 seconds.
- Queue stage 3 of this statistic displays the number of calls in the Queued or Delivery Pending states from 60-90 seconds, etc.

The Beyond row of this statistic displays the number of calls waiting in the queue after the fifth queue stage ends.

Calls Answered on Queue Stages

The number of calls answered during each queue stage. For example, if you are using the default queue stages:

- Queue stage 1 of this statistic displays the number of calls answered within 30 seconds after entering the Queued state.
- Queue stage 2 of this statistic displays the number of calls answered between 30 to 60 seconds after entering the Queued state.
- Queue stage 3 of this statistic displays the number of calls answered between 60-90 seconds after entering the Queued state, etc.

The Beyond row of this statistic displays the number of calls answered after the fifth queue stage ends.

Calls Abandoned on Queue Stages

The number of calls abandoned while in the queue during each queue stage. For example, if you are using the default queue stages:

- Queue stage 1 of this statistic displays the number of calls abandoned within 30 seconds after entering the Queued state.
- Queue stage 2 of this statistic displays the number of calls abandoned between 30 to 60 seconds after entering the Queued state.
- Queue stage 3 of this statistic displays the number of calls abandoned between 60-90 seconds after entering the Queued state, etc.

The Beyond row of this statistic displays the number of calls abandoned after the fifth Queue stage ends.

Outbound Statistics

Outbound statistics are statistics based on the activity of outbound calls that meet the following requirements:

- The voice application handles the call
- The call has a **Direction** interaction property set to **Outbound**.

IMPORTANT: Outbound statistics do not include outbound calls that are not handled by a voice application. For example, if an agent calls an outside line and the call goes directly to the PSTN without being processed by a voice application, the call does not affect outbound statistics.

Outbound statistics are for use in environments with voice applications that handle outbound calls, such as automatic dialing applications. You can also configure IPCM to route all outbound calls through a voice application.

The Statistics Console lists outbound statistics on the **Outbound** tab. "[Statistic Definitions and Calculations](#)" contains the definition of each outbound statistic.

Statistics and Metrics Engine (SME) Scheduled Updates

The default configuration of the Statistics Console resets all non-interval based statistics every 24 hours at midnight. For example, the “Number of Calls” statistic for an agent resets to **0** at midnight.

You can configure all non-interval based statistics to reset to 0 at times other than midnight by specifying new update times in the SME schedule:

1. On the Management Portal menu window, click **System Configuration>>Contact Center Server>>SME**. The **SME** page appears.

Event	Time (HH:MM:SS)	
Midnight	00:00:00	
<input type="text"/>	<input type="text"/> : <input type="text"/> : <input type="text"/>	<input type="button" value="Add"/>
		<input type="button" value="Update"/>

2. On the **Schedules** tab, in the **Event** column, create a name for the update. The name has no restrictions.
3. In the **Time** column, enter the hour, minute, and second at which you want all non-interval based statistics to reset to 0.
4. Click the **Add** button. A row is added to the table.
5. Click the **Update** and **Commit Changes** buttons to enact your changes.
6. Restart the SME server to enact changes made to the schedule.

If necessary, you can delete update times by clicking the red x icon next to the time.

Note: The statistical values in the Statistics Console change according to the configurations on the SME Schedule page; however, the **Today** tab at the bottom of the Statistics Console does not change. FrontRange Solutions recommends notifying all Statistics Console users when you set new update times so the name of the **Today** tab does not create confusion.

Statistic Definitions and Calculations

The following table lists the statistics in IPCM and the objects to which each statistic applies.

Statistic	Agent	Agent Groups	Contact Center	Services
Average After-Call Work Time	X	X	X	
Average Busy Time	X	X	X	X
Average Call Abandon Time			X	X
Average Call Duration			X	
Average Handling Time	X	X	X	
Average Held Time	X	X		
Average Outbound Handling Time	X	X	X	X
Average Outbound Time	X	X	X	X
Average Outbound Wrap-up Time	X	X	X	X
Average Time in IVR			X	X
Average Time in Queue			X	X
Average Time on Agent	X	X	X	

Statistic	Agent	Agent Groups	Contact Center	Services
Calls Diverted			X	X
Calls Queued			X	X
Current Logon Time	X			
Diverted Calls Failed			X	X
Maximum Call Duration			X	
Maximum Time in IVR			X	X
Maximum Time in Queue			X	X
Maximum Time on Agent	X	X	X	
Minimum Call Duration			X	
Minimum Time in IVR			X	X
Minimum Time in Queue			X	X
Minimum Time on Agent	X	X	X	
Number of Accepted Transfers	X	X	X	X
Number of Agents in Busy State			X	

Statistic	Agent	Agent Groups	Contact Center	Services
Number of Agents in Not Ready State			X	
Number of Agents in Ready State			X	
Number of Agents in Wrap Up State			X	
Number of Answered Returned Interactions	X	X	X	X
Number of Busy Lines			X	
Number of Calls Abandoned			X	X
Number of Calls Answered	X	X	X	X
Number of Calls in Queue			X	X
Number of Calls on Hold			X	X
Number of Calls Received			X	X
Number of Calls Short Abandoned			X	X
Number of Disconnected in IVR Interactions			X	X

Statistic	Agent	Agent Groups	Contact Center	Services
Number of Inbound Lines			X	
Number of Logged-in Agents			X	
Number of Originated Transfers	X	X	X	X
Number of Rejected Transfers	X	X	X	X
Number of Returned Interactions	X	X	X	X
Outbound Calls Made	X	X	X	X
Outbound Handling Time	X	X	X	X
Outbound Wrap-up Time	X	X	X	X
Percent Calls Abandoned			X	X
Percent Calls Answered			X	X
Percent Calls Short Abandoned			X	X
Queued Calls Diverted			X	X
Relative Agent Load	X			

Statistic	Agent	Agent Groups	Contact Center	Services
Relative Group Load		X		
Service Factor			X	X
Total After-Call Work Time	X	X	X	
Total Busy Time	X	X	X	
Total Handling Time	X	X	X	
Total Held Time	X	X		
Total Logon Time	X	X	X	
Total Not Ready Time	X	X	X	
Total Outbound Time	X	X	X	X
Total Ready Time	X	X	X	
Total Ready Time	X	X	X	
Total Time in Queue			X	X
Total Working Time	X	X	X	

The following subsections define each statistic and describe the calculation IPCM uses to determine the statistic value. Calculations use the concept of monitored period to refer to the time span from which IPCM collects data to calculate a statistic. For example, if the monitored period of time for the **Number of calls** statistic is from midnight to 10:00 PM, IPCM only displays the number of calls within that twenty-two hour period.

Note: IPCM regularly stores the values of several of these statistics in the IPCM database to generate reports for the Historical Reports Interface. Refer to "[IPCM Database Setup](#)" and "[IPCM Database Details](#)" for information about the IPCM database, including the columns and tables that store these values.

Average After-Call Work Time

Definition

The average time the agent, agent group, or contact center spent completing after-call work during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equation for the agent associated with the interaction:

$$\frac{\text{Total time agent spent in After-Call Work state during monitored period}}{\text{Total number of interactions (including this interaction) answered by agent during monitored period}} = \text{Average after call work time}$$

Average Busy Time

Definition

For an agent, agent group, or contact center - The average time the selected agent, agent group, or contact center spent talking to callers during the monitored period.

For a service - The average time agents spent talking to callers associated with the selected service during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equation for the agent associated with the interaction:

$$\frac{\text{Total time agent spent in Busy state during monitored period}}{\text{Total number of interactions (including this interaction) answered by agent during monitored period}} = \text{Average busy time}$$

IPCM also performs the following equation for the service associated with the interaction:

$$\frac{\text{Total time agents spent in Busy state during for interactions associated with service during monitored period}}{\text{Total number of interactions (including this interaction) associated with service during monitored period}} = \text{Average busy time}$$

Average Call Abandon Time

Definition

For the contact center - The average time callers spent in queue before disconnecting during the monitored period.

For a service - The average time for which calls associated with the selected service were in queue before the caller disconnected during the monitored period.

This statistic excludes both interactions derived from transfers and short abandoned interactions (refer to "[Abandon and Short Abandon Threshold](#)").

Calculation

When an interaction changes to the **Completed** state from the **Queued** or **Delivery Pending** states, IPCM determines if the interaction was abandoned. If the interaction was abandoned, IPCM increments the total count of abandoned interactions during the monitored period and performs the following equation for the entire contact center:

$$\frac{\begin{array}{l} \text{Time} \\ \text{interaction} \\ \text{spent in} \\ \text{Delivery} \\ \text{Pending state} \end{array} + \begin{array}{l} \text{Time} \\ \text{interaction} \\ \text{spent in} \\ \text{Queued state} \end{array} + \begin{array}{l} \text{Total time all other} \\ \text{abandoned interactions} \\ \text{spent in both Queued and} \\ \text{Delivery Pending states} \\ \text{during monitored period} \end{array}}{\begin{array}{l} \text{Total number of abandoned interactions (including this} \\ \text{interaction)} \end{array}} = \begin{array}{l} \text{Average call} \\ \text{abandon} \\ \text{time} \end{array}$$

IPCM also increments the total count of abandoned interactions associated with the service during the monitored period, and performs the following equation for the associated service:

$$\frac{\begin{array}{l} \text{Time} \\ \text{interaction} \\ \text{spent in} \\ \text{Delivery} \\ \text{Pending state} \end{array} + \begin{array}{l} \text{Time} \\ \text{interaction} \\ \text{spent in} \\ \text{Queued state} \end{array} + \begin{array}{l} \text{Total time all other} \\ \text{abandoned interactions} \\ \text{associated with the service} \\ \text{spent in both Queued and} \\ \text{Delivery Pending states} \\ \text{during monitored period} \end{array}}{\begin{array}{l} \text{Total number of abandoned interactions associated with the} \\ \text{service (including this interaction)} \end{array}} = \begin{array}{l} \text{Average call} \\ \text{abandon} \\ \text{time} \end{array}$$

Average Call Duration

Definition

The average duration of calls coming into the contact center during the monitored period.

Calculation

When an inbound call changes to the **Disconnected** state, IPCM performs the following equation:

$$\frac{\begin{array}{l} \text{Duration} \\ \text{of call} \end{array} + \begin{array}{l} \text{Total duration of all} \\ \text{other calls during} \\ \text{monitored period} \end{array}}{\begin{array}{l} \text{Total number of calls (including} \\ \text{this call) during monitored period} \end{array}} = \begin{array}{l} \text{Average} \\ \text{call} \\ \text{duration} \end{array}$$

Average Handling Time

Definition

For the selected agent, agent group, or contact center - The average time spent talking to callers, transferring calls, and completing after-call work during the monitored period.

For the selected service - The average time agents spent talking to callers, transferring calls, and completing after-call work associated with the selected service during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equation for the agent associated with the interaction:

$$\frac{\begin{array}{l} \text{Total time agent} \\ \text{spent in Busy} \\ \text{state during} \\ \text{monitored period} \end{array} + \begin{array}{l} \text{Total time agent} \\ \text{spent in After-Call} \\ \text{Work state during} \\ \text{monitored period} \end{array}}{\begin{array}{l} \text{Total number of interactions} \\ \text{(including this interaction)} \\ \text{answered by the agent during} \\ \text{monitored period} \end{array}} = \begin{array}{l} \text{Average} \\ \text{handling} \\ \text{time} \end{array}$$

Average Held Time

Definition

The average time the selected agent or agent group kept an interaction that completed during the monitored period on hold.

Note the following:

- The statistic only includes the hold time of interactions that end during the monitored period. If an interaction is on hold during the monitored period but ends after the monitored period, IPCM does not factor the interaction into the calculation.
- The statistic factors the total hold time of an interaction ending within the monitored period, even if the hold time is outside of the monitored period. For example, if the monitored period is from 11:45 AM to 12:45 PM and an interaction ends at noon after being on hold only from 10:20 am to 10:30 am, IPCM factors in 10 minutes of hold time into the calculation.
- The statistic compiles the total hold time interactions ending within the monitored period. If the interaction was on hold from 10:10 AM to 10:20 AM, and then from 10:40 to 10:46 AM, IPCM factors 16 minutes of hold time into the calculation.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equation:

$$\frac{\text{Total time interactions associated with agent spent in Held state}}{\text{Total number of interactions that ended during the monitored period that entered the Held state}} = \text{Average held time}$$

Average Outbound Handling Time

Definition

For the selected agent, agent group, or contact center - The average time spent handling outbound calls (including talking to callers, transferring calls, and completing after-call work) during the monitored period.

For the selected service - The average time agents spent handling outbound calls (including talking to callers, transferring calls, and completing after-call work) associated with the selected service during the monitored period.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equation for the agent associated with the interaction:

$$\frac{\begin{array}{l} \text{Total time agent} \\ \text{spent in Busy} \\ \text{state on outbound} \\ \text{calls during} \\ \text{monitored period} \end{array} + \begin{array}{l} \text{Total time agent} \\ \text{spent in After-Call} \\ \text{Work state on} \\ \text{outbound calls} \\ \text{during monitored} \\ \text{period} \end{array}}{\begin{array}{l} \text{Total number of outbound} \\ \text{interactions (including this} \\ \text{interaction) answered by the agent} \\ \text{during monitored period} \end{array}} = \begin{array}{l} \text{Average} \\ \text{outbound} \\ \text{handling} \\ \text{time} \end{array}$$

Average Outbound Time

For the selected agent, agent group, or contact center - The average time spent in the active states (**Data Collection, Queued, Pending Delivery, Delivered, Held** and **Wrap-up**) combined for outbound calls.

For the selected service - The average time spent in the active states (**Data Collection, Queued, Pending Delivery, Delivered, Held** and **Wrap-up**) combined for outbound calls associated with the selected service.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equation for the agent associated with the interaction:

$$\frac{\text{Total time spent Data Collection, Queued, Pending Delivery, Delivered, Held and Wrap-up states during monitored period}}{\text{Total number of outbound interactions (including this interaction) answered by the agent during monitored period}} = \text{Average outbound time}$$

Average Outbound Wrap-up Time

Definition

For the selected agent, agent group, or contact center - The average time spent in the **Wrap-up** state for outbound calls during the monitored period.

For the selected service - The average time agents spent in the **Wrap-up** state for outbound calls associated with the selected service during the monitored period.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equation for the agent associated with the interaction:

$$\frac{\text{Total time agent spent in Wrap-up state on outbound calls during monitored period}}{\text{Total number of outbound interactions (including this interaction) answered by the selected entity during monitored period}} = \text{Average outbound wrap-up time}$$

Average Time in IVR

Definition

For the contact center - The average time callers spent working with the IVR during the monitored period.

For a service - The average time callers associated with the selected service spent working with the IVR during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes from the **Data Collection** state to any other state, IPCM performs the following equations.

For the contact center:

$$\frac{\begin{array}{l} \text{Total time this} \\ \text{interaction} \\ \text{spent in Data} \\ \text{Collection} \\ \text{state} \end{array} + \begin{array}{l} \text{Total time all other} \\ \text{interactions (not} \\ \text{including this one)} \\ \text{spent in Data} \\ \text{Collection state} \end{array}}{\begin{array}{l} \text{Total number of interactions} \\ \text{(including this interaction) that} \\ \text{entered Data Collection state} \\ \text{during monitored period} \end{array}} = \begin{array}{l} \text{Average} \\ \text{time in} \\ \text{IVR} \end{array}$$

For the service associated with the interaction:

$$\frac{\begin{array}{l} \text{Total time this} \\ \text{interaction} \\ \text{spent in Data} \\ \text{Collection} \\ \text{state} \end{array} + \begin{array}{l} \text{Total time all other} \\ \text{interactions associated} \\ \text{with the service (not} \\ \text{including this one)} \\ \text{spent in Data} \\ \text{Collection state} \end{array}}{\begin{array}{l} \text{Total number of interactions associated} \\ \text{with the service (including this} \\ \text{interaction) that entered Data} \\ \text{Collection state during monitored} \\ \text{period} \end{array}} = \begin{array}{l} \text{Average} \\ \text{time in} \\ \text{IVR} \end{array}$$

Average Time in Queue

Definition

For the contact center - The average time callers spent in the **Queued** and **Delivery Pending** states combined during the monitored period.

For a service - The average time callers associated with the selected service spent in the **Queued** and **Delivery Pending** states combined during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equations.

For the contact center:

$$\begin{array}{r}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Queued} \\
 \text{state} \\
 \hline
 \text{Total number of interactions (including this} \\
 \text{interaction) that spent time in Queued or Delivery} \\
 \text{Pending states during monitored period}
 \end{array}
 +
 \begin{array}{r}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Delivery} \\
 \text{Pending} \\
 \text{state} \\
 \hline
 \text{Total number of interactions (including this} \\
 \text{interaction) that spent time in Queued or Delivery} \\
 \text{Pending states during monitored period}
 \end{array}
 +
 \begin{array}{r}
 \text{Total time all} \\
 \text{other interactions} \\
 \text{spent in both} \\
 \text{Queued and} \\
 \text{Delivery Pending} \\
 \text{states during} \\
 \text{monitored period} \\
 \hline
 \text{Total time all other interactions} \\
 \text{spent in both} \\
 \text{Queued and} \\
 \text{Delivery Pending} \\
 \text{states during} \\
 \text{monitored period}
 \end{array}
 =
 \begin{array}{r}
 \text{Average} \\
 \text{time in} \\
 \text{queue}
 \end{array}$$

For the service associated with the interaction:

$$\begin{array}{r}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Queued} \\
 \text{state} \\
 + \\
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Delivery} \\
 \text{Pending} \\
 \text{state} \\
 + \\
 \text{Total time all other} \\
 \text{interactions} \\
 \text{associated with the} \\
 \text{service spent in} \\
 \text{both Queued and} \\
 \text{Delivery Pending} \\
 \text{states during} \\
 \text{monitored period} \\
 \hline
 \text{Total number of interactions associated with the} \\
 \text{service (including this interaction) that spent time} \\
 \text{in Queued or Delivery Pending states during} \\
 \text{monitored period} \\
 \hline
 \text{Average} \\
 \text{time in} \\
 \text{queue}
 \end{array}$$

Average Time on Agent

Definition

The average time the selected agent, agent group, or contact center spent talking with a caller or placing the caller on hold during the monitored period. This statistic includes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state after being in the **Delivered** or **Queued** states at any point in time, IPCM performs the following equation:

$$\begin{array}{r}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Held state} \\
 + \\
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Delivered} \\
 \text{state} \\
 \hline
 \text{Number of interactions} \\
 \text{associated with the agent} \\
 \text{(including this interaction)} \\
 \text{that spent time in Held or} \\
 \text{Delivery Pending states} \\
 \text{during monitored period} \\
 \hline
 \text{Average} \\
 \text{time on} \\
 \text{agent}
 \end{array}$$

Calls Diverted

Definition

For the contact center - The number of calls diverted during the monitored period.

For a service - The number of calls associated with the selected service diverted during the monitored period.

Calculation

The number of calls delivered to an external destination such as a voice mail box, live attendant, or third party number.

Calls Queued

Definition

For the contact center - The number of calls put into queues during the monitored period.

For a service - The number of calls associated with the selected service put into queues during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Queued** state, IPCM increments the value of this statistic for both the entire contact center and the service associated with the interaction.

Current Logon Time

Definition

The current length of time the selected agent has been logged on.

Calculation

IPCM marks the time each agent changes from the **Logged Out** state, and continuously subtracts that time from the current time.

Diverted Calls Failed

Definition

For the contact center - The number of calls for which an attempt to divert failed during the monitored period.

For a service - The number of calls associated with the selected service for which an attempt to divert failed during the monitored period.

Calculation

The number of calls for which an attempt was made to deliver to an external destination but the external destination did not answer.

Maximum Call Duration

Definition

The duration of the longest call in the entire contact center during the monitored period.

Calculation

When an inbound call changes to the **Disconnected** state, IPCM compares the duration of the inbound call with the current value of this statistic. If the sum is greater than the current value, IPCM changes the value to the sum; if not, the value stays the same.

Maximum Time in IVR

Definition

For the contact center - The longest time callers spent working contiguously with the IVR during the monitored period.

For a service - The longest time a caller associated with the selected service spent working contiguously with the IVR during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes from the **Data Collection** state to any other state, compares the longest amount of time the interaction spent contiguously in the **Data Collection** state with current value of **Maximum time in IVR** statistic **for the entire contact center**.

- If the sum is more than the current value, IPCM changes the value of the statistic to the sum.
- If the sum is less than the current value, IPCM does not change the value of the statistic.

If the interaction is associated with a service, IPCM also compares the longest amount of time the interaction spent contiguously in the **Data Collection** state with current value of **Maximum time in IVR** statistic **for the associated service**.

- If the sum is more than the current value, IPCM changes the value of the statistic to the sum.
- If the sum is less than the current value, IPCM does not change the value of the statistic.

Note: IPCM treats individually each instance of an interaction being in the **Data Collection** state; IPCM does not sum up the individual **Data Collection** states for a single interaction.

Maximum Time in Queue

Definition

For the contact center - The longest time callers spent in the **Queued** and **Delivery Pending** states during the monitored period.

For a service - The longest time callers associated with the selected service spent in the **Queued** and **Delivery Pending** states during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following operations.

For the contact center:

IPCM sums up the time the interaction spent in the **Queued** and **Delivery Pending** states, and compares the sum with the current value of this statistic for the entire contact center. If the sum is greater than the current value, IPCM changes the value to the sum; if not, the value stays the same.

For the service associated with the interaction:

IPCM sums up the time the interaction spent in the **Queued** and **Delivery Pending** states, and compares the sum with the current value of this statistic for the service. If the sum is greater than the current value, IPCM changes the value to the sum; if not, the value stays the same.

Maximum Time on Agent

Definition

The longest time the selected agent, agent group, or contact center spent talking with a caller and/or having a caller on hold during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM sums up the amount of time the interaction spent contiguously in the **Delivered** and **Held** states, and compares the sum with the current value of this statistic. If the sum is more than the current value, IPCM changes the value to the sum; if not, the value stays the same.

Minimum Call Duration

Definition

The duration of the shortest call in the entire contact center during the monitored period.

Calculation

When an inbound call changes to the **Disconnected** state, IPCM compares the duration of the inbound call with the current value of this statistic. If the sum is less than the current value, IPCM changes the value to the sum; if not, the value stays the same.

Minimum Time in IVR

Definition

For the contact center - The shortest time callers spent working contiguously with the IVR during the monitored period.

For a service - The shortest time a caller associated with the selected service spent working contiguously with the IVR during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes from the **Data Collection** state to any other state, IPCM compares the shortest amount of time the interaction spent contiguously in the **Data Collection** state with current value of **Minimum time in IVR** statistic **for the entire contact center**.

- If the sum is less than the current value, IPCM changes the value of the statistic to the sum.
- If the sum is more than the current value, IPCM does not change the value of the statistic.

If the interaction is associated with a service, IPCM also compares the shortest amount of time the interaction spent contiguously in the **Data Collection** state with current value of **Minimum time in IVR** statistic **for the associated service**.

- If the sum is less than the current value, IPCM changes the value of the statistic to the sum.
- If the sum is more than the current value, IPCM does not change the value of the statistic.

Note: IPCM treats individually each instance of an interaction being in the **Data Collection** state; IPCM does not sum up the individual **Data Collection** states for a single interaction.

Minimum Time in Queue

Definition

For the contact center - The shortest time callers spent in a queue during the monitored period.

For a service - The shortest time callers associated with the selected service spent in a queue during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following operations.

For the contact center:

IPCM sums up the time the interaction spent in the **Queued** and **Delivery Pending** states, and compares the sum with the current value of this statistic for the entire contact center. If the sum is less than the current value, IPCM changes the value to the sum; if not, the value stays the same.

For the service associated with the interaction:

IPCM sums up the time the interaction spent in the **Queued** and **Delivery Pending** states, and compares the sum with the current value of this statistic for the service. If the sum is less than the current value, IPCM changes the value to the sum; if not, the value stays the same.

Minimum Time on Agent

Definition

The shortest time the selected agent, agent group, or contact center spent talking with a caller and/or having a caller on hold during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM sums up the amount of time the interaction spent contiguously in the **Delivered** and **Held** states, and compares the sum with the current value of this statistic. If the sum is less than the current value, IPCM changes the value to the sum; if not, the value stays the same.

Number of Accepted Transfers

Definition

For an agent, agent group, or contact center - The number of transfers the selected agent, agent group, or contact center answered during the monitored period.

For a service - The number of transfers associated with the selected service that were answered during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction resulting from a transfer changes to the **Delivered** state, IPCM increments the value of this statistic for both the agent and service associated with the interaction.

Number of Agents in Busy State

Definition

The number of agents currently handling a customer call.

Calculation

When an agent changes to the **Busy** state, IPCM increments the value of this statistic.

When an agent changes from the **Busy** state to any other state, IPCM decrements the value of this statistic.

When an agent is removed from the configuration while in the **Busy** state, IPCM decrements the value of this statistic.

Number of Agents in Not Ready State

Definition

The number of agents that are logged into the contact center but unavailable to take calls.

Calculation

When an agent changes to the **Not Ready** state, IPCM increments the value of this statistic.

When an agent changes from the **Not Ready** state, IPCM decrements the value of this statistic.

When an agent is removed from the configuration while in the **Not Ready** state, IPCM decrements the value of this statistic.

Number of Agents in Ready State

Definition

The number of agents that are logged into the contact center and available to take calls.

Calculation

When an agent changes to the **Ready** state, IPCM increments the value of this statistic.

When an agent changes from the **Ready** state, IPCM decrements the value of this statistic.

When an agent is removed from the configuration while in the **Ready** state, IPCM decrements the value of this statistic.

Number of Agents in Wrap Up State

Definition

The number of agents currently working on after-call work.

Calculation

When an agent changes to the **After-Call Work** state, IPCM increments the value of this statistic.

When an agent changes from the **After-Call Work** state to any other state, IPCM decrements the value of this statistic.

When an agent is removed from the configuration while in the **After-Call Work** state, IPCM decrements the value of this statistic.

Number of Answered Returned Interactions

Definition

For an agent, agent group, or contact center - The number of interactions that were answered by the selected agent, agent group, or contact center after being returned to the queue after unsuccessful delivery attempts during the monitored period.

For a service - The number of interactions associated with the selected service that were answered after being returned to the queue after unsuccessful delivery attempts during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction enters the **Delivered** state after being in the **Queued** state while waiting for an unsuccessful transfer, IPCM increments the value of this statistic for both the agent and service associated with the interaction.

Number of Busy Lines

Definition

The number of telephony resources busy with incoming calls.

Calculation

When an inbound call enters IPCM, the value of this statistic increments. When an inbound call disconnects, the value of this statistic decrements.

Number of Calls Abandoned

Definition

For the contact center - The number of calls abandoned during the monitored period.

For a service - The number of calls associated with the selected service that were abandoned during the monitored period.

Refer to "[Abandon and Short Abandon Threshold](#)".

This statistic excludes interactions derived from transfers.

Calculation

IPCM increments the value of this statistic for the entire contact center as well as the service associated with the interaction when one of the following occurs:

- When an interaction changes from the **Queued** state to the **Completed** state after the Abandon Threshold expires.
- When an interaction changes from the **Queued** state to the **Delivery Pending** state, then to the **Completed** state after the Abandon Threshold expires.

Number of Calls Answered

Definition

For an agent, agent group, or contact center - The number of calls the selected agent, agent group, or contact center answered during the monitored period.

For a service - The number of calls associated with the selected service answered during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Delivered** state for the first time, IPCM increments the value of this statistic for the agent and service associated with the interaction.

Number of Calls in Queue

Definition

The number of calls currently in queues in the entire contact center or for a particular service.

This statistic includes interactions derived from transfers.

Calculation

For the contact center:

For IPCM increments the value of this statistic when an interaction changes to the **Queued** state. IPCM decrements the value of this statistic when an interaction changes from the **Queued** state to any other state.

For a service:

IPCM increments the value of this statistic when an interaction associated with the selected service changes to the **Queued** state. IPCM decrements the value of this statistic when an interaction associated with the selected service changes from the **Queued** state to any other state.

Number of Calls on Hold

Definition

For the contact center - The number of interactions currently in the **Held** state in the contact center.

For a service - The number of interactions associated with the selected service that are currently in the **Held** state.

Calculation

IPCM increments the value of this statistic when an interaction enters the **Held** state, and decrements when an interaction leaves the **Held** state.

Number of Calls Received

Definition

The number of calls that came into IPCM during the monitored period.

Calculation

When IPCM receives an inbound call, IPCM increments the value of this statistic.

Number of Calls Short Abandoned

Definition

For the contact center - The number of calls short abandoned during the monitored period.

For a service - The number of calls associated with the selected service that were short abandoned during the monitored period.

Refer to "[Abandon and Short Abandon Threshold](#)".

This statistic excludes interactions derived from transfers.

Calculation

IPCM increments the value of this statistic for the entire contact center as well as the service associated with the interaction when one of the following occurs:

- When an interaction changes from the **Queued** state to the **Completed** state before the Short Abandon Threshold expires.
- When an interaction changes from the **Queued** state to the **Delivery Pending** state, then to the **Completed** state before the Short Abandon Threshold expires.

Number of Disconnected in IVR Interactions

Definition

For the contact center - The number of times during the monitored period that callers hung up while working with the IVR.

For a service - The number of times during the monitored period that callers associated with the selected service hung up while working with the IVR.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes from the **Data Collection** state to the **Completed** state, IPCM increments the value of this statistic for both the entire contact center and the service associated with the interaction.

Number of Inbound Lines

Definition

The number of telephony resources that can receive inbound calls. This is a static number determined by the IPCM license you own or by the value in the **Number of inbound lines** field on the **AppServer** tab in the Management Portal at **System Configuration>>Voice Server>>Advanced Configuration**.

Number of Logged-in Agents

Definition

The number of agents currently logged into the contact center.

Calculation

When an agent changes from the **Logged Out** state, IPCM increments the value of this statistic.

When an agent changes to the **Logged Out** state from any other state, IPCM decrements the value of this statistic.

When an agent is removed from the configuration while being in a **Logged In** state, IPCM decrements the value of this statistic.

Number of Originated Transfers

Definition

For an agent, agent group, or contact center - The number of calls the selected agent, agent group, or contact center successfully transferred during the monitored period.

For a service - The number of calls associated with the selected service that were successfully transferred during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction resulting in a transfer changes to the **Completed** state, IPCM increments the value of this statistic for both the agent and service associated with the interaction. The voice application will report that an interaction has ended in a transfer by setting the **EndedBy** interaction attribute to **Transfer** before terminating the interaction. The SME server uses that attribute to tell transferred interactions from others.

Number of Rejected Transfers

Definition

For an agent, agent group, or contact center - The number of transfers routed to the selected agent, agent group, or contact center during the monitored period that were not answered.

For a service - The number of transfers associated with the selected service during the monitored period that were not answered.

This statistic includes interactions derived from transfers.

Calculation

When an interaction resulting from a transfer changes from the **Delivery Pending** state to any state other than **Delivered**, IPCM increments the value of this statistic for both the agent and service associated with the interaction. The voice application will report that an interaction has ended in a transfer by setting the **EndedBy** interaction attribute to **Transfer** before terminating the interaction. The SME server uses that attribute to tell transferred interactions from others.

Number of Returned Interactions

Definition

For an agent, agent group, or contact center - The number of calls routed to the selected agent, agent group, or contact center that were not answered during the monitored period.

For a service - The number of calls associated with the selected service that were routed to an agent but not answered during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

When an interaction changes from the **Delivery Pending** state to any state other than the **Delivered** state, IPCM increments the value of this statistic for both the agent and service associated with the interaction.

Outbound Calls Made

Definition

The number of outbound calls associated with the selected entity (agent, agent group, contact center, or service) during the monitored period.

Outbound Handling Time

Definition

For the selected agent, agent group, or contact center - The total time spent handling outbound calls (including talking to callers, transferring calls, and completing after-call work) during the monitored period.

For the selected service - The total time agents spent handling outbound calls associated with the selected service during the monitored period.

Outbound Wrap-up Time

Definition

For the selected agent, agent group, or contact center - The total time spent in the **Wrap-up** state for outbound calls during the monitored period.

For the selected service - The total time agents spent in the **Wrap-up** state for outbound calls associated with the selected service during the monitored period.

Percent Calls Abandoned

Definition

For the contact center - The percentage of calls that were abandoned during the monitored period.

For a service - The percentage of calls associated with the selected service that were abandoned during the monitored period.

Refer to "[Abandon and Short Abandon Threshold](#)".

This statistic excludes both interactions derived from transfers and short abandoned interactions.

Calculation

When an interaction is abandoned, IPCM performs the following operations.

1. Increments the number of calls put into queues during the monitored period.
2. Increments the total count of interactions abandoned during the monitored period.
3. Performs the equation:

$$\frac{\left(\frac{\text{Number of interactions abandoned}}{\text{Number of calls put into queues during monitored period}} \times 100 \right)}{1} = \text{Percent calls abandoned}$$

Percent Calls Answered

Definition

For the contact center - The percentage of calls answered by one or more agents during the monitored period.

For a service - The percentage of calls associated with the selected service that were answered by one or more agents during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state after being in the **Delivered** state at any point in time, IPCM performs the following operations.

For the contact center:

1. Increments the total count of interactions during the monitored period.
2. Increments the total count of interactions that entered the **Delivered** state during the monitored period.
3. Performs the following equation:

$$\frac{\left(\frac{\text{Number of interactions that entered Delivered state}}{\text{Total number of interactions during monitored period}} \times 100 \right)}{=} \text{Percent calls answered}$$

Percent Calls Short Abandoned

Definition

For the contact center - The percentage of calls that were short abandoned during the monitored period.

For a service - The percentage of calls associated with the selected service that were short abandoned during the monitored period.

This statistic excludes both interactions derived from transfers and abandoned interactions that are not short abandoned. Refer to "[Abandon and Short Abandon Threshold](#)".

Calculation

When an interaction is short abandoned, IPCM performs the following operations.

1. Increments the number of calls put into queues during the monitored period.
2. Increments the total count of interactions short abandoned during the monitored period.
3. Performs the equation:

$$\frac{\left(\frac{\text{Number of interactions short abandoned}}{\text{Number of calls put into queues during monitored period}} \times 100 \right)}{1} = \text{Percent calls short abandoned}$$

Queued Calls Diverted

Definition

For the contact center - The number of calls diverted from queues during the monitored period.

For a service - The number of calls associated with the selected service diverted from queues during the monitored period.

Calculation

The number of calls diverted to an external destination after queueing based on escalation rules or a caller request.

Relative Agent Load

Definition

The percentage of calls the selected agent handled during the monitored period relative to the group to which the agent belongs.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Delivered** state from any state other than the **Queued** state, IPCM performs the following equation for the agent associated with the interaction:

$$\frac{\left(\frac{\text{Number of interactions answered by agent during monitored period}}{\text{Total number of interactions answered by agent group during monitored period}} \times 100 \right)}{=} \text{Relative agent load}$$

Relative Group Load

Definition

The percentage of calls the selected agent group handled during the monitored period relative to all agents in the contact center.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Delivered** state from any state other than the **Queued** state, IPCM performs the following equation for the agent group associated with the interaction:

$$\frac{\left(\frac{\text{Number of interactions answered by group during monitored period}}{\text{Total number of interactions answered by all agents during monitored period}} \times 100 \right)}{1} = \text{Relative group load}$$

Service Factor

Definition

The Service Factor statistic calculates the percentage of incoming calls answered or abandoned within the **Service Factor Threshold**.

For the contact center - The percentage of all calls answered by agents faster than the **Service Factor Threshold** during the monitored period.

For a service - The percentage of all calls associated with the selected service answered by agents faster than the **Service Factor Threshold** during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction that was in both the **Queued** and **Delivered** states at some point in time changes to the **Completed** state, IPCM performs the following operations.

For the contact center:

1. Calculates the time span from when the interaction first entered the **Queued** state to when the interaction first entered the **Delivered** state.
2. Compares the time span with the Service Factor threshold.
 - If the time span is shorter than the Service Factor threshold, IPCM increments both the count of interactions within the Service Factor threshold and the total number of interactions during the monitored period.
 - If the time span is longer than the Service Factor threshold, IPCM increments only the total number of interactions during the monitored period.
3. Performs the following equation for the entire contact center:

$$\frac{\left(\frac{\text{Number of interactions within Service Factor threshold}}{\text{Total number of interactions (including this interaction) during monitored period}} \times 100 \right)}{= \text{Service Factor}}$$

For the service associated with the interaction:

1. Calculates the time span from when the interaction first entered the **Queued** state to when the interaction first entered the **Delivered** state.
2. Compares the time span with the Service Factor threshold.
 - If the time span is shorter than the Service Factor threshold, IPCM increments both the count of interactions associated with the service that are within the Service Factor threshold, and the total number of interactions associated with the service during the monitored period.
 - If the time span is longer than the Service Factor threshold, IPCM increments only the total number of interactions associated with the service during the monitored period.
3. Performs the following equation:

$$\left(\frac{\text{Number of interactions associated with the service that are within Service Factor threshold}}{\text{Total number of interactions associated with the service (including this interaction) during monitored period}} \times 100 \right) = \text{Service Factor}$$

Total After-Call Work Time

Definition

The aggregate time the selected agent, agent group, or contact center spent completing after-call work during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

IPCM tracks the intervals for which each agent is in the **After-Call Work** state, and sums up the durations of these intervals for each agent.

Total Busy Time

Definition

The aggregate time the selected agent, agent group, or contact center spent talking to callers during the monitored period.

Calculation

IPCM tracks the intervals for which each interaction associated with the agent is in the **Delivered** state, and sums up the durations of these intervals.

Total Handling Time

Definition

The aggregate time the selected agent, agent group, or contact center spent talking to callers, transferring calls, and completing after-call work during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

For each interaction associated with the agent, IPCM tracks each interval starting with the interaction changing to the **Delivered** state, and ending with the interaction changing from the **After-Call Work** state to any other state. IPCM sums up the durations of these intervals for each agent.

Total Held Time

Definition

The aggregate time the selected agent or agent group kept callers on hold during the monitored period.

This statistic includes interactions derived from transfers.

Calculation

IPCM tracks the intervals for which each interaction associated with the agent is in the **Queued** state, and sums up the durations of these intervals.

Total Logon Time

Definition

The aggregate time for which the selected agent, agent group, or contact center has logged on during the monitored period.

Calculation

IPCM tracks each interval starting with an agent changing from the **Logged Out** state to any other state, and ending with the agent changing to the **Logged Out** state. IPCM sums up the durations of these intervals for each agent.

Total Not Ready Time

Definition

The aggregate time the selected agent, agent group, or contact center was logged on but unavailable to take calls during the monitored period.

Calculation

IPCM tracks the intervals for which each agent is in the **Not Ready** state, and sums up the durations of these intervals for each agent.

Total Outbound Time

Definition

For the selected agent, agent group, or contact center - The total time spent on outbound calls during the monitored period.

For the selected service - The total time agents spent on outbound calls associated with the selected service during the monitored period.

Total Ready Time

Definition

The aggregate time the selected agent, agent group, or contact center was available to take calls during the monitored period.

Calculation

IPCM tracks the intervals for which each agent is in the **Ready** state, and sums up the durations of these intervals for each agent.

Total Time in Queue

Definition

For the contact center - The aggregate time that all calls spent on hold and being transferred combined during the monitored period.

For a service - The aggregate time that calls associated with the selected service spent on hold and being transferred combined during the monitored period.

This statistic excludes interactions derived from transfers.

Calculation

When an interaction changes to the **Completed** state, IPCM performs the following equations:

For the contact center:

$$\begin{array}{l}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Queued} \\
 \text{state}
 \end{array}
 +
 \begin{array}{l}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Delivery} \\
 \text{Pending} \\
 \text{state}
 \end{array}
 +
 \begin{array}{l}
 \text{Total time all} \\
 \text{other interactions} \\
 \text{spent in both} \\
 \text{Queued and} \\
 \text{Delivery Pending} \\
 \text{states during} \\
 \text{monitored period}
 \end{array}
 =
 \begin{array}{l}
 \text{Total time} \\
 \text{in queue}
 \end{array}$$

For the service associated with the interaction:

$$\begin{array}{l}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Queued} \\
 \text{state}
 \end{array}
 +
 \begin{array}{l}
 \text{Amount of} \\
 \text{time} \\
 \text{interaction} \\
 \text{spent in} \\
 \text{Delivery} \\
 \text{Pending} \\
 \text{state}
 \end{array}
 +
 \begin{array}{l}
 \text{Total time all} \\
 \text{other interactions} \\
 \text{associated with} \\
 \text{service spent in} \\
 \text{both Queued and} \\
 \text{Delivery Pending} \\
 \text{states during} \\
 \text{monitored period}
 \end{array}
 =
 \begin{array}{l}
 \text{Total time} \\
 \text{in queue}
 \end{array}$$

Total Working Time

Definition

The aggregate time the selected agent, agent group, or contact center was available to take calls or was working on calls during the monitored period.

Working on calls includes taking calls, transferring calls, and working on after-call work.

Calculation

IPCM tracks each interval starting with an agent changing from the **Not Ready** state to any state other than the **Logged Out** state, and ending with the agent changing to the **Not Ready** or **Logged Out** states. IPCM sums up the durations of these intervals for each agent.

Statistic Console Customizations

The default Statistics Console meets the needs of most customers; however, some FrontRange Solutions customers require customizations for unique business models or localization.

This topic describes the following Statistics Console customizations:

- Change statistic names.
- Dynamically localize statistic names.
- Delete statistics.

Perform these customizations by modifying XML code in the Host Configuration file (**C:\Program Files\FrontRange Contact Center\Data\HostConfiguration.xml**). Locate the XML code for the statistic you want to modify by searching the Host Configuration file for the name of the statistic preceded by the **<Neutral>** element (including brackets). Example: **<Neutral>Total after call work time**

CAUTION: FrontRange Solutions recommends you perform such customizations only if you understand XML; incorrectly editing an XML file can break IPCM. FrontRange Solutions also recommends backing up a file before editing it.

Change Statistic Names on the Statistics Console

The **Neutral** element determines how IPCM displays the name of the statistic. Change a statistic name by editing the text within the **Neutral** element and saving the Host Configuration file. For example, to change the name of the **Total after call work time** statistic to **Wrap Up Period**, change

```
<Neutral>Total after call work time</Neutral>
```

to

```
<Neutral>Wrap Up Period</Neutral>.
```

Localize Statistic Names on the Statistics Console

IPCM dynamic localization of statistic names utilizes the locale IDs in Microsoft Windows national language support. Monitoring applications (clients of the SME server) specify the locale ID of the user's language when requesting statistical data. The SME looks up the locale ID and returns the statistical data using the associated localized statistic name. This enables you to customize IPCM so a user in Moscow can view statistical data in Russian while a user in Mexico City views the same statistical data in Spanish.

To localize a statistic:

1. Add a **Localized** child element to the **Name** element for the statistic.
2. Give the **Localized** element the mandatory attribute **locale**, which specifies the Windows Locale ID for which the name is localized.

Note: The Windows Locale ID is a combination of language identification, regional sub-language identification, and sorting order. The SME ignores the latter but SME clients can use it.

3. Enter the localized statistic name in the **Localized** element.
4. Save the Host Configuration file.

This screenshot shows the XML code for localizing the **Total busy time on interval statistic** to Russian and Chinese.

```
- <Metric id="@MT_INT_TOTAL_BUSY_TIME">
- <Name>
  <Neutral>Total busy time on interval</Neutral>
  <Localized locale="1033">Total busy time on interval</Localized>
  <Localized locale="1049">Общее время разговора на интервале</Localized>
  <Localized locale="2052">总通话时间</Localized>
</Name>
</Metric>
```

Note: If a client requests the localized name of a statistic that is not localized, IPCM returns the statistic name specified in the **<Neutral>** element.

Delete Statistics from the Statistics Console

The Neutral element is a child of the Name element. To remove a statistic from the Statistics Console, delete the Name element and its child elements and save the Host Configuration file. The statistic no longer appears on the Statistics Console.



Reports

Overview

The IPCM Management Portal has a Reports interface that lets you run the types of reports described in this topic. Privileges control access to each report (refer to the online help topic "User Configuration" for details).

Historical Reports

Historical reports are statistical reports on the activity of the contact center and its agents, agent groups, and services from a time period you specify. For example, you can view the number of calls the contact center received this year for a particular service, the amount of time an agent was logged into IPCM in a specific month, etc.

IPCM displays historical reports on the **Historical Reporting** page (**Management Portal>>Reporting>>Historical Reporting**).

Note: The IPCM database does not record historical statistics while the Statistics and Metrics service is stopped. You must purchase an Historical Reporting license to use this feature. If this license is not purchased, the SME service will not store historical data.

The Historical Reporting page contains four tabs: Agent, Contact Center, Agent Groups, and Services. The settings on each tab enable you to set the parameters, such as date range and report type, for the desired reports.

To generate an historical report:

1. Fill in the following fields:
 - **Time Zone** - Select the time zone of the contact center for which you are generating reports.
 - **Base Date** - Select the start date for the report time span.
 - **Historical Data Folder** - Select the database containing the statistical data you want to search. In most cases, the **Default** option is the correct option.
 - **Aggregation Resolution** - Select the time span and interval for which you want to run the report: **Day Hourly**, **Week Daily**, **Month Daily**, **Year Monthly**.
2. Select one or more objects in a **Type Of object** box (which lists Agents, Contact Centers, or Agent Groups, depending on which tab you selected). Press the **Ctrl** key to select multiple objects.
3. Select a report type from the drop-down list beneath the **Type Of object** box.
4. Click the **Run Report** button. IPCM displays the report.

IPCM caches reports instead of continuously querying the database. Click the **Cached reports** button to view the reports that have been cached. To run a report for a second time and obtain new results, click the cached report and click the **Remove All** button. This forces IPCM to regenerate the report the next time you run it.

Viewing Reports

When viewing reports, note the following:

- Print a hard copy of a report using the print functionality of your browser.
- Click the columns on a report chart for a more detailed view.
- Click the arrows at the top of the page to change the report time frame.
- Click the **View as Table** button to display data as a table. Click the **Save as .CSV** button to download the data as a CSV file.
- Click the **View Interactions** button to see the interaction data (refer to "[Interaction Reports](#)").

Historical Report Definitions

The following table defines the historical reports on the **Historical Reporting** page. The four columns on the right indicate the entities to which the report applies, using the following abbreviations:

- A=agents
- AG=agent groups
- CC=the entire Contact Center
- S=services

Report	Description	A	AG	CC	S
Average Abandon Time	The aggregate value of the Total Abandon Time statistic divided by the aggregate value of the Number of Calls Abandoned statistic during the period you specify.			X	
Average Busy Time	The aggregate value of the Total Busy Time statistic divided by the aggregate value of the Number of Calls Answered plus the Number of Accepted Transfers during the period you specify.	X	X	X	X
Average Call Duration	The aggregated value of the Total Call Duration (V_IN_TOTAL column of the CC_METRICS and SERVICE_METRICS tables) divided by the aggregated value of the Number of Calls Received (V_CALLS_RECEIVED column); Total Call Duration metric is not reported directly.			X	X
Average Recording Rating Per Trait	For each trait, the sum of all ratings for that trait divided by the number of times the trait was rated during the period you specify.	X			

Report	Description	A	AG	CC	S
Average Time in Queue	The aggregate value of the Total Time in Queue statistic divided by the aggregate value of the Number of Calls Unqueued statistic during the period you specify.			X	X
Average Time to Answer	For agents, groups and the contact center, the aggregate time spent in the Pending Delivery state divided by the aggregate value of the Number of Delivery Attempts statistic for the agent, group or contact center. For services, the aggregate time calls for the service spent in the Pending Delivery state divided by the aggregate value of the Number of Delivery Attempts statistic for the service.	X	X	X	X
Calls Abandoned on Queued Stages	For the contact center, the number of calls abandoned during the queue stage. For services, the number of calls for the service abandoned during the queue stage.			X	X
Calls Answered on Queued Stages	For agents, groups, or the contact center, the number of calls answered during the queue stage. For services, the number of calls for the service answered during the queue stage	X	X	X	X
Calls Queued	The aggregate value of the Calls Queued statistic during the period you specify.			X	X
Maximum Number of Logged in Agents	The highest number of agents logged into IPCM during the period you specify		X	X	

4-6 Reports

Report	Description	A	AG	CC	S
Minimum Number of Logged in Agents	The lowest number of agents logged into IPCM during the period you specify.		X	X	
Not Ready Time Breakdown	The duration of each instance an agent or agent group is in the Not Ready state.	X			
Number of Accepted Transfers	The aggregate value of the Number of Accepted Transfers statistic during the period you specify.	X	X	X	X
Number of Answered Returned Interactions	The aggregate value of the Number of Answered Returned Interactions statistic during the period you specify.	X	X	X	X
Number of Calls Abandoned	The aggregate value of the Number of Calls Abandoned statistic during the period you specify.			X	X
Number of Calls Answered	The aggregate value of the Number of Calls Answered statistic during the period you specify.	X	X	X	X
Number of Calls Diverted	The aggregate value of the Calls Diverted statistic during the period you specify.			X	X
Number of Call Diverted from Queue	The aggregate value of the Queued Calls Diverted statistic during the period you specify.			X	X
Number of Calls Failed to Divert	The aggregate value of the Diverted Calls Failed statistic during the period you specify.			X	X

Report	Description	A	AG	CC	S
Number of Calls Handled	The sum of aggregate values of the Number of Calls Answered and Number of Outbound Calls metrics.	X	X	X	X
Number of Calls Received	The aggregate value of the Number of Calls Received statistic during the period you specify.			X	
Number of Calls Short Abandoned	The aggregate value of the Number of Calls Short Abandoned statistic during the period you specify.			X	X
Number of Disconnected in IVR Interactions	The aggregate value of the Number of Disconnected in IVR Interactions statistic during the period you specify.			X	
Number of Originated Transfers	The aggregate value of the Number of Originated Transfers statistic during the period you specify.	X	X	X	X
Number of Outbound Calls	The aggregate value of the Outbound Calls Made statistic during the period you specify.	X	X	X	X
Number of Rejected Transfers	The aggregate value of the Number of Rejected Transfers statistic during the period you specify.	X	X	X	X
Number of Returned Interactions	The aggregate value of the Number of Returned Interactions statistic during the period you specify.	X	X	X	
Percent Calls Abandoned	The aggregate value of the Number of Calls Abandoned statistic divided by the aggregate value of the Calls Queued statistic during the period you specify, multiplied by 100.			X	X

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Report	Description	A	AG	CC	S
Percent Inbound and Outbound Calls	Inbound: The aggregate value of the Number of Calls Received statistic divided by the aggregate value of the Number of Calls Handled statistic during the period you specify, multiplied by 100. Outbound: The aggregate value of the Outbound Calls Made statistic divided by the aggregate value of the Number of Calls Handled statistic during the period you specify, multiplied by 100.	X	X	X	X
Queue Performance Chart	The aggregate values of the following statistics during the period you specify: <ul style="list-style-type: none"> • Number of Calls Answered • Number of Calls Abandoned • Number of Calls Short Abandoned 			X	X
Service Factor	The aggregate value of the product of Service Factor and Number of Calls Answered , divided by the aggregate value of the Number of Calls Answered .			X	X
Total After Call Work Time	The aggregate value of the Total After Call Work Time statistic during the period you specify.	X	X	X	
Total Busy Time	The aggregate value of the Total Busy Time statistic during the period you specify.	X	X	X	
Total Handling Time	The aggregate value of the Total Handling Time statistic during the period you specify.	X	X	X	
Total Held Time	The aggregate value of the Total Held Time statistic during the period you specify.	X	X		

Report	Description	A	AG	CC	S
Total Logon Time	The aggregate value of the Total Logon Time statistic during the period you specify.	X	X	X	
Total Not Ready Time	The aggregate value of the Total Not Ready Time statistic during the period you specify.	X	X	X	
Total Ready Time	The aggregate value of the Total Ready Time during the period you specify.	X	X	X	
Total Time in Queue	The aggregate value of the Total Time in Queue during the period you specify.			X	
Total Working Time	The aggregate value of the Total Working Time statistic during the period you specify.	X	X	X	
Work Timing Chart	The aggregate values of the following statistics during the period you specify: <ul style="list-style-type: none"> • Total Busy Time • Total After Call Work Time • Total Ready Time • Total Not Ready Time 	X	X	X	

Note: Outbound calls made manually by the agent using an IP phone may not be tracked, if they do not place the call through the IPCM server, but directly through an integrated PBX.

Interaction Reports

Interaction reports are reports listing records of previous interactions within IPCM. You can view interaction records from a specific time period, or based on interaction properties and property values. Each record contains data you configure IPCM to track, such as the states each interaction passed through and the ANI of the inbound call. Records also include audio recordings of interactions you configure IPCM to record.

Storing Interaction Records

The IPCM database only stores the interaction properties you specify on the Interaction Reporting **Database** configuration page (**Management Portal>>System Configuration>>Contact Center Server>>Interaction Reporting**).

The **Database** page has a table listing all interaction properties IPCM currently stores in the database. The list initially consists of several default interaction properties that IPCM tracks.

- To configure IPCM to store an interaction property that is not in the table, type the name of the interaction property in the field at the bottom of the table, then click the **Add**, **Update**, and **Commit Changes** buttons.
- To configure IPCM not to store an interaction property that is in the table, click the red x icon next to the property. A confirmation dialog box appears. Click **OK** and IPCM removes the property from the table. Click the **Update** and **Commit Changes** buttons to enact the change.

Note: For information on the interaction-related tables in the IPCM database, refer to "[IPCM Database Details](#)".

Searching Interaction Records

The **Interactions** page (**Management Portal>>Reporting>>Interactions**) lets you search the interaction records in the IPCM database, and save the searches you perform. You can run a new search, or a saved search.

Interactions search

Saved Criteria:

New [New] [Save(As)] [Remove]

Search parameters

Time zone: (GMT-08:00) Pacific Time (US & Canada); Tijuana
select time zone to display report in

Dates: Custom

From: [] [] To: [] []

Show: All Calls Rows in result: 50

Filter By: Not Used Value: []

[Search Interactions]

To run a new search, set the following fields in the **Search Parameters** table:

- **Time zone** - Select your time zone in the drop-down list.
- **Dates** - The time frame from which you want to retrieve interaction records. Either select a defined period such as **Today**, or select the **Custom** option and specify a range in the **From** and **To** fields.
- **From** - If you select the **Custom** option in the **Date** field, specify the earliest date and time from which you want the search to retrieve interaction records. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
- **To** - If you select the **Custom** option in the **Date** field, specify the latest date and time from which you want the search to retrieve interaction records. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
- **Show** - Select **All calls** if you want the search to return records of all interactions. Select **Only calls with recordings** if you want the search to include only calls that were recorded.

- **Rows in result** - Select the number of rows you want the search to return.
- **Filter by** - Select the interaction property you want to use as the search key. The list of interaction properties includes those specified on the **Management Portal>>System Configuration>>Contact Center Server>>Interaction Reporting>>Database** page (refer to "[Storing Interaction Records](#)") The **Custom** option in the **Filter by** list enables you to manually enter both the **Field** and **Value**.
- **Value** - Enter or select the value of the attribute you selected in the **Filter by** field.

After setting the fields in the **Search Parameters** section, click the **Search Interactions** button. IPCM searches the database and refreshes the page to display the results.

Click the link in the date column to view the Call Interaction statistics. In the **Call Interactions** dialog box, click the **Data** link to see Interaction Properties, and click the **View** link to see Application details.

Saving Searches

To save a search:

1. On the **Interactions** page, configure your search by setting the parameters in the **Search Parameters** section.
2. Click the **Save(As)** button. A popup screen appears.
3. Name the new search and click **OK**. IPCM adds the search to the **Saved Criteria** drop-down list.

To run a saved search, select the search in the **Saved Criteria** drop-down list. The values in the **Search Parameters** change to reflect the search you select. Click the **Search Interactions** button to run the search.

To remove a search from the **Saved Criteria** drop-down list, select the search and click the **Remove** button. Click the **Commit Changes** button to enact your change.

Recordings and Ratings

Note: This feature is only available for IPCM installations with the Quality Management license.

The **Interactions** page lets you listen to audio recordings of agent conversations. These recordings are triggered by any of the following:

- A supervisor clicking the **Record Conversation** button on the **Quality Management** tab of the Agent Dashboard interface (refer to the *IPCM Agent Dashboard User's Guide*).
- A voice application (refer to the online help topic "Connect Call Block").
- The Contact Center Quality Management schedule (refer to the online help topic "Contact Center Server Configuration").

Note: An agent can record a call by clicking the **Record** button on the Agent Dashboard. However, this action records the call only locally (on the client workstation). Local recordings are not available on the server (or in the Management Portal). Only server side recordings are tracked by server.

To listen to a recording, click the **Listen** link next to an interaction. The **Listen Interaction** screen appears, displaying audio controls that control the playback of the recording, as well as several different categories of ratings that let rate the recording on a scale of 1 to 10 in various categories.

Rate the recording by selecting ratings from the drop-down lists and clicking the **Update Ratings** button.

Archive Interactions

The Archive Interaction page (**Management Portal>>Reporting >>Archive Interactions**) enables you to archive interaction data and remove it from the database (thus freeing up critical space on the server, since **.wav** files are usually very large files).

The screenshot shows the 'Archive Interactions' interface. At the top, there is a title 'Archive Interactions' and a subtitle 'Set search range to select interactions for archiving'. Below this, there are several input fields: a 'Timezone:' dropdown menu currently set to '(GMT-08:00) Pacific Time (US & Canada); Tijuana' with a 'select time zone' link below it; a 'Dates:' dropdown menu set to 'Custom'; and two 'From:' and 'To:' text input fields, each with a calendar icon to its right. At the bottom right of the form area is a blue button labeled 'Check records'.

To archive interactions:

1. Select your time zone from the drop-down list.
2. In the **Dates** field, select the time frame from which you want to retrieve interaction records. Either select a defined period such as **Today**, or select the **Custom** option and specify a range in the **From** and **To** fields.
3. If you select the **Custom** option in the **Date** field, in the **From** field specify the earliest date and time from which you want the search to retrieve interaction records. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
4. If you select the **Custom** option in the **Date** field, in the **To** field specify the latest date and time from which you want the search to retrieve interaction records. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
5. Click **Check Records**. The archive Summary information appears.
6. Click **Next**.
7. On the Archive Interactions page, select the Archive options:
 - **Remove data from source database after successful archive** - Select this option to remove the archived data from the database (otherwise the archived data will remain on the server database after archiving).
 - **Use custom archive destination path** - Select this option to specify the file location for the archived data. The default location is: **C:\Program Files\FrontRange Solutions\IP Communications Management\CfgStudio\Interactions Archive**.
8. Click **Archive**.

Voice Application Reports

IPCM stores the following data about voice applications in the IPCM database:

- The names of the voice applications that process calls.
- The number of calls each voice application processes.
- The names of the building blocks the voice application executes.
- The number of times the voice application executes each building block
- The number of calls that disconnect during each block.
- The names of the conditional exits the voice application executes.
- The number of times the voice application executes each conditional exit.

The **IVR Statistics search** page (**Management Portal>>Reporting >>Applications**) lets you run reports on the above data. These reports show the activity of voice applications in your system during a specific time period. For example, see how many calls each voice application processed this month, which conditional exits are most commonly used, which building blocks are executing during disconnections, etc.

To run a new search:

1. Select your time zone from the drop-down list.
2. In the **Dates** field, select the time frame from which you want to retrieve voice application data. Either select a defined period such as **Today**, or select the **Custom** option and specify a range in the **From** and **To** fields.
3. If you select the **Custom** option in the **Date** field, in the **From** field specify the earliest date and time from which you want the search to retrieve voice application data. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the

date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**

4. **To:** If you select the **Custom** option in the **Date** field, specify the latest date and time from which you want the search to retrieve voice application data. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
5. If you select the **Custom** option in the **Date** field, in the **To** field specify the latest date and time from which you want the search to retrieve voice application data. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
6. Click the **Search** button. IPCM searches the database and refreshes the page to display the results. Click an application name in the results list to view data about that application. Click the **Edit** button to open the application in Application Builder.

Instant Messaging Reports

The IPCM database stores instant message (IM) sessions.

Note: For information about instant messaging, refer to the *IPCM Agent Dashboard User's Guide*.

The **Instant Messaging Search** page (**Management Portal>>Reporting >>Instant Messaging**) lets you view instant messages in the IPCM database.

Instant Messaging

Instant Messaging History

(GMT-08:00) Pacific Time (US & Canada); Tijuana

select time zone to display report in

Dates: Custom

From:

To:

Agent : Any

With : Any

To run a search:

1. Select your time zone from the drop-down list.
2. In the **Dates** field, select the time frame from which you want to retrieve voice application data. Either select a defined period such as **Today**, or select the **Custom** option and specify a range in the **From** and **To** fields.
3. If you select the **Custom** option in the **Date** field, in the **From** field specify the earliest date and time from which you want the search to retrieve voice application data. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
4. **To:** If you select the **Custom** option in the **Date** field, specify the latest date and time from which you want the search to retrieve voice application data. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
5. If you select the **Custom** option in the **Date** field, in the **To** field specify the latest date and time from which you want the search to retrieve voice application data. Either click the calendar icon next to the field and specify a date and time in the pop up screen, or type the date/time in the field using the following format: **<month>/<day>/<year> <hour>:<minute>:<second>**. For example: **06/05/2006 15:53:25**
6. In the **Agent** field, select the user who sent the instant messages for which you want to search.
7. In the **With** field, select the user who received the instant messages for which you want to search.
8. Click the **Search** button to run the search. IPCM returns a list of instant messages sorted by date. Click the date to view the instant message text.

Call Detail Records

The voice server creates a call detail record (CDR) for every call it generates or receives. Each record contains the following information:

- Sequential call number
- Internal call reference number
- Call direction (either incoming or outbound)
- Origination number (ANI), if available
- Termination number (DNIS), if available
- Date and time call began
- Date and time call was answered, if it was answered
- Date and time call finished
- Party that finished the call (either IVR or caller)

The voice server stores call detail records in files in the **C:\Program Files\FrontRange Solutions\IP Communications Management\cdr** directory, and uses the following format for the filenames:

YYYY_MM_DD_HH_mm_SS_HOSTNAME_NN.tab

in which the following are true:

- **YYYY** = Four digit year.
- **MM** = Two digit month.
- **DD** = Two digit day.
- **mm** = Two digit minute.
- **SS** = Two digit second.
- **HOSTNAME** = The IPCM host machine.
- **NN** = The sequential file number.

For example: **2005_03_11_21_48_33_IPCMSERVER_09.tab**

By default, the voice server stores a maximum of ten CDR files with a maximum file size of 10 MB each. If all ten log files are full and the voice server needs to write another CDR, it overwrites the oldest CDR file with a new one.

View CDR files using Microsoft SQL with Microsoft Jet/ODBC through an application such as Microsoft Access. This requires a **schema.ini** file in the CDR directory containing the following:

- <filename>
- Format=TabDelimited
- ColNameHeader=False
- MaxScanRows=1
- DateTimeFormat=yyyy-MM-dd HH:nn:ss
- CharacterSet=ANSI
- Col1=SEQ Long
- Col2=CRN Text
- Col3=CALLTYPE Text
- Col4=ANI Text
- Col5=DNIS Text
- Col6=RINGTIME DateTime
- Col7=ANSWERTIME DateTime
- Col8=HANGTIME DateTime
- Col9=HANGPARTY Text
- Col10=CHANNEL Long



States

Overview

This appendix describes the possible states of agents, interactions, and calls.

Agent States

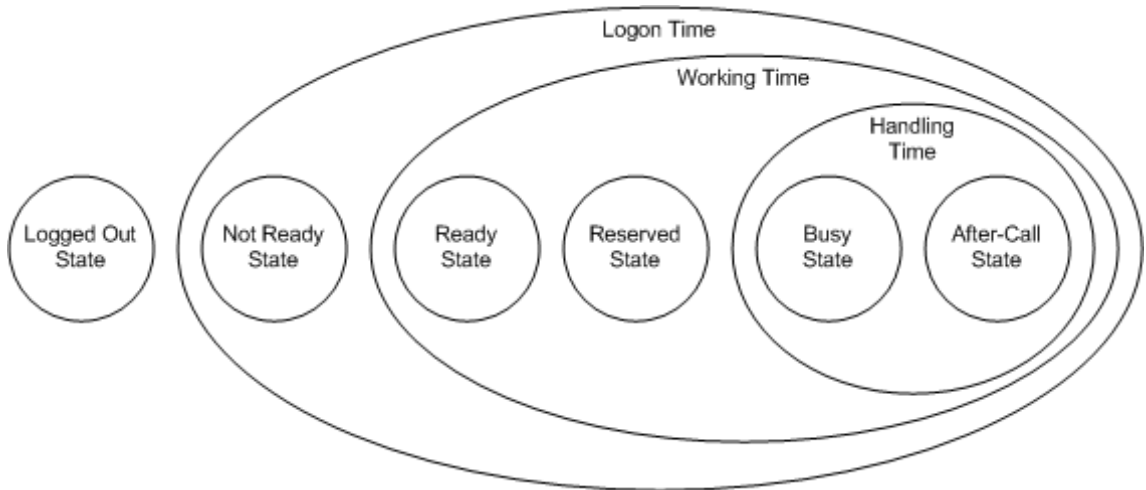
An agent is always in one (and only one) of the following states:

- **Logged Out** - The agent is not using IPCM.
- **Not Ready** - The agent is logged on to IPCM but is not available to take calls. The Statistics Console refers to the time the agent spends in this state as Not Ready Time.
- **Ready** - The agent is available to take calls. The Statistics Console refers to the time the agent spends in this state as Ready Time.
- **Reserved** - IPCM is routing a call to the agent, making the agent unavailable to take other calls. The agent's phone rings during this state.
- **Busy** - The agent is having an active conversation with the caller or is transferring the call. The Statistics Console refers to the time the agent spends in this state as Busy Time.
- **After-Call Work** - The agent is done talking with the caller and is completing the after-call work. After-call work consists of tasks related to the call that an agent completes after hanging up with the caller, such as completing the fields on a call management record or editing notes about the call. The agent is unavailable to take calls while in the After-Call Work state. After the After-Call Work state, the agent returns to the Ready state and is once again available to take calls.

IPCM logically groups some states together:

- **Handling Time** - The time an agent spends in the **Busy** and **After-Call Work** states combined (i.e., working on a single call, talking to the caller, transferring the caller, and completing after-call work).
- **Logon Time** - The time an agent is logged on to IPCM (i.e., the agent is in any state except the **Logged Out** state).
- **Working Time** - The time an agent is in the **Ready**, **Reserved**, **Busy**, and **After-Call Work** states combined. During this time, the agent is available to take calls or is working on calls (i.e., talking to callers, transferring calls, or completing after-call work).

The following Venn diagram shows the relationships of the terms and states described above.

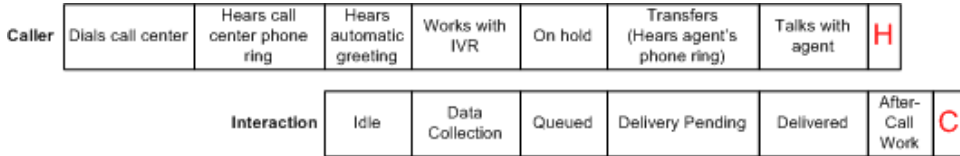


Interaction States

An interaction can be in only one of the following states at any moment:

- **Idle** - The interaction is inactive. This is an interim state in which IPCM is not doing anything with the interaction. A caller may hear a recorded greeting during this state.
- **Data Collection** - The caller is connected to the voice application, which collects the information IPCM needs to route the interaction.
- **Queued** - IPCM has determined the appropriate destination of the interaction and placed the interaction in queue. The caller is waiting for the agent to accept the interaction.
- **Delivery Pending** - The agent has accepted the interaction and IPCM is routing the interaction to an agent.
- **Held** - After talking with the caller, the agent has placed the caller on hold. The caller hears hold music. For an interaction to exit the **Held** state, the agent that put the interaction on hold must take the interaction off hold, returning the interaction to the delivered state.
- **Delivered** - The caller is having an active conversation with the agent.
- **After-Call Work** - The caller has either hung up or the agent has transferred the caller, and the agent is finishing any necessary after-call work, such as filling in fields on a call management record or editing notes about the call.
- **Completed** - The agent is out of the **After-Call Work** state and the interaction is over. IPCM deletes the instance of the interaction from the system. IPCM reviews the history of each interaction entering the **Completed** state for statistical purposes.

The life cycle of each interaction extends beyond the period of time that a caller is connected to IPCM, as shown in the graphic below.



H = Hang up

C = Interaction Complete

An interaction can involve only one agent and one call. If an agent transfers the interaction to another agent, IPCM generates a new interaction and the original interaction terminates (refer to "[Transfers](#)"). An interaction can involve zero agents if the caller disconnects before IPCM connects the caller to an agent.

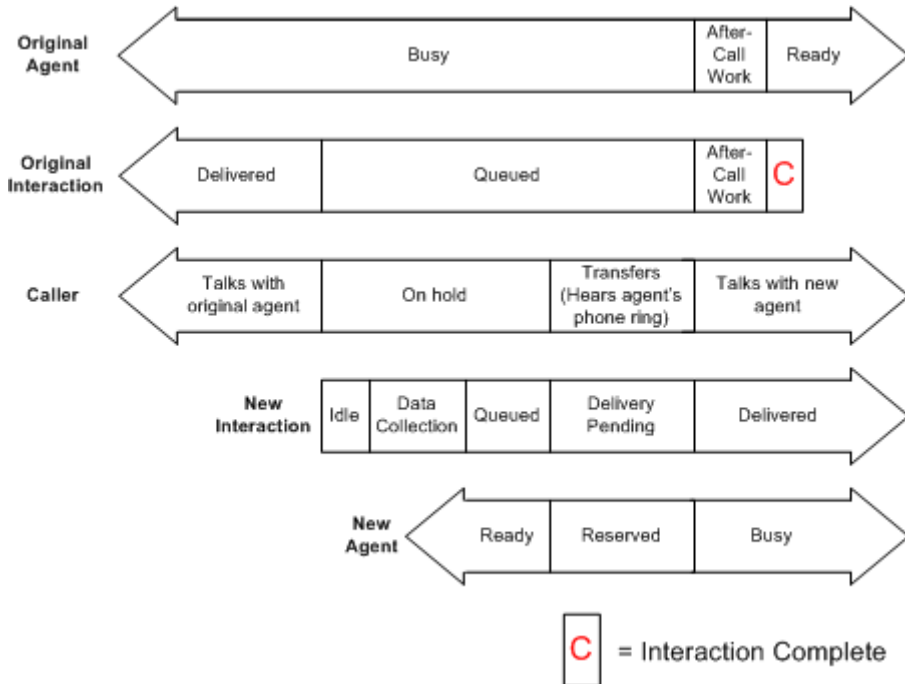
Transfers

Agents can transfer calls in IPCM, but they cannot transfer interactions. When an agent transfers a call to another agent, the IVR, or back to the queue, the following occurs:

1. The original interaction enters the **Queued** state.
2. IPCM creates a new interaction in the **Idle** state.
3. IPCM routes the new interaction to either another agent or the voice application.
4. The agent or voice application accepts the new interaction, which enters the **Delivery Pending** state.
5. The agent or IVR answers the new interaction, which enters the **Delivered** state.
6. The original interaction enters the **After-Call Work** state.
7. The agent involved with the original interaction completes the after-call work and exits the **After-Call Work** state.
8. The original interaction enters the **Completed** state.

If the transfer cannot complete for any reason, the new interaction enters the **Completed** state and the original interaction returns to the **Delivered** state, connecting the caller to the original agent once again.

The following diagram shows a successful transfer to another agent.



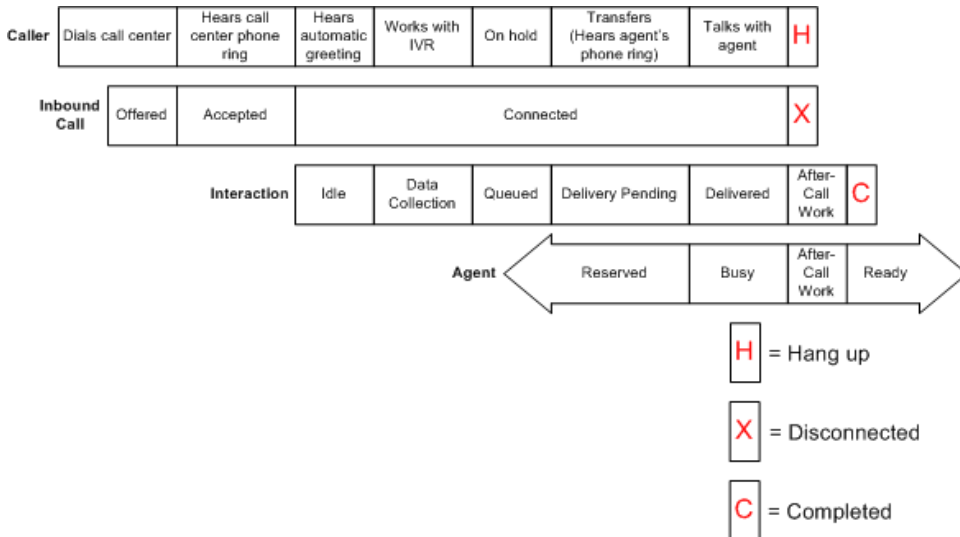
Note: IPCM links the original and new interactions to each other, making it possible to restore the full path of the caller's communication with the contact center.

Call States

An inbound call can be in only one of the following states at any moment:

- **Offered** - The inbound call checks if IPCM is available to accept inbound calls. If IPCM is available, the call changes to either the **Accepted** or **Connected** states, depending on the configuration of IPCM.
- **Accepted** - IPCM is available and the inbound call is attempting to establish a connection. If IPCM allows the call to establish a connection, the inbound call changes to the **Connected** state. If IPCM does not allow the call to establish a connection, the inbound call changes to the **Disconnected** state.
- **Connected** - IPCM has answered the call.
- **Disconnected** - The connection between IPCM and the caller is terminated.

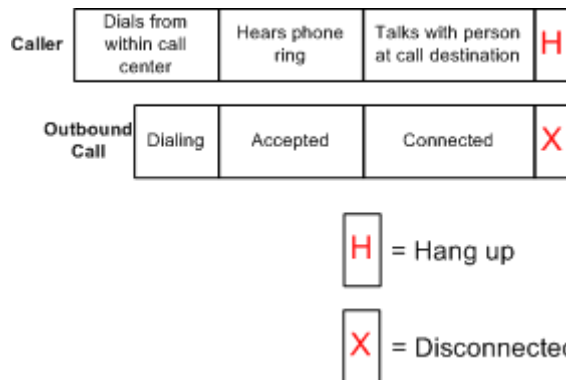
The following diagram illustrates the relationships between inbound call states and the states of other entities in IPCM, as well as what a caller experiences during each state. The arrows indicate the agent in the example is online before and after the call and interaction complete.

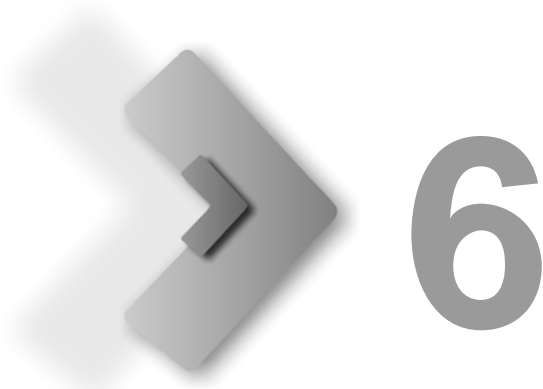


An outbound call can be in only one of the following states at any moment:

- **Dialing** - The outbound call checks if the intended recipient (agent, customer, or server) is available to accept the call. If the recipient is available, the call changes to the **Accepted** state.
- **Accepted** - The recipient is available and the outbound call is attempting to establish a connection. If the recipient allows the outbound call to establish a connection, the outbound call changes to the **Connected** state.
- **Connected** - The recipient has answered the outbound call and a connection between the caller and recipient is established.
- **Disconnected** - The connection between the outbound call and recipient is terminated.

The following diagram illustrates what a caller experiences during each outbound call state. Note that outbound calls do not generate interactions.





Properties

Overview

This appendix describes the default properties for agents, interactions, and calls. This appendix also contains a table you can print and use to keep track of user-defined properties.

Agent Properties

The following table lists the default agent properties.

Property	Type	Description
IdleTime	int	The idle time in seconds.
NormalizedIdleTime	int	The percentage of idle time relative to other agents.
ReservedInteractionID	string	The Interaction ID for which IPCM reserves the agent.
Skills	string	A collection of the agent's skills.

Interaction Properties

The following table lists the default interaction properties.

Property	Type	Description
CRN (Call Reference Number)	int	The identifier of the inbound call leg that initiated the interaction. This identifier is unique only during one IPCM start session; it can repeat if you restart the voice server.
ANI (Automatic Number Identification)	string	The telephone number of the incoming call associated with the interaction.
DNIS (Dialed Number Identification Service)	string	The telephone number dialed by the caller associated with the interaction.
State	string	The current state of the interaction. The possible values are: 0=Unknown 1=Idle 2=Data Collection 3=Queued 4=Delivery Pending 5=Delivered 6=Held 7=After-Call Work 8=Completed For information on interaction states, refer to "States"
FirstInteractionID	int	The ID of the first interaction in the chain. For example, if a call is transferred there are two interactions for that call – one for the first agent and another for second agent. The second interaction has the ID of the first interaction in this property.
PreviousInteractionID	int	The ID of the previous interaction in the chain.
AgentID	int	The ID of the agent who handles interaction.
ServiceType	string	The name of the service set by the voice application.

Property	Type	Description
CurrentApplication	string	The name of the application that created the interaction.
CurrentBlock	string	The name of the block executing currently.
SelectedCondition	string	The name of the selected condition if an Application Building building block has multiple conditions
DisconnectedInBlock	string	The name of the block executing when the inbound call disconnects.
Reason	string	The Not Ready reason of the agent if IPCM routes the interaction to an agent who is in the Not Ready state.

Call Properties

The following table lists the default call properties. The **Direction** property indicates whether the call is an inbound or outbound call.

Property	Type	Description
ANI (Automatic Number Identification)	string	The telephone number of an incoming call.
CallName	string	The caller ID.
CallDate	date	The time and date the call arrived.
ChannelID	date	The voice server channel ID.
DNIS (Dialed Number Identification Service)	string	The telephone number the caller dialed.
Direction	string	The direction of the call (either inbound or outbound).
VoIPData	IVR params	Refer to " VoIP Data Properties ".

VoIP Data Properties

VoIP data properties are a subset of call properties that include the properties in the table below.

Property	Type	Description
FullRemoteSDP	string	Full Session Description Protocol (SDP) of the remote side.
FullLocalSDP	string	Full SDP of the local side.
AcceptedREmoteSDP	string	The accepted remote SDP.
AcceptedLocalSDP	string	The accepted local SDP.
Codec	int	The selected voice codec.