



***Verint WFM Connector  
Integration Requirements  
and  
Functional Design Document***

**Version 01**

**June 07, 2019**

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**Version History**

<i>Date</i>	<i>Version</i>	<i>Author</i>	<i>Description</i>
	01		Created the draft



## 1.0 Introduction

The objective of the document is to provide a specification of historical and real-time data integration between Genesys/Cisco Contact Routing System and the Verint Workforce Management Tool using the Max Data WFM RTS Connector application.

## 2.0 Scope of the Project

The WFM RTS Connector will be used to collect historical and real-time Workforce Management related statistics from the Genesys/Cisco Call Center Environment and deliver the statistics to the Verint Workforce Management Tool. The delivered statistics will enable (5/15/30/45/60) historical interval reports call volumes and patterns and real-time data to be used by Verint to forecast and project future comparable intraday historical call volumes and patterns for future scheduling periods.

The project includes gathering the requirements, creation and approval of the specification, integration design and development, deployment, testing and validation. WFM RTS Connector data output will be validated by Customer as well as by Verint. Once the WFM RTS Connector functionality has been successfully validated and accepted by the Customer, continued technical support of this application will be provided as per the existing technical support agreement.

## 3.0 Definitions

The following terms and definitions apply to this document:

**Agent Login Id** – The numeric digit sequence used to identify an agent within the Genesys framework, and within TotalView. The PBX Logon ID.

**Queue ID** – The alphanumeric digit sequence used to identify a *Virtual Queue* within the Genesys framework, and to identify a *Queue* within the TotalView system.

**RTA** – TotalView Real time Adherence

**ACD** – Automatic Call Distributor

**Routing Strategy** – A programmatic script utilized by the Genesys/Cisco Enterprise Routing Server to distribute interactions (contacts) to agents.

**Target** – A routing object, such as a Skill, Agent, or Agent Group that can be comprised of one or more agents but is always resolved to a specific agent (the one that will receive the interaction) based on some criteria such as agent availability.

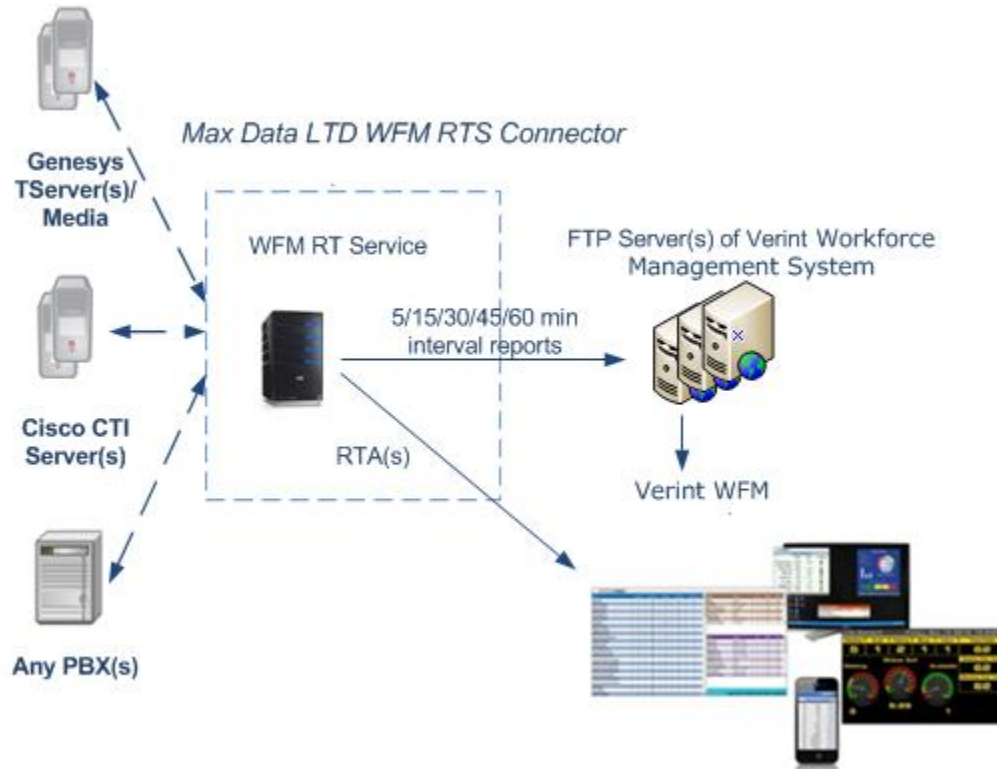
**Virtual Queue** – A virtual object created in the Genesys environment and used solely for reporting purposes. Virtual Queues do not actually queue interactions to agents. Instead, they provide a means by which a Routing Strategy can generate queuing events to provide custom statistics in the WFM Connector application.

**Genesys/Cisco softphone Agent States** – The Genesys/Cisco CTI agent phone states used to control Agent activities as defined within the Genesys/Cisco CTI communication messaging.

## 4.0 System Architecture

WFM RTS Connector (commonly referred to as a WFM Adapter) is a module offered as part of the Info-Bridge Reporting Solution installed in the Customer's call center environment. Below is the diagram showing the WFM RTS Connector deployed as part of the overall architectural design.

### 4.1 General System Architecture



## 5.0 WFM Connector Configuration

### 5.1 Historical Adherence

 **WFM Service Configuration**


Service Level:  Abandoned SRV:  Interval:   Daily

**WFM Vendors**

Teleopti
  NICE
  Aspect
  Verint
  GMT

Max Data LTD WFM Connector will derive the necessary historical statistics within (5/15/30/45/60) min time interval that enable the Verint Workforce Management System.

### 5.2 FTP/Folder Configuration

 **Remote FTP Configuration**

IP/Folder	FTP Directory	Port
<input checked="" type="checkbox"/> C:\2002\FTP		
<input checked="" type="checkbox"/> 127.0.0.1	WFM	0

FTP

**FTP**

IP Address:  Directory:  Port:

User Name:  PSW:

Folder:

## 6.0 Verint Data Collection from WFM Connector

### 6.1 Historical Statistical Integration

The following section describes interval report generation and delivery, and how it is accomplished by the WFM Connector.

### 6.2 Report Generation

The WFM Connector will generate the following (5/15/30/45/60) minutes interval reports for the Verint system:

- [Agent Productivity Report](#)
- [Forecasting/Scheduling Report](#)

The files generated by WFM RTS Connector will contain one (5/15/30/45/60) minutes interval report and will be named according to the following format:

**VerintAgentProductivity.YYYY.MM.DD.HH.MM. parse2\_agent\_prod.**

The time stamp information will be based on the system time (in the local time zone) of the server where the report generator is running.

The Customer will supply the FTP transfer information or the network folder path at the time of implementation.

**6.3 Report Delivery**

The WFM Connector will support both anonymous and username/password FTP transfers. *Customer* is expected to indicate the FTP username/password at the time of the WFM Connector implementation.

Remote FTP Configuration

IP/Folder	FTP Directory	Port
<input checked="" type="checkbox"/> C:\2002\FTP		
<input checked="" type="checkbox"/> 127.0.0.1	WFM	0

FTP

FTP

IP Address:  Directory:  Port:

User Name:  PSW:

Folder:

Remote FTP Configuration

IP/Folder	FTP Directory	Port
<input checked="" type="checkbox"/> C:\2002\FTP		
<input checked="" type="checkbox"/> 127.0.0.1	WFM	0

FTP

FTP

IP Address:  Directory:  Port:

User Name:  PSW:

Folder:

Name	Date modified	Type	Size
VerintAgentStats.2016.08.17.16.20.parse2_agent_prod	8/17/2016 4:25 PM	PARSE2_AGENT_PROD File	1 KB
VerintAgentStats.2016.08.17.16.25.parse2_agent_prod	8/17/2016 4:30 PM	PARSE2_AGENT_PROD File	1 KB



**7.0 Genesys/Cisco to Verint WFM System Statistics Mapping**

The following section provides a list of the data items that have been identified as necessary to produce the (5/15/30/45/60) minutes interval reports required by Verint WFM and a description of how each data item will be mapped to a corresponding statistic within the Genesys/Cisco environment.

**7.1 Agent Stats Report**

The *Agent Stats Report* is often an optional report that is generated at the end of each day or within (5/15/30/45/60) minutes interval. The report includes information regarding agent status information.

**7.1.1 Sample Report**

```

Advisor Agent Stats Report
08/18/2016 12:30
AGENT_NAME      AGENT_ID  STAFF_TIME  ENTERED_ACD  ANSWERED_ACD  ABANDONS      LOGIN_TIME
Alexander Sachin  1002      300         0000000004  0000000003  0000000001  0000000239
End Advisor Agent Stats Report

TALK_TIME      ACW_TIME      HOLD_TIME  IDLE_TIME  UNAVAIL_TIME  AUX_TIME      AUX_IN_TIME  AUX_OUT_TIME
0000000023    0000000000    0000000011  0000000135  0000000049  0000000006  0000000000  0000000002
    
```

**7.1.2 Data Elements**

Field	Data Type	Description
Date	MM/DD/YYYY	This field is the formatted date and time indicating the beginning this statistics interval.
AGENT_NAME	char(50)	Agent description, typically name for easy identification.
AGENT_ID	char(50)	Agent's Login ID within the PBX
STAFF_TIME	integer	The duration, in seconds, of the reported interval.
ENTERED_ACD	ushort	The total number of ACD interactions that entered the agent's queue (but the agent did not necessarily answer) during this interval.
ANSWERED_ACD	ushort	The total number of ACD interactions that an agent answered during this interval.
ABANDONS	ushort	The number of calls that abandoned while alerting this agent during this interval.
LOGIN_TIME	integer	The sum of time (in seconds) that the agent was logged on to the Interaction Client (in the system) during time interval
TALK_TIME	integer	The total handle time (in seconds), or talk time, of calls in this agent's queue during this interval. We can include or exclude Hold time or Hold Time only related to consult calls.
ACW_TIME	integer	The sum of time (in seconds) that the agent spent in an "After Contact Work" status. It can be included or excluded ACD and None ACD related
HOLD_TIME	integer	The sum of time (in seconds) that interaction spent on hold while in this agent's queue. It can be specified ACD or None ACD related, consult and none consult calls.
IDLE_TIME	integer	The sum of Idle (Wait) for ACD call time
UNAVAIL_TIME	integer	The sum of unavailable time. It can be specified AUX and ACW None ACD related.
AUX_TIME	integer	The sum of AUX (Not Ready) time (in seconds) ACD or None ACD related.
AUX_IN_TIME	integer	The sum of time of Inbound or Internal calls Agent received on AUX (Not Ready) State
AUX_OUT_TIME	integer	The sum of time of Outbound calls Agent received on AUX (Not Ready) State
ACW_IN_TIME	integer	The sum of time of Inbound or Internal calls Agent received on ACW State ACD or None ACD related
ACW_OUT_TIME	integer	The sum of time of Outbound calls Agent received on ACW State ACD or None ACD related

**7.2 Forecasting/Scheduling Report**

The *Forecasting/Scheduling Report* contains a breakdown of agent interaction activity grouped by Genesys/Cisco Any Queue Types and Agent Logon ID within (5/15/30/45/60) minutes interval.

The objective of Verint' Workforce Management tool (WFM) collecting the following ACD historical data is to enable historical call volumes and patterns to be used to forecast and project future comparable intraday historical call volumes and patterns for future scheduling periods.

The Verint Workforce Management (WFM) tool collects the following data elements from a direct feed from the WFM RTS Server. This historical data is captured every 5, 15, 30, 45 or 60 minutes, depending on the WFM RTS Server's historical data collection interval configuration. This historical data is collected for each Genesys/Cisco ACD Queue/Virtual Queue.

This data is fed from the WFM RTS Server immediately (the same millisecond) after the 5, 15, 30, 45 or 60 minute time interval has lapsed to enable usage of this data to assist in intra-day schedule management in addition to being used in generating forecasts to be used in.

**7.2.1 Sample Report**

For queue/skill data, generate a report in the following example format:  
**DATE,TIME,CG,INT,CV,SL,AB,ASA,AHT,STAFF,OCC**

Example:

```

Verint Forecasting/Scheduling Report
08/18/2016 12:30
CG      INT      CV      SL      AB      ASA      AHT      STAFF      OCC
671005  5      0000000006 0000000066.67 0000000002 0000000003.33 0000000024.33 0000000190 0000000038.42
End Verint Forecasting/Scheduling Report
    
```

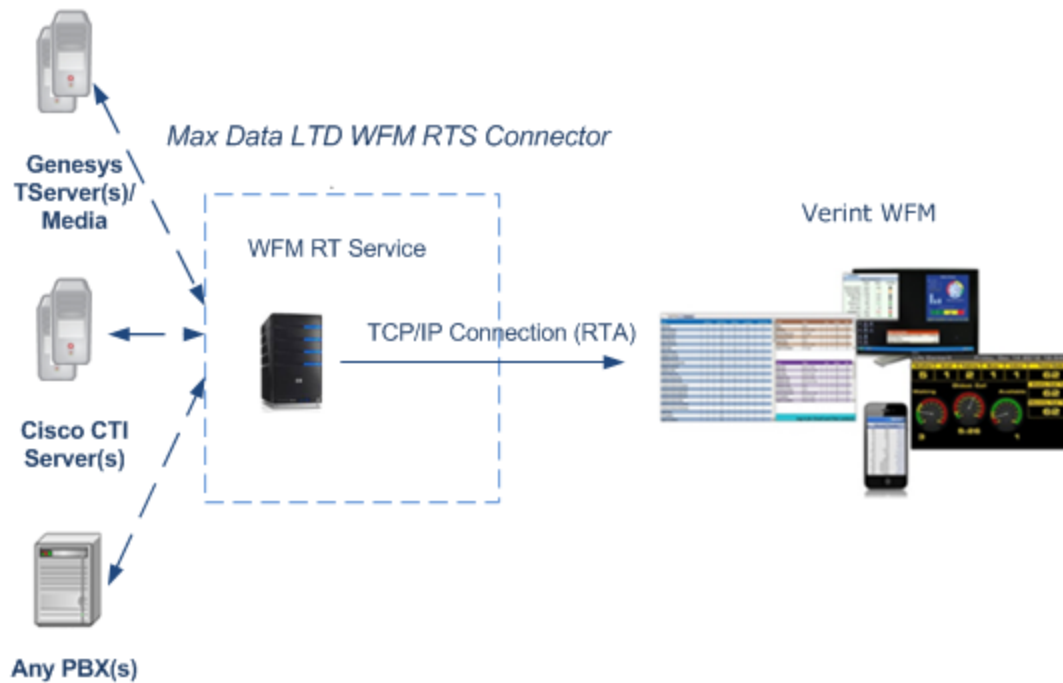
**7.2.2 Data Elements**

Column	Data Type	Description
DATE	MM-DD-YYYY	Reporting Date
TIME	HH:mm	Reporting start time
CG	char(50)	Genesys/Cisco Skill or Queue/VQ
INT	ushort	The duration, in minutes, of the reported interval.
CV	ushort	The total number of call interactions that entered the workgroup queue during this interval.
SL	double	The percentage of calls that agents handled within a specified threshold.
AB	ushort	The number of calls that abandoned during this interval
ASA	double	<p>Average Speed of Answer. The average amount of time it takes for calls to be answered during time interval. This includes the amount of time callers wait in a waiting queue and while the agent's phone rings however does not include the time it takes for callers to navigate through the IVR.</p> $ASA = \frac{\text{Total Waiting time for all callers (in Secs.)}}{\text{Total Number of Callers}}$
AHT	double	<p>Average Talk Time</p> <p>(Total talk time All Calls)/(Total number of calls [ANS])</p>
STAFF	integer	The total length of time during interval which agents were joined in.
OCC	double	Occupancy= AHT * 100 / Login Time (percentage)

## 8.0 Real-Time Adherence / Agent State Monitoring

The objective of Verint' Workforce Management tool (WFM) collecting the following ACD real-time agent phone state data is to enable supervisors and management to monitor agent schedule adherence in both real-time and historically. Verint accomplishes this by retrieving the agent phone states, in real time from WFM RTS Server. These ACD phone states can include but are not limited to: "Ready", "After Call Work", "Break", "Lunch", or "Training". Verint compares, in real-time the agent's ACD phone state to the schedule that has been generated and published by Verint for the agent and displays, in real-time, in Verint's Real-time Adherence screen whether the agent is adhering to their published schedule or not.

### 8.1 Architectural Design



### 8.2 RTA Configuration

WFM RTA

WFM RTA Configuration

IP Address:  Port:

**8.3 Implementing the Verint Real-time Phone State Data Capture**

Verint will start a TCP/IP listener on a specified port. The switch connects to this port and sends the Verint system real time data. On the initial connection the data for all agents are sent; subsequent updates contain data for agents that have changed states since the last update. All the data is send as text strings terminated by the new line character. The field separator is the pipe (|) character and the record separator is the new line character (ASCII 0x0A - '\n').

The basic flow of events is outlined below:

1. Initial Data Block sent on Verint. The initial data block will include all the current status of all agents tracked by the 3rd party real-time interface. (This included logged in and logged out agents) The Initial Data Block will be sent on one of three occurrences:
  - a. First Time Verint connects to the 3rd Party real-time Interface
  - b. On a re-connection after either party disconnected from the network for any reason. (That is TCP/IP handshake was broken)
  - c. The 3rd Party Interface has determined an "error" and requesting a Apect reset of all agent states.
2. All subsequent agent state changes will send to Apect as Delta Data Blocks. This includes:
  - Status changes for agents within the initial data block
  - Login events and status changes for agents not currently within the initial data block load. (If and agent is added to the ACD or new agent is tracked, the 3rd party interface need only send a Delta Data Block. However, the system can resend the Initial Data Block that includes the current status of all agents.)

**8.4 Data lines**

Data lines are of the form

**AgentId|VerintStateId|IdleReasonCode|Duration|NodeId|ClassificationID|**

**8.5 Data Blocks**

- For the initial data block the server first sends ==START==
- For update data blocks the server sends ==START-DELTA==
- The start or start-delta line is followed by the time stamp (the ==TS line). The value is the current time on the ACD is in milliseconds from the Unix epoch
- Data blocks are terminated by ==EOD==

SAMPLE INITIAL DATA BLOCK

```
==START==
==TS1108597114000==
AgentId1|AspectStateId|IdleReasonCode|Duration (Seconds)|NodeId|ClassificationID|
AgentId2|AspectStateId|IdleReasonCode|Duration (Seconds)|NodeId|ClassificationID|
==EOD==
```

EACH DELTA BLOCK IS OF THE FORM

```
==START-DELTA==
==TS1108597114000==
AgentId1|AspectStateId|IdleReasonCode|StartTime (HHmmss)|NodeId|ClassificationID|
AgentId2|AspectStateId|IdleReasonCode|StartTime (HHmmss)|NodeId|ClassificationID|
==EOD==
```

8.6 Example

```

Press ENTER to quit
==START==
==TS1472198568664==
1002!12!!73!!
1002!2!!8!!
==EOD==
==START-DELTA==
==TS1472198571706==
1002!1!!080251!!
==EOD==
==START-DELTA==
==TS1472198573391==
1002!10!!080253!!
==EOD==
==START-DELTA==
==TS1472198573391==
1002!10!!080253!!
==EOD==
==START-DELTA==
==TS1472198579412==
1002!7!!080259!!
==EOD==
==START-DELTA==
==TS1472198582673==
1002!10!!080302!!
==EOD==
==START-DELTA==
==TS1472198590769==
1002!0!End of Shift!080310!!
==EOD==

```

```

Press ENTER to quit
==START==
==TS1472198568664==
1002!12!!73!!
1002!2!!8!!
==EOD==
==START-DELTA==
==TS1472198571706==
1002!1!!080251!!
==EOD==
==START-DELTA==
==TS1472198573391==
1002!10!!080253!!
==EOD==
==START-DELTA==
==TS1472198573391==
1002!10!!080253!!
==EOD==
==START-DELTA==
==TS1472198579412==
1002!7!!080259!!
==EOD==
==START-DELTA==
==TS1472198582673==
1002!10!!080302!!
==EOD==
==START-DELTA==
==TS1472198590769==
1002!0!End of Shift!080310!!
==EOD==

```

```

==START==
==TS1473087852608==
1002!12!!54!!
1002!7!!45!!
Email_1002!49!!54!!
Email_1002!43!!40!!
Email_1002!38!!25!!
Chat_1002!50!!54!!
Chat_1002!44!!16!!
Chat_1002!17!!14!!
==EOD==
==START-DELTA==
==TS1473087864458==
Chat_1002!35!!150424!!
==EOD==
==START-DELTA==
==TS1473087874286==
Email_1002!45!!150434!!
==EOD==
==START-DELTA==
==TS1473087874289==
Email_1002!40!!150434!!
==EOD==
==START-DELTA==
==TS1473087874290==
Email_1002!45!!150434!!
==EOD==
==START-DELTA==
==TS1473087879052==
1002!10!!150439!!
==EOD==
==START-DELTA==
==TS1473087892855==
1002!1!!150452!!
==EOD==
==START-DELTA==
==TS1473087897609==
1002!2!!150457!!
==EOD==
==START-DELTA==
==TS1473087900196==
1002!1!!150500!!
==EOD==

```

## 8.7 Connection Management

The connection should be kept open as long as possible. If a broken connection is detected Verint will restart the listener within a configurable interval (by default 10 seconds). The switch should retry connecting to the Verint listener. Once a connection has been reestablished the switch should send a

**==START==** data block with the current states for all agents in the system (followed by **==STARTDELTA==** when agent states changes)

## 8.8 Notes

For switches where the agents can be in multiple states by ClassificationID (queue or skillsets) the WFM RTS will resolve the active state for the agent before sending the update.

For example: if the agent is on a call on one queue/skillset and is not ready on another queue/skillset, the agent state that is usually desired is that the agent is on a call. Another common issue is handling logouts. An agent is considered logged out only when the agent is logged out of the system. If the agent is logged out on one queue/skillset the WFM RTS will not send one line that says that the agent is logged out with one ClassificationID and another state with another ClassificationID. In other words the primary key is the AgentID and not the combination of AgentID and ClassificationID.

## 8.9 Verint Staten ID values

ACD State	Aspect StateID	Description
AGENT_LOGGED_OUT	0	Agent logged out of the ACD
AGENT_ACD_INCALL	1	Agent on internal call that came through ACD
AGENT_ACD_HOLD	2	Agent put ACD call on hold
AGENT_OUTCALL	3	Agent made an outbound call
AGENT_OUTCALL_HOLD	4	Agent put outbound call on hold
AGENT_INCALL	5	Agent received call directly to phone from outside bypassing the ACD
AGENT_INCALL_HOLD	6	Agent put inbound non-ACD call on hold
AGENT_WRAPUP	7	Agent in wrap up state
AGENT_NREADY	8	Agent in not ready (AUX) state
AGENT_AWAY	9	Agent in away state
AGENT_ACD_WAIT	10	Agent in ACD wait state
AGENT_CONSULT	11	Agent requested consultation from Supervisor
AGENT_LOGIN	12	Agent logged into the system
AGENT_OUTCALL_SETUP	13	Agent preparing to make outbound call



AGENT_OUTCALL_INT	14	Agent made an internal call
AGENT_INCALL_INT	15	Agent received an internal call
AGENT_EMAIL_INV	16	Agent received email invite
AGENT_CHAT_INV	17	Agent received chat invite
AGENT_WEBCALL	18	Agent on a Web Call
AGENT_ACD_WAIT_PRIM	19	ACD wait primary
AGENT_HELP	20	Agent requested help
AGENT_ACD_INCALL2	21	Agent has a call on their second line
AGENT_OUTCALL2	22	Agent on outbound call on second line
AGENT_EMERG	23	Agent has set their phone in an emergency state
AGENT_INTERNAL_CALL	24	Agent made internal call (similar to state 15)
AGENT_MSG	25	Agent leaving a message
AGENT_SUPERVISOR	26	Agent has requested supervisor assistance
AGENT_ACD_INCALL_NET	27	Agent on an ACD network call
AGENT_TRANSFER	28	Agent is transferring a call
AGENT_NOT_RESPONDING	29	Agent in not responding state
AGENT_MONITORING_USER	30	Supervisor is monitoring agent
AGENT_MONITORING_CONTACT	31	Supervisor is monitoring ACD call
AGENT_COACHING_USER	32	Agent unavailable due to supervisor coaching
AGENT_RECOVERING	33	Agent in recovery state
AGENT_EMAIL_REV	34	Email revoked after it was reached the Agent
AGENT_CHAT_REV	35	Chat revoked after it was reached the Agent
AGENT_EMAIL_REJ	36	Agent rejected Email
AGENT_CHAT_REJ	37	Agent rejected Chat
AGENT_EMAIL_ACC	38	Agent accepted Email
AGENT_CHAT_ACC	39	Agent accepted Chat
AGENT_EMAIL_PROC	40	Agent processed Email (Marked Done)
AGENT_CHAT_PROC	41	Agent processed Chat
AGENT_EMAIL_NOTPROC	42	Agent didn't processed Email (Didn't marked Done)
AGENT_EMAIL_READY	43	Agent in Ready state for Email
AGENT_CHAT_READY	44	Agent in Ready state for Chat
AGENT_EMAIL_NOTREADY	45	Agent in Not Ready state for Email
AGENT_CHAT_NOTREADY	46	Agent in Not Ready state for Chat
AGENT_EMAIL_LOGGED_OUT	47	Agent logged out from Email
AGENT_CHAT_LOGGED_OUT	48	Agent logged out from Chat
AGENT_EMAIL_LOGIN	49	Agent logged into Email

AGENT_CHAT_LOGIN	50	Agent logged into Chat
------------------	----	------------------------

**8.10 Additional Notes**

- Not all ACD's support all these different Verint State ID's. We will work with each vendor to identify which state ID's they can provide, and Verint will provide support for those states.
- Idle Reason code is the auxiliary reason code.
- We ignore node id.
- ClassificationID is the queue.
- Duration is in seconds of how long the agent has been in the current state.

**9.0 Revision & Sign-off Sheet**

**9.1 Change Record**

Date	Author	Version	Change Reference

**9.2 Reviewers**

Name	Version Approved	Position	Date

**9.3 Distribution**

Name	Position

**9.4 Document Properties**

<b>Item</b>	<b>Details</b>
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Author	
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Last Updated	