Intelligent Customer Routing Overview and Specification

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Chapter 1: Introduction

Purpose

This document describes tested product characteristics and capabilities, including feature descriptions, interoperability, performance specifications, security, and licensing requirements.

Intended audience

This document is intended for people who want to gain a high-level understanding of the product features, functions, capacities, and limitations.

Document changes since last issue

The following changes have been made to this document since the last issue:

- Updated the CPU information for the virtualized environment.

Related resources

Documentation

The following table lists the documents related to Intelligent Customer Routing. Download the documents from the Avaya Support website at http://support.avaya.com

Title	Description	Audience
Design		
Intelligent Customer Routing (ICR) Overview and Specification	This guide contains information on the concepts underlying Intelligent Customer	All

Table continues…

Title	Description	Audience
	Routing. The guide also provides information about features, specifications, and the compatibility of Intelligent Customer Routing with other products. The specifications include information about performance, capacity, traffic, security, and licensing.	
Implementation		
Implementing Intelligent Customer Routing (ICR)	This guide provides the deployment scenarios, prerequisites, and procedures to install Intelligent Customer Routing on a single system or multiple systems. Topics include information about installing components of ICR and configuring Avaya Aura® Communication Manager, Avaya Aura® Session Manager, and Avaya Aura® Experience Portal for ICR. Also contains the information about configuring ICR properties, importing certificates, and uninstalling ICR.	Planning Engineers Implementation Engineers Administrators
Maintenance and Troubleshooting		
Troubleshooting Intelligent Customer Routing (ICR)	This guide provides the troubleshooting tips related to: • ICR installation • ICR administration • ICR reporting • ICR components, such as Core and applications This guide also contains the diagnostic procedures for collecting logs, setting the log levels, enabling the logging for ICR applications, and generating the new certificates that are expired.	Administrators Service Engineers
Administration		
Administering Intelligent Customer Routing (ICR)	This guide provides information about administering and managing ICR components, configuring ICR applications, monitoring real time and historical reports, managing licenses and certificates, troubleshooting errors, and identifying the events and alarms.	Administrators

Table continues…

Title	Description	Audience
	This guide is available in the PDF format and also as an online help integrated with the application.	
Online Help for Intelligent Customer Routing (ICR)	This is the online help integrated with the ICR application Web interface. This online help contains the procedures that you need to perform to configure ICR, troubleshoot the errors that occurs in ICR, and identify the events and alarms that ICR displays. When you click the help link on an application Web page, the application opens the corresponding help page in a browser window.	Administrators
Developer		
Intelligent Customer Routing Developer Guide	This guide provides the information about developing applications using ICR Pluggable Data Connector (PDC), creating custom reports for ICR using the AAEP custom report, and sample applications that ICR provides.	Application Developers
Intelligent Customer Routing SDK Programmer Guide	This guide provides detailed information about the ICR Core SDK API's for Intelligent Customer Routing.	
Intelligent Customer Routing Web services Reference Guide	This guide provides information on the web services that provide the ability to retrieve, add, modify and delete ICR configurations. ICR configuration elements that are available include Skills, Destinations, Business Hours, Holidays, and Call Centers. Web services allow customers, integrators to configure and administer ICR configuration using third party tools and applications. It also allows integrators to develop tools for performing bulk operations such as adding ICR Skills and Destinations (VDNs).	
Related documents		
Implementing Avaya Aura® Experience Portal	This guide provides information about installing and configuring Avaya Aura® Experience Portal.	Implementation Engineers
Administering Avaya Aura® Experience Portal	This guide provides information about administering and managing Avaya Aura® Experience Portal.	Administrators
Avaya Aura® Orchestration Designer Developers Guide	This guide provides the detailed information and procedures for using Avaya Aura®	Implementation Engineers

Table continues…

Title	Description	Audience
	Orchestration Designer features and options to create speech, message, and call control applications.	ICR Application Developers

Finding documents on the Avaya Support website

Procedure

1. Navigate to http://support.avaya.com/.
2. At the top of the screen, type your username and password and click **Login**.
3. Click **Support by Product** > **Documents**.
4. In **Enter your Product Here**, type the product name and then select the product from the list.
5. In **Choose Release**, select an appropriate release number.
6. In the **Content Type** filter, click a document type, or click **Select All** to see a list of all available documents.

   For example, for user guides, click **User Guides** in the **Content Type** filter. The list displays the documents only from the selected category.
7. Click **Enter**.

Training

The following courses are available on the Avaya Learning website at www.avaya-learning.com. After logging into the website, enter the course code or the course title in the **Search** field and click **Go** to search for the course.

Course code	Course title
2054W	What is New for Avaya Aura® Experience Portal Release 7.2
2064T	Administering Avaya Aura® Experience Portal R7 Online Test
2064W	Avaya Aura® Experience Portal Administration
7005V	Implementing and Supporting Avaya Aura® Experience Portal and Avaya Proactive Outreach Manager
W: Self-paced course	
T: Test based	
V: Instructor led virtual course	

Support

Go to the Avaya Support website at http://support.avaya.com for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.

Warranty

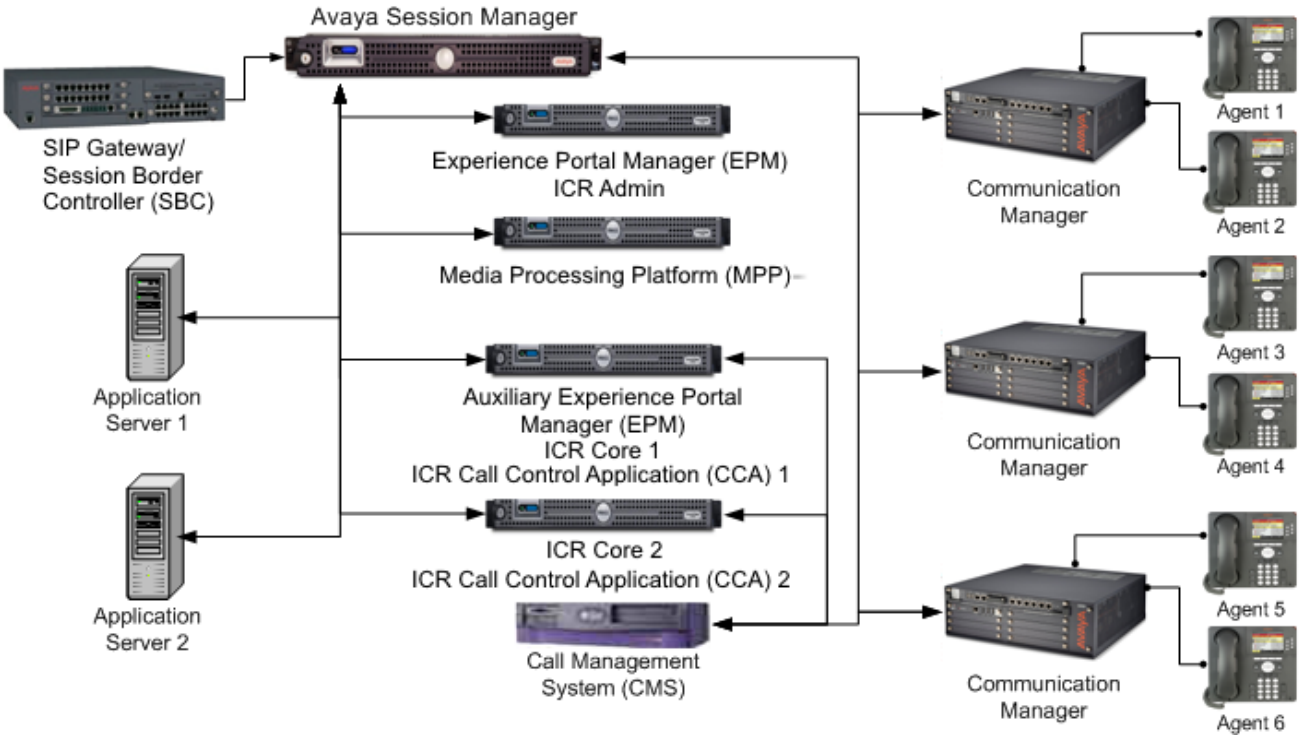
Avaya provides a 90–day limited warranty on Intelligent Customer Routing. To understand the terms of the limited warranty, see the sales agreement or other applicable documentation.

In addition, Avaya's standard warranty description and details for support under warranty are available on the Avaya Support website at **Help & Policies** > **Policies & Legal** > **Warranty & Product Lifecycle**. Also see **Help & Policies** > **Policies & Legal** > **License Terms Lifecycle**.

Chapter 2: Intelligent Customer Routing overview

Intelligent Customer Routing (ICR) helps businesses to capitalize on the next competitive differentiator in the Customer Experience. ICR provides enhanced customer service by identifying and determining the caller intent through simple and intelligent customer conversations using speech and self service. ICR provides an opportunity for customers to serve themselves and, when needed, determines the most optimal route to provide live assistance to that end consumer leveraging resources enterprise wide. Avaya has unified self and assisted service into a single smart call routing solution that dynamically manages available media and IT resources while enabling a personalized high-value service from start to finish.

The following diagram gives a picture of how you can implement ICR in your system.



With ICR, Avaya begins the transition to the next generation contact centers by leveraging Avaya's next generation enterprise communication architecture, Avaya Aura®. This user centric architecture focuses on any-media, any-application, and any-device from the ground up. Earlier contact center solutions have used computer telephony integration (CTI) to collaborate different applications and

different protocols into complex solutions. These solutions were difficult to deploy, operate, and support. ICR removes the complexity, leveraging Session Initiation Protocol (SIP) for standards based integration and delivery of information or contact to any resource within or external to the enterprise.

When a call arrives, ICR can intelligently greet a customer based on business insights. While customers are waiting for live agents, Intelligent Customer Routing can present personalized up-sell or cross-sell messages, callback options, and even opt-in services to pro-actively notify customers of transaction status before the call even occupies resources on an ACD.

For example:

- Determine if a customer has talked to anyone in the past about their need and whether the customer wants to connect again for the same need.
- Gather more information about a caller based on a request; location of home purchase for which the caller needs a loan, existing loan number, and an order number.
- Offer an opportunity only to premium customers (and tell the customers that the opportunity is specific for them as highly valued customers) to pre-register for the service when the service becomes available.
- Ask customers about their experience with a previous purchase of a tool, a cell phone, a toaster, or a travel experience. Based on the customer feedback, respond to the customer.
- Refer customers to a local help desk that offers configuration and assistance free of charge. Send an email with a quick tips that customers can refer when installing and configuring a product.

New in this release

Intelligent Customer Routing (ICR) Release 7.0.2 supports the following new capabilities:

AAEP 7.2.1 support

ICR Release 7.0.2 provides support for Avaya Aura Experience Portal (AAEP) 7.2.1. Due to currency upgrade in the AAEP 7.2.x any ICR Release older than 7.0.2 is incompatible with the AAEP 7.2.x platform. ICR 7.0.2 carries forward all the features of Release 7.0.1 as is and with no extra features added.

Feature description

Intelligent Customer Routing (ICR) provides features to efficiently handle customer calls that arrives in an organization. In ICR, calls are either completely served through self-service applications or intelligently routed to a relevant call center across applicable geographic locations based on the best available source of real-time data.

Use various features in ICR to provide the necessary self service and routing.

Business Advocate is not supported with ICR 7.0.2 and with any of the previous ICR releases.

ICR SDK

ICR SDK provides ability to extend the routing capabilities of ICR by deploying custom routing module in ICR. The SDK provides set of APIs using which you can develop a routing module to meet specific business requirement. The API provides access to ICR Configuration, Call center metrics collected by doing BSR polling or from CMS-RT Socket and data collected in Self Service Application. The API also provides utility methods for logging and storing data into cache. The custom routing module is invoked from Self Service application using ICR PDC method called *Invoke Extension*.

Additional fields and methods in ICR PDC

ICR PDC is enhanced to provide six new fields in DestinationInformation variable. The fields are:

- agentAvailable
- agentStaffed
- ewtHigh
- ewtMedium
- ewtTop
- ewtLow

The following two methods are added:

- Get All Destination information
- Selected Destination

Application Developer can write logic in Self Service application to retrieve the destination information for all destinations in an ICR Skill and select a destination to route the call. These new fields and APIs are supported with CMS as data source for BSR information.

ICR Connector for third party or custom applications

ICR connector web application connects third party or custom applications with ICR Core. The connector is deployed on an application server and provides the REST API that third party or custom application can use to get routing information from ICR Core. The connector includes the following APIs:

- Get Destination
- Get All Destinations

- Selected Destination
- Invoke Extension

ICR Configuration Web Services

ICR Configuration Web Services provides administration of ICR Configuration entities such as Business Hours, Holidays, Call Center, Skill and Destination over web service. For each of these entities, a web service is available with add, update, delete, and retrieve operation.

Termination reason for wait treatment application

ICR CCA is enhanced to provide a termination reason to the wait treatment application. ICR CCA terminates the wait treatment application for multiple reasons, for example when an agent answers a queued call or the caller disconnects the call while listening to a wait treatment or when a spike is detected in estimated wait time or in queue position. For these reasons, ICR CCA terminates the running wait treatment application by passing the appropriate reason code to the wait treatment application.

Support for SHA-2 Certificate

The `update_cert.sh` script is enhanced to generate the SHA-2 certificate on a standalone ICR server. The ICR 7.0.x release supports SHA-2 certificate for secured communication with products such as Avaya Aura® Experience Portal and Avaya Aura® Session Manager.

ICR CCA properties configurable at runtime

In ICR, you can configure properties at runtime for the Call Control Application (CCA) that is running. These properties are specific to the CCA that you are configuring. For each CCA, you can configure different values for all the properties.

ICR CCA periodically checks the properties that you configured on the Change ICR Applications page and uses the changed values for the new calls that arrive in ICR.

Zoning support

In Avaya Aura® Experience Portal, zoning is a functionality to logically distribute various systems and resources, such as applications and media servers, into different groups called zones. With zoning, organizations can best utilize the resources that are widespread across the geographical locations. Distributing the resources into zones helps organizations to reduce the time and cost in serving customers in a particular zone.

ICR being a managed application of Avaya Aura® Experience Portal, supports the zoning functionality for the following components:

- Call control application

  You can add call control applications for a particular zone and configure the dependent applications, such as self service application (SSA), wait treatment applications (WTAs), and error handling applications (EHAs) for that zone.

- Real time monitoring

  You can filter the application and queued calls based on the selected zones. By filtering the details based on the selected zones, you can easily find the application and queued call details for a particular zone.

- SIP connection for ICR Core server

  The ICR Core server can use the SIP connection configured in a particular zone. When adding an ICR Core server, you can specify the zone from which the ICR Core server can use the SIP connection to find the best location to route a call.

Consultation transfer from Self Service Application

Consultation transfer, which also called as Supervised transfer, is a feature in Avaya Aura® Experience Portal (AAEP). As ICR is a managed application of AAEP, ICR supports the Consultation transfer feature.

With Consultation transfer, an ICR Call Control Application (CCA) can transfer a call from Self Service Application (SSA) to another destination without releasing the call till the call is successfully transferred to the destination. If the call transferring fails, ICR CCA returns the appropriate response to SSA. SSA then, takes further action to handle the call transfer.

The consultation transfer feature is similar to a blind transfer feature except that, in consultation transfer the outcome of the call transfer is known and the call did not drop even for an unsuccessful transfer attempt.

The application developer can use the Consultation transfer feature and build custom business logic by checking the response that the consultation transfer feature returns.

For more information about the consultation transfer node usage and the code returned on success and failures of the call transfer, see the *Consultation Transfer node* topic in the *Nodes and Palette* appendix of the Avaya Aura® Orchestration Designer (AAOD) help.

Preferred and failover ICR Core

After you install ICR and configure ICR Core servers, you can set the preferred and failover ICR Core servers on the application server.

With the preferred and failover settings on the application server, Pluggable Data Connector (PDC) can receive the routing information for a call from a specific ICR Core server and keeps the routing requests within a particular site. For example, PDC can route all calls arrived at Site 1 to the ICR Core servers configured as preferred at Site 1. If the preferred ICR Core servers at Site 1

are unavailable, PDC can route all calls arrived at Site 1 to the ICR Core servers configured as failover at Site 1.

Earlier, the application server was randomly selecting the best available ICR Core server from the available ICR Core servers. The random selection of ICR Core server was ensuring the equal distribution of call routing requests. But this leads to sending routing requests to ICR core in a different site and increasing the network utilization. Therefore, ICR 7.0 and later provides an option to set the preferred and failover ICR Core servers.

Sending real time EWT and queue position values to a running WTA

Avaya Aura® Experience Portal features an enhanced VoiceXML browser to send and receive the external events within a voice application in a synchronous and asynchronous mode.

As ICR is a managed application of Avaya Aura® Experience Portal, ICR leverages the enhancement of the VoiceXML browser to send the updated or real time EWT and queue position values to the running WTA through external event.

CMS rt_socket routing

Intelligent Customer Routing provides support for using Call Management System (CMS) as the data source to receive the real-time data about skills and agent's statistics for all ACDs.

CMS provides more granular level information about skills and agents. ICR uses the information of skills and agents, and finds the best destination ACD to route the calls under the agent surplus and the call surplus situations across ACDs.

ICR Core receives the real time data from CMS using the `rt_socket` package. The `rt_socket` package is an Avaya Professional Services (APS) offering, which provides the near real time data feed through TCP socket interface.

Note:

- For CMS based routing, ICR supports only the first ten skills configured for an agent. Occupancy report of the topmost skill assigned to the agent is available.
- ICR Core receives the agent feed from CMS only after the agents log in to ACD skills configured in ICR.

Support SIP endpoints

ICR supports the SIP endpoints and also a mixed environment consisting of SIP endpoints and H. 323 endpoints.

Customers having contact centers with SIP environment or mixed environment can use ICR to intelligently route the calls.

Load balancing across SIP proxy servers

ICR performs the load balancing of BSR polling requests to Communication Manager across multiple SIP proxy servers. ICR leverages the SIP connection configuration of Avaya Aura® Experience Portal. In a SIP connection configuration, the administrator can designate some proxy servers as primary servers for a service and some proxy servers as backup servers. The administrator can do this designation by setting the priority and weight to each configured proxy server.

The administrator can set the Priority property to designate the primary and secondary role to the proxy servers. Similarly, the administrator can set the Weight property to decide how calls that have the same priority must be distributed across proxy servers.

Dynamically reducing the cache freshness interval in an agent surplus situation

In ICR, you can configure a property to dynamically reduce the cache freshness interval in an agent surplus situation.

ICR identifies an agent surplus situation when Communication Manager returns the BSR response with an estimated wait time (EWT) of 0. ICR dynamically reduces the polling cycle to the configured value so that frequent polling can occurs and ICR can provide efficient route destination.

When an EWT that ICR receives from Communication Manager is greater than 0, ICR dynamically reverts the cache freshness value to the original value configured on the Change Skill Configuration page.

Opt-out from WTA

Using the opt-out from WTA enhancement, the ICR call control application (CCA) can cancel the calls in a queue and disconnects the caller. If you do not want the ICR CCA to disconnect the call, you can set the ICR CCA to blind transfer the call to another destination.

Call routing enhancement

During cache freshness, ICR Core always returns the same cached destination VDN to route the calls. Therefore, ICR cannot efficiently route the calls across multiple ACDs.

With the call routing enhancement, ICR Core can efficiently route the calls across multiple ACDs within cache freshness interval by adjusting the BSR information in cache.

Self Service First using Avaya Aura® Experience Portal

Self Service First is provided through Avaya Aura® Experience Portal as the first point of access to an organization. Calls connect to Avaya Aura® Experience Portal before connecting to an Automatic Call Distribution (ACD).

Intelligent Routing

In a contact center, agents or experts are the most valuable and most expensive resources. Therefore, organizations must effectively utilize the time and skills of agents or experts in the organization.

Using Avaya Aura® Experience Portal as the call control point, ICR selects, among a group of contact center locations, and routes the call to the most optimal contact center and the best-suited agent at that time. With the Best Service Routing (BSR) infrastructure, ICR locates the best location for a call based on the shortest queue and skill availability.

ICR also has the ability to provide self service to customers, place a virtual call and park that call on ACD, and provide an enhanced wait treatment.

Enhanced or advanced wait treatment

While a call is in a queue of Communication Manager, waiting for an agent to become available, ICR can provide advanced wait treatments, such as self service or predictive offers to a caller.

An organization can use the queue time for performing activities such as:

- Gathering additional information from a customer, which is necessary for an agent when the call is connected.
- Resolving issues by providing information to a customer or gathering information from a customer. For example, providing information to a customer about the amount due for the credit card or asking a customer to validate the credit card by providing the pin number.
- Offering customers the opportunities based on previous activities or purchases.
- Playing special messages regarding new promotions applicable to particular customers.
- Providing customers the ability to sign up for new value added services, such as SMS messages with bill due dates, amounts, and shipment information.
- Providing the call back options to the customer based on estimated or predicted queue wait time.

When an agent becomes available, the call is connected to the agent.

Reporting

Avaya ICR provides real-time monitoring and historical reporting.

In real-time monitoring, you can view the real-time status of the calls in applications and calls in a queue. In the status, you can view the calls for each applications, call for a particular skill, or calls for a particular call center.

In historical reporting, you can view the details of the calls that ICR call control application (CCA) sessions handle and process. The historical report includes information from the time a call arrives in the ICR CCA session up to the call exit from the ICR CCA session.

ICR Pluggable Data Connector (PDC)

ICR Pluggable Data Connector (PDC) is a connector between Self Service Application (SSA) and ICR Core.

ICR PDC is built to integrate ICR into Avaya Aura® Orchestration Designer. ICR PDC is a generic connector, which an application developer can use without knowledge of call centers and ICR Core. The purpose of ICR PDC is to provide a SIP URI, which is the routing destination for a skill.

Sample Applications

Avaya ICR provides the following sample Orchestration Designer VXML applications to start defining the segmentation and wait treatment:

- SSA: Self service application
- WTA: Wait treatment application
- EHA: Error handling application

These sample applications show how you can incorporate caller segmentation, wait treatment applications, and self-service applications into an ICR application. These sample applications are reusable templates that you can further customize to meet the customer requirements.

The ICR SDK contains the following two extension modules that are provided as samples for developers to understand and develop their own routing modules:

- Preferred Site Module
- Percentage Distribution Module

Note:

The Preferred Site Module and the Percentage Distribution Module must not be used in a production environment.

Avaya Aura® Experience Portal integration

You can seamlessly integrate ICR with Avaya Aura® Experience Portal to:

- Administer, configure, and manage serviceability and licensing.
- Manage users and assign ICR specific roles to users.

- Monitor alarms and different types of logs, such as audit logs, information logs, and error logs.
- Back up and restore operations.

Feature comparison

The following table summarizes the operational and functional changes in Intelligent Customer Routing (ICR) by release. The intent of this table is to identify changes in the way existing functionality is invoked or changes to the existing functional behavior.

Functionality	7.0.2	7.0 FP1	7.0	6.0 SP2	6.0 SP1
ICR SDK	Yes	Yes	No	No	No
ICR PDC enhancements — Added new fields and methods	Yes	Yes	No	No	No
ICR Connector for third party or custom applications	Yes	Yes	No	No	No
ICR Configuration Web Services	Yes	Yes	No	No	No
Termination Reason for Wait Treatment application	Yes	Yes	No	No	No
Support for SHA-2 Certificate	Yes	Yes	No	No	No
Runtime configurable ICR CCA properties	Yes	Yes	Yes	No	No
Zoning support	Yes	Yes	Yes	No	No
Consultation transfer from Self Service Application	Yes	Yes	Yes	No	No
Preferred and failover ICR Core	Yes	Yes	Yes	No	No
Sending updated EWT and queue position values to the running WTA	Yes	Yes	Yes	No	No
Call Management System (CMS) based routing enhancements	Yes	Yes	Yes	No	No
SIP endpoint support	Yes	Yes	Yes	Yes	No
Load balancing across SIP proxy servers	Yes	Yes	Yes	Yes	No
Dynamically reducing cache freshness interval in agent surplus condition	Yes	Yes	Yes	Yes	No
Opt out from WTA	Yes	Yes	Yes	Yes	Yes
Call routing enhancements	Yes	Yes	Yes	Yes	Yes
Self service first using Avaya Aura® Experience Portal	Yes	Yes	Yes	Yes	Yes
Intelligent routing	Yes	Yes	Yes	Yes	Yes
Enhanced or Advanced Wait Treatment	Yes	Yes	Yes	Yes	Yes

Table continues…

Functionality	7.0.2	7.0 FP1	7.0	6.0 SP2	6.0 SP1
Reporting	Yes	Yes	Yes	Yes	Yes
ICR Pluggable Data Connector	Yes	Yes	Yes	Yes	Yes
Sample applications	Yes	Yes	Yes	Yes	Yes
Avaya Aura® Experience Portal integration	Yes	Yes	Yes	Yes	Yes

Chapter 3: Interoperability

Product compatibility

For the latest and most accurate compatibility information, go to http://support.avaya.com/CompatibilityMatrix/Index.aspx.

Operating system compatibility

The following Linux versions are supported for a fresh install of Intelligent Customer Routing (ICR) 7.0.2:

- Red Hat Enterprise Linux (RHEL) 6.8 (64-bit)
- Avaya Enterprise Linux based on RHEL 6.8

The following Linux versions are supported for upgrades from ICR 6.0.x to ICR 7.0.2:

- RHEL 6.4 (64-bit) or later
- Avaya Enterprise Linux based on RHEL 6.4 or later

For upgrades from ICR 7.0.x to ICR 7.0.2, the operating system upgrade is optional. You can continue to use RHEL 6.4 (64-bit) or Avaya Enterprise Linux based on RHEL 6.4.

Note:

Avaya recommends that you upgrade to RHEL 6.8 (64-bit) or Avaya Enterprise Linux based on RHEL 6.8 to avail the security fixes.

The Avaya-provided server offer includes Enterprise Linux Installer, which installs the Avaya Enterprise Linux operating system.

Orchestration Designer and Application server requirements

Orchestration Designer requirements

Intelligent Customer Routing supports applications developed using Avaya Aura® Orchestration Designer 6.0 and later.

Note:

ICR 7.0.2 supports application server configured with Orchestration Designer 7.2 with Java 8 only.

For detailed Orchestration Designer requirements, see the Orchestration Designer documentation on the Avaya Support website at https://www.support.avaya.com.

Application Server prerequisites

- Avaya Aura® Orchestration Designer 7.2
- Java 8
- Tomcat 7 or 8

Chapter 4: Performance specifications

In Avaya lab, various tests are conducted to measure the performance of ICR running on a physical system and running in a virtualized environment.

While conducting the tests, the results are collected for the capability and scalability of ICR, and the utilization of the system by ICR.

Related links

ICR running on a physical system on page 24
ICR running in a virtualized environment on page 26

ICR running on a physical system

This section provides the performance test results of various tests performed on ICR running on a physical system in the Avaya lab.

Related links

Performance specifications on page 24
Configuration of the physical system used for testing on page 24
Capacity and scalability specification for Get Destination method on page 25
Capacity and scalability specification for Get All Destination and Invoke Extension method on page 25

Configuration of the physical system used for testing

The following configurations were used for testing the performance of ICR running on a physical system.

- CPU: Intel® Xeon® E5620 at 2.40 GHz, 2 CPU, 4 Core with HT enabled
- Harddisk: 100-GB
- Memory: 12-GB
- BHCC: 150000
- ACDs: 10

Related links

ICR running on a physical system on page 24

Capacity and scalability specification for Get Destination method

The following table provides the capacity values of ICR components based on the tests conducted on ICR running on a physical system using Get Destination method.

Parameter name	Value
Number of ICR skills	500
Number of ACDs	10
Number of agents logged in each ACD	2000 to 5000
Number of agents logged in across all ACDs	26000
Number of ACD skills assigned to an agent	10
Number of ACD skills in each ACD for CMS routing	500
Number of ACD skills across all ACDs for CMS routing	5000
Number of web service requests for an ICR Core server in an hour	75000
Number of Polling and Queue VDN for each ICR skill	10
Number of Polling and Queue VDNs across all ICR skills	5000
Number of calls completed in an hour	150000
Number of RT_socket sessions on an ICR Core server	20
Number of agent records across RT_socket sessions	26000
Number of ACD skill records across RT_socket sessions	5000
Minimum CMS session refresh interval for an agent data feed	6 seconds
Minimum CMS session refresh interval for a skill data feed	3 seconds
Number of agents monitored per CMS	6000 to 10000

Related links

ICR running on a physical system on page 24

Capacity and scalability specification for Get All Destination and Invoke Extension method

The following table provides the capacity values of ICR components based on the tests conducted on ICR running on a physical system for testing Get All Destination and Invoke Extension method.

Parameter name	Value
Number of ICR skills	50
Number of ACDs	2
Number of agents logged in each ACD	3000
Number of agents logged in across all ACDs	6000

Table continues…

Parameter name	Value
Number of ACD skills assigned to an agent	10
Number of ACD skills in each ACD for CMS routing	400
Number of ACD skills across all ACDs for CMS routing	800
Number of Polling and Queue VDN for each ICR skill	20
Number of Polling and Queue VDNs across all ICR skills	1000
Number of calls completed in an hour	30000
Number of RT_socket sessions on an ICR Core server	4
Number of agent records across RT_socket sessions	6000
Number of ACD skill records across RT_socket sessions	800
Minimum CMS session refresh interval for an agent data feed	6 seconds
Minimum CMS session refresh interval for a skill data feed	3 seconds
Number of agents monitored per CMS	6000

Related links

ICR running on a physical system on page 24

ICR running in a virtualized environment

ICR is a managed application of Avaya Aura® Experience Portal. Therefore, ICR supports the virtualized environment that Avaya Aura® Experience Portal supports. For more information about virtualized environment of Avaya Aura® Experience Portal , see *Deploying Avaya Aura® Experience Portal in an Avaya Customer Experience Virtualized Environment*.

This section provides the performance test results of various tests that are performed on ICR running in a virtualized environment.

Related links

Performance specifications on page 24
Configuration of the virtualized environment used for testing on page 26
Capacity and scalability specification on page 27

Configuration of the virtualized environment used for testing

The following configurations were used for testing the performance of ICR running in a virtualized environment.

- Virtualized environment: VMWare ESXi 5.5
- CPU: Intel® Xeon® CPU E5-4620 @ 2.20 GHz, 4 vCPU
- Harddisk: 120-GB

- Memory: 8-GB
- BHCC: 50000
- ACDs: 2
- ICR Core servers: 2

Related links

ICR running in a virtualized environment on page 26

Capacity and scalability specification

The following table provides the capacity values of ICR components based on the tests conducted on ICR running in a virtualized environment.

Parameter name	Value
Number of ICR skills	50
Number of ACDs	2
Number of agents logged in each ACD	3000
Number of agents logged in across all ACDs	6000
Number of ACD skills assigned to an agent	10
Number of ACD skills in each ACD for CMS routing	400
Number of ACD skills across all ACDs for CMS routing	800
Number of web service requests for an ICR Core server in an hour	25000
Number of Polling and Queue VDN for each ICR skill	20
Number of Polling and Queue VDNs across all ICR skills	1000
Number of calls completed in an hour	50000
Number of RT_socket sessions on an ICR Core server	4
Number of agent records across RT_socket sessions	6000
Number of ACD skill records across RT_socket sessions	800
Minimum CMS session refresh interval for an agent data feed	6 seconds
Minimum CMS session refresh interval for a skill data feed	3 seconds
Number of agents monitored per CMS	6000

Related links

ICR running in a virtualized environment on page 26

Chapter 5: Environmental requirements

Before implementing Intelligent Customer Routing (ICR), Release 7.0.2 ensure that you review the environmental requirements for ICR.

ICR is a managed application of Experience Portal Manager. Therefore, the environmental requirements mentioned for Experience Portal Manager are also applicable to ICR. For more information about environmental requirements for Experience Portal Manager, see *Avaya Aura® Experience Portal Overview and Specification*.

Chapter 6: Security

Security specification

Before implementing Intelligent Customer Routing (ICR) Release 7.0.2, ensure that your security staff reviews and approves the ICR deployment plan. You must engage the expertise of your security staff early in the implementation process. The security staff must consider how they will incorporate the ICR system into their routine maintenance of virus protection, patches, and service packs.

ICR is a managed application of Experience Portal Manager. Therefore, the security specifications mentioned for Experience Portal Manager are also applicable to ICR. For more information about security specifications for Experience Portal Manager, see *Avaya Aura® Experience Portal Overview and Specification*.

For more information and documentation related to security of all Avaya products, see the Avaya Security Advisories website at http://support.avaya.com/security.

Ports utilization

For complete port matrix information, see *Intelligent Customer Routing Port Matrix* at the Avaya Support website: http://support.avaya.com/security.

Chapter 7: Licensing requirements

For ICR, you require licenses for ICR Core functionality and ICR Realtime Monitoring. With ICR Core functionality license, ICR can select the best destination for routing a call. With ICR Realtime Monitoring license, ICR can display call details on the ICR Monitor page. You can manage the licensing of ICR using Web License Manager (WebLM) server, which is an integral part of the Avaya Aura® Experience Portal.

Experience Portal supports the Enterprise WebLM server and local WebLM server. ICR supports only local WebLM server. Therefore, if Experience Portal is using the Enterprise WebLM server, you must install standard ICR licenses to the local WebLM server.

Glossary

ACD Skill	The Skill configured on Communication Manager or ACD
Application server	A server that runs in conjunction with a Web server and allows client programs to call methods over HTTP.
Avaya Aura®	A converged communications platform unifying media, modes, network, devices, applications. Avaya Aura® is based on the SIP architecture with Session Manager at the core.
Call Center	Communication Manager or ACD configured in ICR
Communication Manager	A key component of Avaya Aura®. It delivers rich voice and video capabilities and provides a resilient, distributed network for media gateways and analog, digital, and IP-based communication devices. It includes advanced mobility features, built-in conference calling, contact center applications and E911 capabilities.
Destination	A queue VDN configured in ICR.
EPM	Experience Portal Manager (EPM) is the Web interface used to access Experience Portal.
ICR Skill	The Skill configured in ICR
Session Manager	A SIP routing and integration tool that is the core component within the Avaya Aura® solution.
SIP	Session Initiation Protocol (SIP) is an application-layer control signaling protocol for creating, modifying, and terminating sessions with more than one participant using http like text messages.
TCP	Transmission Control Protocol is one of the core protocols of Internet Protocol Suite, the set of network protocols used for the Internet.
TLS	Transport Layer Security (TLS) is a cryptographic protocol that provides communication security over the Internet.

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