



# **IP Office Server Edition Solution Overview Guide IP Office 8.1**

15-604133  
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# Chapter 1: Introduction

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## Purpose

This document describes a unique Avaya solution from a holistic perspective focusing on the strategic, enterprise, and functional views of the architecture. It includes a high-level description of each verified reference configuration for the solution.

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## Intended audience

The primary audience for this document consists of sales engineers. It describes how the solution and its verified configurations meet customer needs at a high level. Sales engineers can use this document, in conjunction with the *Reference Configuration* and the *Product Overview and Specification* documents, when responding to customers' requirements. It can also be used by solution architects, implementation engineers, and support personnel.

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## Related documents

This section lists the related documents for the products and the solution components referenced in this document.

	Document	Document ID
1	IP Office Server Edition Reference Configuration	15-604135
2	IP Office Manager	15-601011
3	Deploying IP Office Server Edition Solution	15-604134



# Chapter 2: IP Office Server Edition Solution

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## Overview

IP Office Server Edition provides IP Office telephony capabilities, unified communications, mobility and collaboration, provides high availability, ease of use, and low total cost of ownership (TOC). Targeted at the Midsize Enterprise, IP Office Server Edition supports up to 32 sites, 1000 users and comprehensive resilience.

Highlights of IP Office Server Edition Solution	
<ul style="list-style-type: none"><li>• Supports 100 to 1000 users as a fully integrated solution.</li><li>• You can add Server Edition Expansion System to increase the capacity and capabilities</li><li>• You can deploy IP Office Server Edition Solution as a centralized or distributed set up</li><li>• Offers low Total Cost of Ownership:<ul style="list-style-type: none"><li>- Highly cost effective for an IP only or an hybrid of IP and analog set up</li><li>- Easy to install and manage</li><li>- Centralized administration</li><li>- Centralized licensing</li></ul></li></ul>	<ul style="list-style-type: none"><li>• IP Office Server Edition supports extensive unified communications features optimized for IP Telephony</li><li>• Supports native IP, digital, and analog trunks and extensions</li><li>• Integrates messaging, collaboration, mobility, and presence features</li><li>• Offers out of the box resilience</li><li>• Supports all IP Office endpoints and trunks including Avaya Flare® Experience, video conferencing, DECT, and Wi-Fi</li></ul>

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## IP Office Editions

IP Office Server Edition is designed to complement the existing range of IP Office editions to enable Midsize Enterprise customers to benefit from the extensive IP Office features whilst adding integrity and capacity:

IP Office Edition	Platform	Business size	Market need
Basic Edition	IP 500 V2	<25	Telephony
Essential Edition	IP 500 V2	20–99	IP Telephony with Essential Mobility
Preferred Edition	IP 500 V2	21–250	Unified Communications with Preferred Mobility
Advanced Edition	IP 500 V2	21–250	Unified Communications with Contact Center
Server Edition	Linux Server, IP 500 V2 and Linux Expansion	100 — 1000	Unified Communications with Preferred Mobility

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## Solution architecture

This section describes the architecture of IP Office Server Edition Solution.

IP Office Server Edition Solution is based on a fixed star network topology that provides comprehensive features and their management. The solution provides a flexible and modular architecture which can scale up the number of users and sites by networking multiple servers. The components function as a single logical unit through an integrated management system.

IP Office Server Edition Solution provides the following features:

- A single Server Edition Primary server provides IP Office Server Edition, Voicemail Pro, and Avaya one-X® Portal.
- You can optionally add a second Server Edition Secondary server to increase the capacity and ensure resilience.
- IP Office Server Edition Solution supports up to 30 expansion systems which provide additional capacity, support analog or digital interfaces, and remote sites.
- Server Edition Expansion System can be an existing IP500 V2 or IP Office Server Edition server.
- The IP Office Server Edition Solution users can be configured on IP Office Server Edition server or Server Edition Expansion System.
- IP Office Server Edition software distribution includes the components such as Server Edition Manager, System Status Application (SSA), Voicemail Pro client, and SoftConsole.



- You can set up Server Edition Secondary or Server Edition Expansion System either centrally or at a remote site.
- You can optionally configure a separate application server dedicated to Avaya one-X® Portal to provide more Power User capacity above the maximum that Server Edition Primary supports.
- You can add new servers and expansion systems any time.

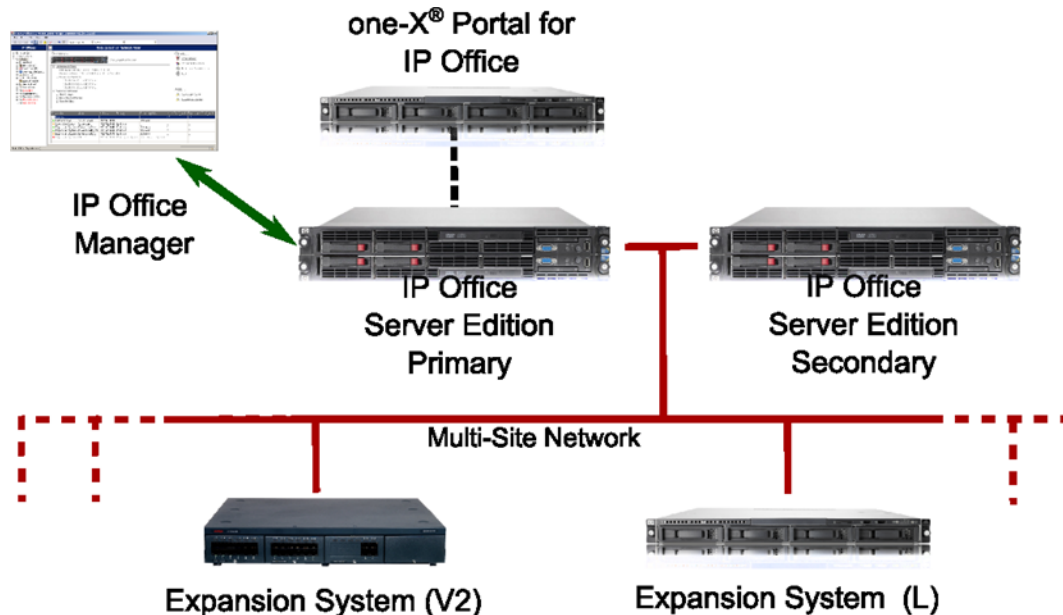


Figure 1: Solution Architecture

## Solution components

IP Office Server Edition Solution includes Server Edition Primary, Server Edition Secondary, Server Edition Expansion System, and Avaya one-X® Portal for IP Office. The following section provides an overview of the individual components.

### Related topics:

[Server Edition Primary server](#) on page 10

[Server Edition Secondary Server](#) on page 12

[Server Edition Expansion System](#) on page 14

[Server Edition Manager](#) on page 15

[one-X Portal for IP Office Server Edition](#) on page 17

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## Server Edition Primary server

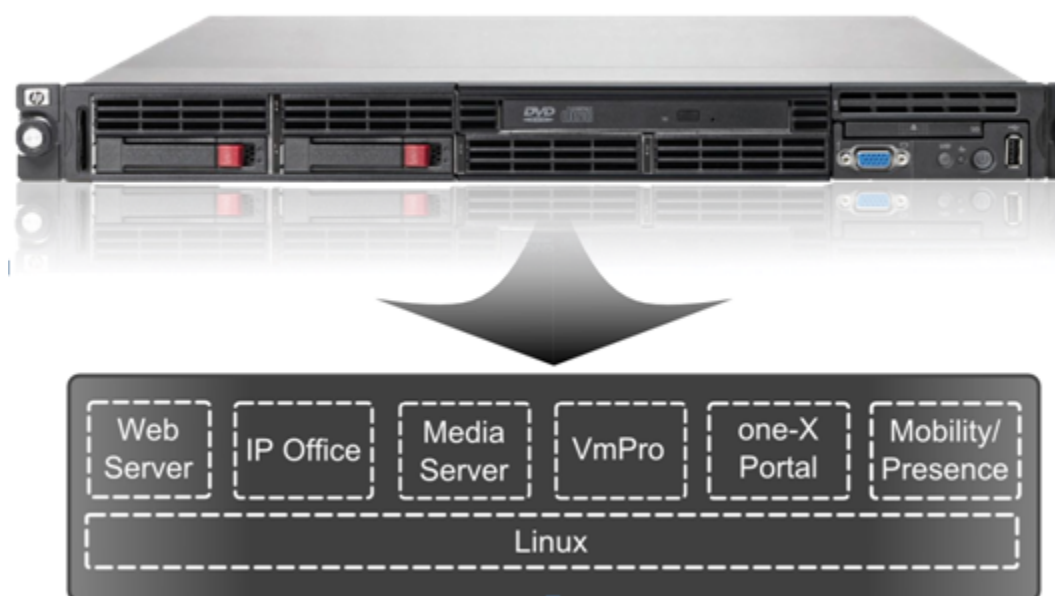
Server Edition Primary is the only hardware component required for IP Office Server Edition Solution. All other components are optional. Avaya can also supply a software-only solution to Avaya customers and Business Partners.

Server Edition Primary server is available in two capacities and depends on the platform that you select.

Material Code	Description
270393	HP DL360G7 IPO SERVER EDITION
270395	HP DL120G7 IPO SERVER EDITION

Server Edition Primary contains an integrated set of the following components and features:

- IP Office feature server
- Voicemail Pro server
- Avaya one-X<sup>®</sup> Portal and Mobility server
- Solution Administration web portal (Web Control)
- IP Office Server Edition Manager, including System Status Application
- Voicemail Pro client
- Client and DevConnect applications such as IP Office Softphone and DevLink
- Acts as a central host for licensing, Solution directory and time server
- IP focused telephony capabilities to support 500 users and extensions such as H.323, SIP, IP DECT, and Wi-Fi
- Backup server for up to 500 IP extensions
- Supports voicemail recording and Text to speech (TTS) channels
- Supports remote worker including Avaya one-X<sup>®</sup> Portal users Avaya one-X<sup>®</sup> Mobile and Flare Communicator clients
- Conference resources for ad-hoc and meet-me conferences
- Upgrade packages for all the components of the IP Office Server Edition Solution including phones.



**Figure 2: IP Office Server Edition**

Highlights of Server Edition Primary server	
<p><b>Scaling (HP DL360)</b></p> <ul style="list-style-type: none"> <li>• Up to 500 users/extensions (H.323, SIP, IP DECT, Wi-Fi, SIP ATA)</li> <li>• Up to 250 IP trunks (H.323, SIP)</li> <li>• Supports failover for up to 500 users/extensions</li> <li>• 100 Voicemail recording channels</li> <li>• 200 active one-X Portal for IP Office users</li> <li>• 128 conference channels</li> </ul> <p><b>Scaling (HP DL120)</b></p> <ul style="list-style-type: none"> <li>• Up to 250 IP users/extensions (H.323, SIP, IP DECT, Wi-Fi, SIP ATA)</li> <li>• Up to 125 IP trunks (H.323, SIP)</li> <li>• Supports failover for up to 500 users/extensions</li> <li>• 40 Voicemail recording channels</li> </ul>	<ul style="list-style-type: none"> <li>• Integrated appliance</li> <li>• Hardware resilience: Hot plug Hard drives and Power supplies (HP DL30 only)</li> <li>• Web based wizard for initial provisioning</li> <li>• Web Solution Administration Portal</li> <li>• Directory and Time server</li> <li>• Efficient Media server</li> <li>• Dual LAN support</li> <li>• VLAN support</li> <li>• Comprehensive Avaya IP Phone support including DHCP and upgrades</li> <li>• All native Linux applications</li> <li>• High integrity Linux OS (CentOS 6.x)</li> <li>• Full software distribution and solution upgrade</li> <li>• Backup and restore</li> </ul>

Highlights of Server Edition Primary server	
<ul style="list-style-type: none"> <li>• 100 active one-X Portal for IP Office users</li> <li>• 128 Conference channels</li> </ul>	
<b>Application support</b> <ul style="list-style-type: none"> <li>• Telephony</li> <li>• Conferencing</li> <li>• Unified Messaging</li> <li>• Mobility</li> <li>• Presence</li> <li>• Receptionist (up to 10)</li> </ul>	

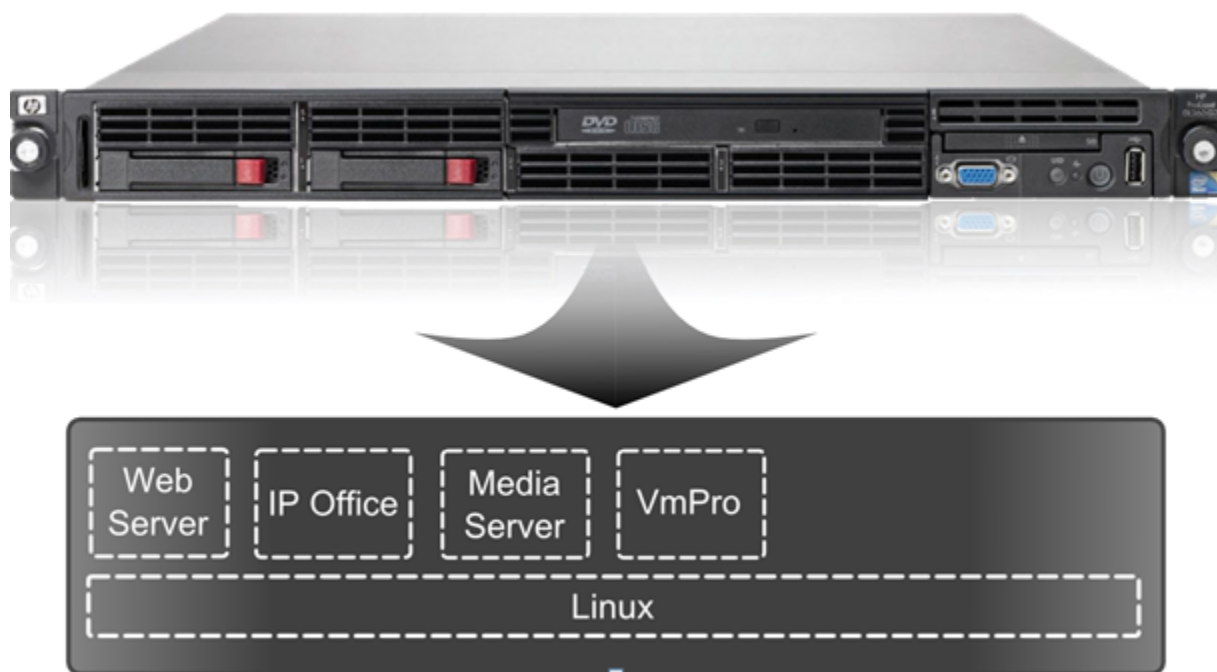
## Server Edition Secondary Server

The Server Edition Secondary provides both capacity and resilience for the solution, and can be added to the Server Edition Primary at any time. The Server Edition Secondary need not be located in the same place as the Server Edition Primary. The Server Edition Secondary server is available in two capacities and depends on the platform that you select:

Material Code	Description
270393	HP DL360G7 IPO SERVER EDITION
270395	HP DL120G7 IPO SERVER EDITION

Server Edition Secondary contains the following IP Office components:

- IP Office feature server, including backup hunt group processing
- Media server – no hardware VCMs required
- Backup Voicemail Pro server for resilience
- Backup solution administration web portal (Web Control)
- IP focused telephony capabilities to support 500 users or phones such as H.323, SIP, IP DECT and Wi-Fi
- Backup server for up to 500 IP extensions
- Supports 100 backup voicemail or recording channels
- 128 conference channels for ad-hoc and meet-me conferences



**Figure 3: : Server Edition Secondary**

Highlights of Server Edition Secondary server	
<p><b>Scaling (HP DL360)</b></p> <ul style="list-style-type: none"> <li>• Up to 500 users/extensions (H.323, SIP, IP DECT, Wi-Fi, SIP ATA)</li> <li>• Up to 250 IP trunks (H.323, SIP)</li> <li>• Supports failover for up to 500 failover users/extensions</li> <li>• 100 backup Voicemail recording channels</li> <li>• 128 Conference channels</li> </ul> <p><b>Scaling (HP DL120)</b></p> <ul style="list-style-type: none"> <li>• Up to 250 IP users/extensions (H.323, SIP, IP DECT, Wi-Fi, SIP ATA)</li> <li>• Up to 125 IP trunks (H.323, SIP)</li> <li>• Supports failover for up to 500 users/extensions</li> <li>• 40 Voicemail recording channels</li> </ul>	<ul style="list-style-type: none"> <li>• Centrally Managed</li> <li>• Integrated appliance</li> <li>• Hardware resilience: Hot plug Hard drives and Power supplies (HP DL30 only)</li> <li>• Web based wizard for initial provisioning</li> <li>• Backup Web Administration Portal</li> <li>• Directory and Time server</li> <li>• Efficient Media server</li> <li>• Dual LAN support</li> <li>• VLAN support</li> <li>• Comprehensive Avaya IP Phone support including DHCP and upgrades</li> <li>• All native Linux applications</li> <li>• High integrity Linux OS (CentOS)</li> </ul>

Highlights of Server Edition Secondary server	
<ul style="list-style-type: none"> <li>• 100 active one-X Portal for IP Office users</li> <li>• 128 Conference channels</li> </ul>	

## Server Edition Expansion System

Server Edition Expansion System provide additional capacity, locations or analog or digital capabilities. Server Edition Expansion System can be added to the Server Edition Primary server at any time. You can add a maximum of 30 Server Edition Expansion Systems and the Server Edition Expansion Systems need not be in the same location. There are two types of Server Edition Expansion Systems, and you can use these systems in any combination:

Server Edition Expansion System (V2) to support IP, digital, and analog telephony

Material Code	Description
700476005	IPO IP500 V2 CNTRL UNIT

Server Edition Expansion System (L) to support IP telephony

Material Code	Description
270395	HP DL120G7 IPO SERVER EDITION

Highlights of Server Edition Expansion System	
<b>Server Edition Expansion System (L) Scaling</b> <ul style="list-style-type: none"> <li>• Up to 250 IP users/extensions (H.323, SIP, IP DECT, Wi-Fi, SIP ATA)</li> <li>• Up to 125 IP trunks (H.323, SIP)</li> <li>• 128 Conference channels</li> </ul> <b>Application support</b> <ul style="list-style-type: none"> <li>• Telephony</li> <li>• Conferencing</li> </ul>	<ul style="list-style-type: none"> <li>• Centrally managed</li> <li>• Centrally licensed</li> <li>• Users or extensions on H.323 only, you can backup the users or extensions on a primary or secondary server</li> <li>• Web based wizard for initial provisioning</li> <li>• Efficient Media server</li> <li>• Dual LAN support</li> <li>• VLAN support</li> <li>• Comprehensive Avaya IP Phone support including DHCP and upgrades</li> <li>• All native Linux applications</li> <li>• High integrity Linux OS (CentOS 6.x)</li> </ul>

Highlights of Server Edition Expansion System	
<p><b>Server Edition Expansion System (V2) Scaling</b></p> <ul style="list-style-type: none"> <li>• Up to 384 IP, digital or analog users/extensions</li> <li>• Up to 125 IP trunks (H.323, SIP)</li> <li>• Up to 204 analog trunks</li> <li>• Up to 8 PRI and 16 BRI trunks</li> <li>• 128 Conference channels</li> <li>• 148 VCM channels</li> </ul> <p><b>Application support</b></p> <ul style="list-style-type: none"> <li>• Telephony</li> <li>• Conferencing</li> </ul>	<ul style="list-style-type: none"> <li>• Uses current IP Office IP500 V2 chassis, expansion modules and expansion units</li> <li>• Centrally managed</li> <li>• Centrally licensed</li> <li>• Users or extensions on H.323 only, you can backup the users or extensions on a primary or secondary server</li> <li>• Comprehensive Avaya IP Phone support including DHCP and upgrades</li> <li>• You can convert an existing IP500 V2 installation to IP Office Server Edition, including configuration and licenses</li> </ul>

## Server Edition Manager

Server Edition Manager is a new mode of operation of the existing IP Office Manager. Server Edition Manager supports complete centralized administration for up to 1000 users or extensions and up to 32 devices including one Server Edition Primary, one Server Edition Secondary, and 30 Server Edition Expansion Systems. Server Edition Manager also provides IP Office telephony and Unified Communications feature set. Server Edition Manager in Server Edition mode provides an effective solution management for all the components of the solution for activities such as:

- Single point of configuration for IP Office and Voicemail
- Simple initial installation wizard
- Overview of the solution with inventory and status
- Common settings consolidated to the Server Edition Primary
- Supports online, offline administration, and configuring a complete solution
- Integrated System Status, Voicemail Pro client, SystemMonitor
- Template operations
- Centralized configuration and template storage
- Administrator account management utility
- Retains existing IP Office expertise

Even though Server Edition Manager is a Windows application, Server Edition Manager can be installed directly from the Web administration portal of Server Edition Primary server. This

enables you to use any Windows personal computer that has any IP Office Manager that is pre-installed immediately.

Using Server Edition Manager, the administrator can create templates for many management items such as users, extensions, Hunt Groups, and Lines. The administrator can then create any new item using the default settings or the template. You can create multiple users and extensions using one template.

<b>Highlights of Server Edition Manager</b>	
<p><b>Scaling</b></p> <ul style="list-style-type: none"> <li>• Administration of up to 1000 users or extensions</li> <li>• Up to 32 devices</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>• Windows XP, Vista, 7, Server 2003/2008</li> <li>• Installed through Web Control or Administration DVD</li> <li>• Integrated Voicemail Pro client, System Status Application, and Web Control access</li> <li>• Context sensitive help</li> </ul>	<p><b>Call Routing Support</b></p> <ul style="list-style-type: none"> <li>• Full IP Office ARS and dial plan support</li> <li>• Default routing simplifies configuration</li> <li>• Solution wide auto line group numbering</li> <li>• Common incoming call routes provide resilience</li> <li>• Resilient Hunt Groups</li> </ul> <p><b>Offline Operation</b></p> <ul style="list-style-type: none"> <li>• Complete solution can be created and/or managed offline if required</li> <li>• Can still manage when some devices offline</li> <li>• On/offline configuration sync options to harmonize as required</li> </ul>
<p><b>Solution Management</b></p> <ul style="list-style-type: none"> <li>• Complete solution view with status and inventory</li> <li>• Users and Hunt Groups are solution wide</li> <li>• Centralized User Rights, feature short codes, Time Profiles, Incoming Call Routes, and Account Codes</li> <li>• Permits advanced per-device configuration if desired</li> <li>• All configurations stored on primary server</li> <li>• Solution wide system directory</li> <li>• Easy management of central and per-device licenses</li> </ul>	<p><b>Resilience management</b></p> <ul style="list-style-type: none"> <li>• You can manage every device locally for 'rainy day' events</li> <li>• You can manage the solution through a secondary server when the primary server fails or in a 'split WAN' setup</li> <li>• On/Offline configuration sync options to harmonize as required</li> </ul>



Highlights of Server Edition Manager	
<b>Add or Remove Devices</b> <ul style="list-style-type: none"> <li>• Single process for addition or removal of device</li> <li>• In-built Initial Configuration Utility (ICU) to simplify adding a new device</li> <li>• Common configuration items from primary server is auto populated</li> <li>• Can configure before you install a new device</li> </ul>	<b>Validation</b> <ul style="list-style-type: none"> <li>• Configuration validation on read and any change.</li> <li>• Solution wide validations</li> </ul>
<b>Localization</b> <ul style="list-style-type: none"> <li>• English, French, Italian, LA Spanish, and German</li> </ul>	<b>Template</b> <ul style="list-style-type: none"> <li>• Create a local and centralized templates from an existig Line, Extension, User, Hunt Group, Time Profile, Firewall Profile, IP Route and Service entries</li> <li>• Recreate multiple Extension and Users from one template</li> </ul>
<b>Remote access</b> <ul style="list-style-type: none"> <li>• Supports access from service through SSL VPN</li> </ul>	<b>Security</b> <ul style="list-style-type: none"> <li>• Single Sign On to all except one-X Portal administration</li> <li>• Administrator account utility to harmonize credentials</li> </ul>

## one-X Portal for IP Office Server Edition

You can add a stand alone Avaya one-X® Portal for IP Office server to support more than 200 users, or for higher call processing capacity on the primary server. You can add the server to the solution at any time from the same pre-installed distribution present on all Server Edition platforms.

You can activate Avaya one-X® Portal for IP Office Server Edition on:

Material Code	Description
270395	HP DL120G7 IPO SERVER EDITION

Highlights of Avaya one-X® Portal for IP Office	
<b>Scaling</b> <ul style="list-style-type: none"><li>• Up to 500 active one-X Portal users</li><li>• Allows up to 14400 BHCC on the Primary</li></ul>	<ul style="list-style-type: none"><li>• Web based wizard for initial provisioning</li><li>• Dual LAN support</li><li>• VLAN support</li><li>• High integrity Linux OS (CentOS 6.x)</li></ul>

# Chapter 3: Features

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## Business continuity

This section describes the design of IP Office Server Edition Solution and the associated components that offer business continuity.

IP Office Server Edition Solution offers business continuity features to maintain a high level of service in the event of any network or device outage to ensure normal operation. A combination of the various remote access features, resilience, and redundancy ensures business continuity.

Highlights of business continuity	
<b>Remote access features</b> <ul style="list-style-type: none"><li>• Avaya one-X® Portal for IP Office</li><li>• Avaya one-X® Mobile for IP Office</li><li>• IP Office Softphone</li><li>• Remote worker phone</li></ul>	<b>Resilience</b> <ul style="list-style-type: none"><li>• HP DL360 server supports hot swap able hard drives and Power Supply Units</li><li>• Components such as IP Office, IP Phones, Voicemail Pro, and Hunt Groups provide resilience</li><li>• The inter IP Office links or trunks provide resilience through network topology and PSTN backup</li></ul>

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## Resilience

This section provides an overview of the resilience that the various components of the IP Office Server Edition Solution offers.

A single Server Edition Primary server supports redundant Hard Disk Drives and Power Supply Units. You can also configure it to use alternative trunks using the IP Office Alternate Route Selection feature when the trunks are busy or there is a failure of the trunk. To provide resilience at an IP Office Server Edition Solution level you need to add a Server Edition Secondary server.

The Server Edition Secondary server provides resilience for hunt groups, messaging and all H.323 extensions or users of the Server Edition Primary without any administration. Server Edition Secondary does not provide resilience for Avaya one-X<sup>®</sup> Portal for IP Office .

Adding an Server Edition Expansion System with H.323 extensions or users enables you to backup those on either the Server Edition Primary or Server Edition Secondary servers. The dual star Multi-Site Network topology when a Server Edition Secondary server is present supports diverse routing between all nodes.

At all times, no server hardware is forced to be idle, enabling you decide whether to provide true redundancy, or shared resource resilience.

IP Office Server Edition Solution provides IP extension resilience for Avaya H.323 16xx, 96xx and 96x1 phones. The Server Edition Expansion System with the integrated DHCP server enable upgrade and configuration support, installing and configuring resilient phone is a straightforward operation and can even support two systems on the same LAN subnet.

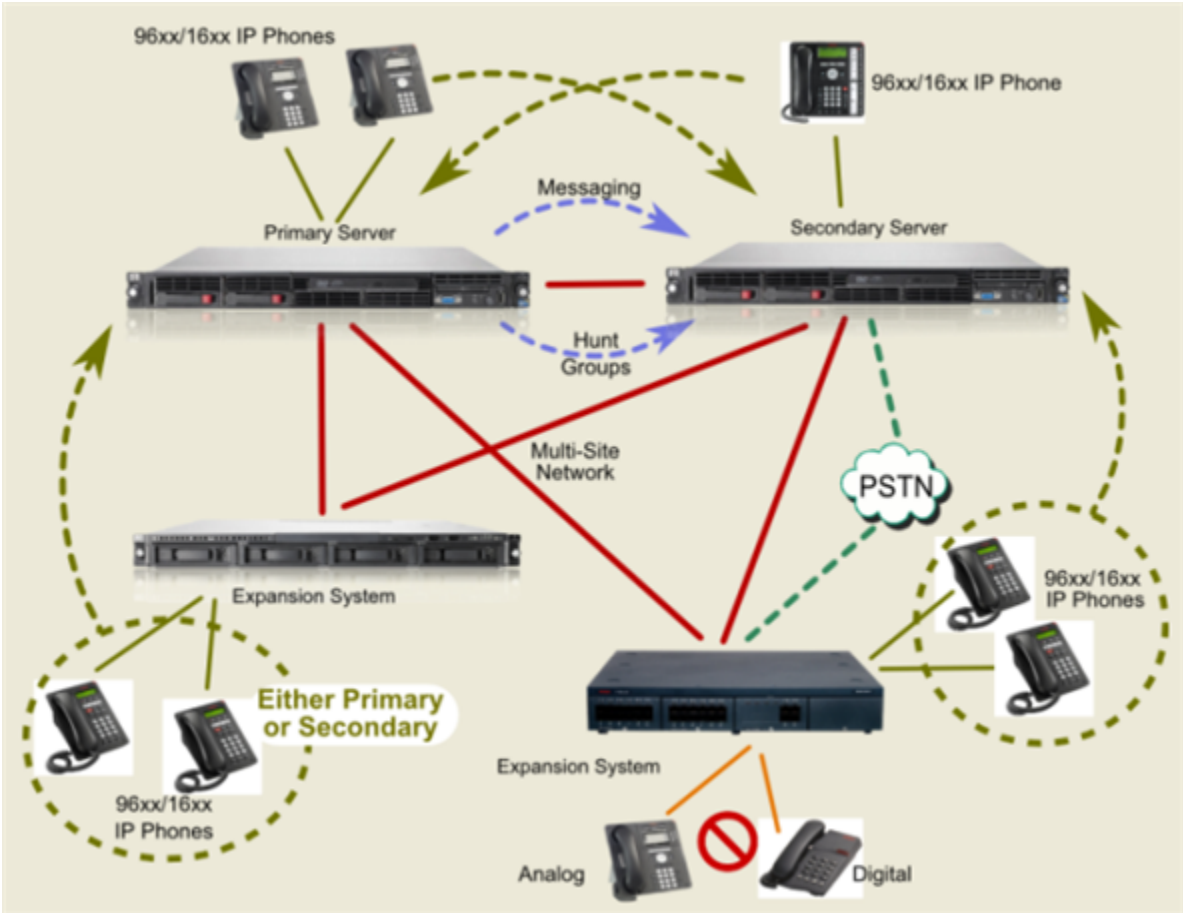


Figure 4: Resilience overview

### Components that are resilient

The following components of IP Office Server Edition Solution are resilient:

- IP Office Server Edition
- Voicemail Pro server
- IP Phones
- Hunt groups
- Inter IP Office device links
- Trunks
- Incoming Call Routes

Highlights of a resilient multi-site network	
<ul style="list-style-type: none"><li>• Transparency for most of the features</li><li>• Resilience of users and hunt groups</li><li>• Back up system for Voicemail Pro</li></ul>	<ul style="list-style-type: none"><li>• Network topology provides resilience</li><li>• None of the hardware is idle</li><li>• Simple to activate resilience</li></ul>

## Resilience management

You can continue to administer and manage the failure of IP Office Server Edition server and devices in an IP Office Server Edition Solution network through the Server Edition Secondary server. This provides management without the offline capability, and a facility to realign the configuration after the outages have been resolved. The resynchronization feature highlights the time and source of configuration change and enables the administrator to decide which change set to retain. In addition, you can directly manage each device and application to allow configuration whilst isolated. You can use the resynchronization capability to realign the configurations after the devices are reconnected.

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## Backup and Restore

IP Office Server Edition Solution supports a variety of backup and restore features to preserve and optionally reinstate both configuration and data in the event of an equipment failure. The Server Edition Primary offers a manual and secure solution backup to an external server which can optionally be the Server Edition Primary. Each server and expansion system can be configured to locally copy configuration and firmware and phone binaries on a periodic bases and both Voicemail Pro and Avaya one-X® Portal for IP Office have comprehensive backup and restore capabilities.


Highlights of backup and restore	
<b>IP Office Server Edition Manager</b> <ul style="list-style-type: none"> <li>• Saves all IP Office device configuration and templates on the Server Edition Primary.</li> <li>• Save IP Office device configuration and templates to a local drive of a computer.</li> <li>• Restore IP Office device configuration from a local drive of the computer or the Server Edition Primary.</li> </ul>	<b>Server Edition Primary</b> <ul style="list-style-type: none"> <li>• Solution Backup or Restore using a manual command from the Web Control. The backup can be on a local drive or a remote SCP file server that can be another IP Office Server Edition server.</li> <li>• Recover a corrupted or failed server configuration, application and user data. All these are in a single file set and you can securely copy it on a local drive or remote location and subsequently restore.</li> <li>• Configure each local application backup to the local drive, and use default or predefined directories.</li> </ul>
<b>Server Edition Expansion System (V2)</b> <ul style="list-style-type: none"> <li>• Back up to the local SD card.</li> <li>• Back up manually through phone, Manager or automated 24 hr - active by default.</li> </ul>	<b>Voicemail Pro</b> <ul style="list-style-type: none"> <li>• Back up to a local drive of the Server Edition Primary server.</li> <li>• Back up manually or periodically (daily, weekly, monthly) through Voicemail Pro Client.</li> <li>• Options to backup content which can include configuration and messages</li> </ul>

Highlights of backup and restore	
<ul style="list-style-type: none"> <li>• Back up configuration, security, and binary files as a single file set.</li> <li>• Restore through IP Office Manager or phone command or automatically as a result of boot failure.</li> </ul>	<ul style="list-style-type: none"> <li>• Back up multiple backup file sets up to a maximum of 4 file sets.</li> <li>• Restore through the Web Control Panel. The restore is a complete backup data set.</li> </ul>
<b>Linux Server Edition Expansion System (L)</b> <ul style="list-style-type: none"> <li>• Back up to the local hard drive.</li> <li>• Back up manually through Phone, Manager or automated 24 hr - active by default.</li> <li>• Back up configuration, security, and binary files as a single file set.</li> <li>• Restore through a Manager or phone command, or as a result of boot failure.</li> </ul>	<b>Avaya one-X® Portal for IP Office</b> <ul style="list-style-type: none"> <li>• Back up the Avaya one-X® Portal database, Presence and Mobility settings to a local drive or an FTP server.</li> <li>• Back up manually using Avaya one-X® Portal for IP Office by logging in as a <i>Superuser</i>.</li> <li>• Back up multiple backup file sets (unlimited).</li> <li>• Restore using Avaya one-X® Portal for IP Office by logging in as a <i>Superuser</i>.</li> </ul>

## Security

IP Office Server Edition Solution is a reliable and secure solution. For more information about security, see *IP Office Security Guide*.

Highlights of the security in IP Office Server Edition Solution	
<b>Platform</b> <ul style="list-style-type: none"> <li>• IP Office for Linux operating system is CentOS 6.1 based on Red Hat Enterprise Linux that is further hardened for defaults, packages, and users.</li> <li>• Operating system of Server Edition Expansion System (L) is developed for IP Office. The operating system is simple, stable, and reliable.</li> <li>• Components that are secure: <ul style="list-style-type: none"> <li>- Software security engine for all the components.</li> <li>- Hardware security engine for Office Server Edition Expansion System (V2).</li> </ul> </li> </ul>	<b>IP Office Server Edition Manager</b> <p>Most of the administrative data is in the IP Office</p> <ul style="list-style-type: none"> <li>• Transport Layer Security (TLS) secures the communications between IP Office Manager and IP Office and insecure ciphers are disabled.</li> <li>• Provides Role based user access control (RBAC).</li> <li>• Provides comprehensive user account and password controls.</li> <li>• You can enable a PKI Trust domain.</li> <li>• The system generates warnings messages if administrative passwords are set to default. The system sends alarms or login failure.</li> </ul>

Highlights of the security in IP Office Server Edition Solution	
<ul style="list-style-type: none"> <li>- Internal Access Control Engine polices for external service requests and internal applications.</li> </ul>	<ul style="list-style-type: none"> <li>• The system records all the accesses in the audit trail.</li> <li>• You can disable unused services and ports such as HTTP.</li> </ul>
<p><b>Administration User Accounts</b> The Administration user accounts can be controlled for:</p> <ul style="list-style-type: none"> <li>• Password complexity</li> <li>• Previous password history</li> <li>• Change password on next login</li> <li>• Idle lockout and login failure lockout</li> <li>• Time and date the account expires</li> </ul>	<p><b>Single Sign On (SSO)</b></p> <ul style="list-style-type: none"> <li>• Administration credentials to log in to Web Control are securely transferred to Manager, SSA, Voicemail Pro client.</li> <li>• Password management utility in IP Office Server Edition Manager synchronizes all IP Office passwords except for Voicemail Pro and Avaya one-X<sup>®</sup> Portal for IP Office administration accounts.</li> </ul>
<p><b>Audit trail</b></p> <ul style="list-style-type: none"> <li>• Each IP Office system maintains an audit trail of access and configuration change.</li> <li>• Web Control also maintains an audit trail.</li> <li>• The IP Office system displays the audit trail in IP Office Server Edition Manager and SSA.</li> </ul> <p> <b>Note:</b> The system does not maintain an audit trail of Voicemail Pro and Avaya one-X<sup>®</sup> Portal for IP Office.</p>	<p><b>Public Key Infrastructure (PKI)</b></p> <ul style="list-style-type: none"> <li>• IP Office supports X.509 certificates</li> <li>• The Trusted Certificate Store can be configured and Identity certificate is available.</li> <li>• The system performs a Certificate Signing Request (CSR) through Simple Certificate Enrollment Protocol (SCEP).</li> <li>• The system creates a self-signed Identity certificate.</li> <li>• Flexible controls to enforce Trust domain on specific services. Extended trust controls for PKI .</li> <li>• Web Management Console, Voicemail Pro and Avaya one-X<sup>®</sup> Portal for IP Office on Linux support X.509 certificates, but not PKI.</li> </ul>
<p><b>LAN</b></p> <ul style="list-style-type: none"> <li>• The servers and expansion systems are thoroughly tested for resistance to Denial of Service and other attacks Server Edition Expansion System (V2) supports a configure able Firewall</li> <li>• Time profiles on Server Edition Expansion System (V2) only</li> </ul>	<p><b>Endpoints</b></p> <ul style="list-style-type: none"> <li>• Username and PIN or password or login code are in the IP Office configuration, and you can administer</li> </ul>



Highlights of the security in IP Office Server Edition Solution	
<ul style="list-style-type: none"> <li>• Static NAT and NATPT in Server Edition Expansion System (V2)</li> <li>• ICMP Filtering</li> <li>• L2TP/PPP VPN on Server Edition Expansion System (V2) only</li> <li>• PAP or CHAP password exchange</li> <li>• Idle or quota timeout</li> <li>• IPSec VPN on Server Edition Expansion System (V2) only</li> </ul>	<p>these through IP Office Server Edition Manager</p> <ul style="list-style-type: none"> <li>• You can use HTTP or HTTPS for settings and firmware upgrades</li> <li>• You cannot make calls unless you are logged in</li> </ul>
<p><b>Call Barring</b></p> <ul style="list-style-type: none"> <li>• You can configure flexible call barring controls using login name or account code to allow internal, local, national or international calls on the basis of every user and system.</li> <li>• You cannot use speed dials, transfers, forwarding, and conferences to bypass controls.</li> <li>• You can enable trunk to trunk calls using IP Office Server Edition Manager. Trunk to trunk calls are disabled by default.</li> <li>• SIP trunk configuration for incoming calls must match URIs..</li> <li>• You can use SMDR (CDR) to create a record of all calls.</li> </ul>	<p><b>Voicemail Pro client</b></p> <ul style="list-style-type: none"> <li>• You can enforce user login with Personal Identification Number (PIN) and configure complexity for the PIN.</li> <li>• You can enforce PIN change when the user logs in for the first time.</li> <li>• Idle timeout.</li> </ul>

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## Remote access

You can access IP Office Server Edition Solution remotely. Some of the components that can be accessed remotely are:

- System Status Application
  - RBAC username and password
  - Password is securely exchanged
  - SSA port can be disabled
- System Monitor
  - Access after password exchange

- SSL VPN or IP Office Support Services
  - The system uses HTTPS and TLS channel
  - Password is securely exchanged
  - Prompts for periodic re keying
- Mobility and Avaya one-X® Portal clients
  - User name and password is the IP Office configuration, and administered through IP Office Server Edition Manager

## Licensing

IP Office Server Edition Solution leverages the IP Office licensing method with a variety of enhancements to simplify management and operation. Many existing IP Office licenses are redundant in IP Office Server Edition as a new edition license enables a host of features that previously required many separate licenses.

- Centralized administration of all the licenses through IP Office Server Edition Manager enables you to configure the licenses in one place, and SSA gives a complete overview of current license status and operation.
- Server Edition Primary server acts as a central host for all common licenses
- Central pool for efficient allocation and cost effective procurement
- Grace periods to support network outages
- Extensive alarms and status to provide visibility of operation
- One new license introduced for IP Office Server Edition
- Purchase the licenses online through Avaya Direct International (ADI)

### Licensing in IP Office Server Edition Solution

Highlights of licensing in IP Office Server Edition Solution	
<ul style="list-style-type: none"> <li>• Centralized administration of the licenses through IP Office Server Edition Manager</li> <li>• Centralized allocation for all common licenses</li> <li>• You need a Server Edition license for each of the device to enable operation</li> </ul>	<ul style="list-style-type: none"> <li>• Server Edition Primary acts as a central host for all the licenses</li> <li>• You can purchase the licenses online through Avaya Direct International (ADI)</li> <li>• The system sends alarms through SSA, SNMP, Syslog, and email when you over allocate the license. The system also sends reminders</li> </ul>

Highlights of licensing in IP Office Server Edition Solution	
	at the beginning and end of the grace period.

**Related topics:**

[Centralized licensing](#) on page 27

[Local licensing](#) on page 27

[Server Edition licensing](#) on page 29

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## Centralized licensing

The Server Edition Primary is the license server for all common licenses including the Edition, SIP trunk, user and endpoint licenses in an IP Office Server Edition Solution. For Release 8.1, centralized licensing is designed to operate without any license shortfall and the Server Edition Primary allocates on a first come first served basis, after reserving all the licenses necessary for its own operation.

All central licenses are issued to the System ID (Feature Key Serial Number) of the Server Edition Primary server. All IP Office for Linux platforms have a System ID derived from a hardware signature. This section describes about how licensing is centralized in IP Office Server Edition Solution

Highlights of centralized licensing	
<ul style="list-style-type: none"> <li>Common licenses such as Server Edition, endpoints, SIP trunk channels, Office Worker, Power User, Receptionist, and UMS Web Services are located in the Server Edition Primary</li> <li>Avaya IP Office System Status Application (SSA) provides detailed status of the licenses that are allocated</li> </ul>	<ul style="list-style-type: none"> <li>Server Edition Primary allocates the licenses to Server Edition Secondary Server Edition Expansion System on request</li> </ul>

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## Local licensing

Some of the licenses are located on the local device and are administered centrally through IP Office Server Edition Manager. SSA provides the status of the licenses that are allocated on the devices.

<p>Server Edition Expansion System (V2)</p> <ul style="list-style-type: none"> <li>• TAPI Wav</li> <li>• PRI Channels</li> <li>• CTI Link Pro</li> <li>• IPSec Tunnelling</li> </ul> <p><b>* Note:</b></p> <p>The TAPI Wav, PRI Channels, and IPSec Tunnelling cannot be allocated on a Server Edition Primary, Server Edition Secondary, or Server Edition Expansion System (L).</p>	<p>Server Edition Primary and Server Edition Secondary</p> <ul style="list-style-type: none"> <li>• Messaging Ports</li> <li>• Messaging Text To Speech (TTS) Pro</li> <li>• Messaging Recordings Administrators</li> </ul> <p><b>* Note:</b></p> <p>These licenses should be allocated only on the server where Voicemail Pro is configured.</p>
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## Supported licenses

License	New for Server Edition	License Location
Server Edition	New	On Server Edition Primary
Avaya/3rd Party IP Endpoint	Existing	On Server Edition Primary
Power User	Existing	On Server Edition Primary
Office Worker	Existing	On Server Edition Primary
Receptionist	Existing	On Server Edition Primary
SIP Trunk Channel	Existing	On Server Edition Primary
UMS Web Services	Existing	On Server Edition Primary
Additional Messaging Ports	Existing	On Server Edition Primary or Server Edition Secondary
Messaging TTS Professional	Existing	On Server Edition Primary or Server Edition Secondary
Additional PRI Channels	Existing	On Server Edition Expansion System (V2)
CTI Pro	Existing	On associated device
CTI Wav users	Existing	On Server Edition Expansion System (V2)
IPSec Tunnelling	Existing	On Server Edition Expansion System (V2)

## Server Edition licensing

You need only one new license is for Server Edition:

Material Code	Description
270397	IPO R8.1+ Server Edition LIC

You need one Server Edition licence for each of the Server Edition Primary, Server Edition Secondary, and Server Edition Expansion System. Some of the features of the Server Edition license are:

- You can enables basic operation (without the Server Edition license you cannot make any calls)
- You can not make calls unless there are valid licenses.
- You can add two additional messaging ports to Server Edition Primary
- You can enable unlimited voice networking channels
- You can enable meet-me conferencing, advanced messaging, automated attendant, call recording, conditional call routing, and queue announcements
- You can enable basic mobility features such as Mobile Twinning, call control, and callback.

### User licenses

In addition to the separate Receptionist license, the following user features can be enabled:

User License Feature	Base User	Office Worker	Power User	Notes
Mobility Features	Yes	Yes	Yes	Mobile twinning, mobile call control. One-X Mobile Essential
one-X Portal Services	-	Yes	Yes	one-X Portal for IP Office support for users one-X Mobile Preferred (iOS/Android)
UMS (voicemail) Services	-	Yes	Yes	MAPI (Microsoft Exchange) or SMTP voicemail integrations
Flare Communicator	-	Yes	Yes	Avaya Flare® Communicator for iPad Devices or Avaya Flare® Communicator for Windows
TTS Email Reading	-	-	Yes	Listen to emails using TTS
Telecommuter options	-	-	Yes	one-X Portal Telecommuter mode

User License Feature	Base User	Office Worker	Power User	Notes
Remote Worker	-	-	Yes	Remote H.323 extensions.
IP Office Softphone	-	-	Yes	IP Office Video Softphone

**Related topics:**

[Unsupported licenses](#) on page 30

## Unsupported licenses

License	Reason
Small/Large System Upgrade	First phase of Server Edition
Essential & Preferred Edition	All relevant features enabled in the Server Edition license
IP500 Voice Networking	Unlimited Voice Networking enabled in the Server Edition license
Teleworker, Mobile Worker licenses	Simplification - features supported in Office Worker and Power User
Embedded Messaging Ports	Embedded messaging not supported on Server Edition
CCR Agent and Supervisor	CCR not yet supported on Server Edition
Voicemail Pro Networked Messaging, Database interface, Visual Basic Script	Not supported on Voicemail Pro for Linux
CCC, Phone Manager, VCM channels, Mobility	Legacy licenses

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## IP Office Server Edition Solution versus Avaya Aura Midsize Enterprise Solution

The following table compares the key features of IP Office Server Edition Solution and Avaya Aura<sup>®</sup> Midsize Enterprise Solution:

Feature	Avaya Aura Midsize Enterprise (with no UC add-ons)	Server Edition	Server Edition Comments
Capacity	250 locations	32 locations	
	2400 users on single server	500 users per server	
		1000 users	
Performance	BHCC	14,400 BHCC	Concurrent calls direct media IP
	1000 concurrent calls	1000 concurrent calls	
Solution Complexity	Medium	Low	Just single server for 500 users, full UC, one Manager
CTI	Solution wide via AES	Per device using IPO CTI interfaces:	Future plan to support solution CTI using REST web services via one-X Portal
	- TAPI 2/3	- TAPI 2/3	
	- CSTA	- Custom (XO)	
	- ASAI		
	- etc		
Resilience	Full HA for 5x 9's plus availability	No HA	Geo-redundancy for all components except one-X Portal
		Typical 4x 9's availability	
Security	SRTP	Security limited to admin interfaces (TLS)	SRTP planned for next release
	802.1x	No true SSO	
	SSO		
IP Networking	IPv4/IPv6	IPv4	
Telephony Networking	CAC	No CAC	Connection preservation already supported in B5800
	Connection preservation	No Connection preservation	
Topology	Star with G450/ G430/B5800 gateways	Single/double star	
Existing upgrade path	Upgrade from CM/ G4x0	Upgrade from IP Office	
Future evolution path	Full Aura	Server Edition only	Will support B5800 features due to

Feature	Avaya Aura Midsize Enterprise (with no UC add-ons)	Server Edition	Server Edition Comments
			product consolidation
Endpoint support	Mix of Avaya and 3rd party endpoints:	Mix of Avaya and 3rd party endpoints:	Server Edition supports more endpoint types than any other product
	- IP (H323+SIP)	- IP (H323+SIP)	
	- TDM	- TDM	
	- Analogue	- Analogue	
Administration tools	Unified Aura Manager (SMGR)	Unified IP Office Manager (IPO Manager)	Will support B5800 features due to product consolidation
Software Only Solution	No	Yes (Controlled introduction at present)	
Virtualized environment	Yes (Xen)	No	
Contact Centre	Yes – 1000 agents. Integrated Contact Center (CC-Elite), Avaya Aura Contact Center via integrated AES Services	No	
Audio Conferencing	Max 6 party Note: Add AAM for higher capacity and Audio/Web/Video conferencing	Max 64 party/128 channels per server/ expansion	
	Max channels?		
IP DECT	Up to 1000	Up to 120 per Server or Expansion system	3840 maximum
Voicemail	1000 VM channels	100 VM channels	
	2400 mailboxes	1000 mailboxes	
Web Conferencing	With AACC	No	In roadmap
Video conferencing	With AACC	No	
Mobility	One-X Mobile Lite, CES for full mobile convergence	One-X Mobile Lite Rich UC with one-X Mobile Preferred	



Feature	Avaya Aura Midsize Enterprise (with no UC add-ons)	Server Edition	Server Edition Comments
Desktop clients/Soft Clients	Flare Communicator for iPad, Flare Experience on ADVD, IP Office Video Softphone, One-X Client	Flare Communicator for iPad and Windows IP Office Video Softphone	Flare Exp in roadmap
Desktop integration	Outlook, Salesforce.com, SAP, IBM Lotus	One-X Portal thin client Outlook plugin Salesforce plugin	
Presence and IM	Integrated Avaya Aura Presence Server	XMPP based Presence server – telephony presence, calendar presence, custom presence status	
Presence and IM Federation	Google Talk and MS Lync	With Google Talk	

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## IP Office Server Edition versus Preferred or Advanced Edition

The following table compares the key features of IP Office Server Edition and Preferred or Advanced Edition.

Feature	Preferred/Advanced Edition	Server Edition	Server Edition Comments
Capacity	32 locations	32 locations	
	1000 users total	1000 users total	
	7200 BHCC	14400 BHCC	
SCN/Multi-Site	Free from Star, mesh, chain SCN trunks anywhere SCN trunk channels licensed	Single or double star No additional SCN trunks Unlimited SCN trunk channel licenses	Restricted topology allows many optimizations Other H.323 trunk types still allowed
Administration	Limited centralized (SCN Manager)	Fully centralized (Server Edition Manager)	Consolidated mode for complete centralization.

Feature	Preferred/Advanced Edition	Server Edition	Server Edition Comments
			Non-consolidated mode for per device configuration
Licensing	Individual or distributed	Central pool	All common licenses centralised.
			Some still distributed.
			All administered centrally
User Profile Licenses	Telecommuter	Office Worker	
	Mobile Worker	Power User	
	Office Worker		
	Power User		
O/G Call Routing	Complex, no default assistance	Simplified	Server Edition Manager and default routes allow simpler O/G call routing
I/C Call Routing	Complex, no default assistance	Simplified	Common ICRs allow simpler I/C call routing and resilience
Time	Free form/complex	Simplified by default, can still be freeform	Primary Server acts as solution time server by default
System directory	Free form/complex	Simplified by default, can still be freeform	Primary Server acts as solution directory server by default
Fax transport	IP Office T.38 fax transport	G.711 fax transport	No need to configure codec sets to enforce; G.711 fax transport used automatically
SIP Trunk Direct Media to remote device across SCN	None	Direct media supported to remote H.323 and IP DECT endpoints	Includes SIP Info and RFC 2833 support No in-band DTMF support
Hunt Groups	Freeform	Hunt groups only on primary	Performance optimised for VMPro location (also on Primary)

Feature	Preferred/Advanced Edition	Server Edition	Server Edition Comments
			Automatic resilience when secondary present.
SoftConsole	Up to 4 per IP Office	Up to 10 on Primary only	Overcomes SoftConsole IP connectivity and SCN limitations
Add/remove device	Manual	Integrated through Server Edition Manager	Auto population of Multi-Site links and common configuration
Device Status/connectivity	Not checked	Access and interconnects checked by SE Manager	Immediate indication if device offline or incorrectly networked
IP Office Initial configuration	Manual	Automated with Initial Configuration Utility (ICU)	Remote install technician without IP Office knowledge
Upgrades	Individual	Centralised	All expansion systems upgraded at same time
Backup/restore	Individual per IP Office and per application	Centralised	Security settings not backed up
Voicemail Pro Ports	40	100	Voicemail, recording, Auto attendants
Voicemail Pro TTS Ports	40	40	
Embedded VM/AA	Supported	Not supported	Central VMPro only
Voicemail Pro VRL, VRLA, Visual Basic Scripts, Database access, Web campaign management	Supported on Windows VMPro server	Not supported	Campaigns are supported, but not the web access for management
CCR	Supported	Not supported	
Software distribution	Admin DVD + Apps DVD	Single iso distribution	Non English TTS separate DVDs

## Features

Feature	Preferred/Advanced Edition	Server Edition	Server Edition Comments
Software Only Solution	No	Yes (Controlled introduction at present)	
Single management portal	No	Yes – Web Control on Primary Server	Backup portal on Secondary Server
IP Office DevConenct/SDKs	Supported	Supported as a set of individual IP Office devices	No whole-solution SDK supported at present
Templates	Analogue and SIP trunks only, local to the Manager PC	Line, Extension*, User*, Hunt Group, Time Profile, Firewall Profile, IP Route, Service, Tunnel, ARS.	
		Centrally stored	
		*Multiple creation option	

# Chapter 4: Deployment

## Hardware components

Server Edition Primary is the only hardware component you require:

- You can add Server Edition Secondary server at any time to increase user capacity and for resilience
- The Server Edition Secondary server can be in a local or remote location
- Expand TDM, analog, and digital capabilities with an Server Edition Expansion System (V2)
- The Server Edition Expansion System can be in a local or remote location
- The Server Edition Expansion System adds IP capacity
- You can add a separate Avaya one-X® Portal for IP Office at any time to increase the capacity of Avaya one-X® Portal for IP Office and for higher Server Edition Primary BHCC
- Rest of solution engineering is the same as IP Office Multi-Site Network (SCN) with a star or double star topology

## Example deployments

<b>Centralized IP only</b>  One Server Edition Primary located at the Head Quarters.	<b>Distributed IP only</b>  1. One Server Edition Primary located at the Head Quarters.  2. One Server Edition Secondary located at the remote site.
<b>Centralized IP, Analog, and Digital</b>  1. One Server Edition Primary located at the Head Quarters.  2. One Server Edition Expansion System located at the Head Quarters.	<b>Distributed IP, Analog, and Digital</b>  1. One Server Edition Primary located at the Head Quarters.  2. One Server Edition Expansion System located at the Head Quarters.  3. One Server Edition Expansion System located in each of the remote sites.

## Software-only distribution

Software-only Server Edition (that is, no servers purchased from Avaya) is available to customers only under exceptional circumstances; any exceptions will be approved on a case by case basis. Software-only is enabled by the following Server Edition license and DVD:

Material Code	Description
270722	IPO R8.1+ SERVER EDITION SW-ONLY LIC

## Deployment

Material Code	Description
700503228	IPO R8.1 SERVER EDITION INSTL DVD

# Chapter 5: IP Office Server Edition Solution specification

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## Solution specifications

### IP Office Server Edition

The following table lists the minimum server specifications for the IP Office Server Edition Solution:

Server Option	Large Server	Small Server
Chassis	HP DL360G7 1U	HP DL120G7 1U
Processor	2 x E5620, 2.4GHz	1 x E3-1220, 3.1GHz
Memory (RAM)	12 GB	12 GB
Hard disk drive	2x 300GB, 10K	1x 250GB, 7.5K
RAID	RAID 1	RAID 0 (none)
RAID Controller	P410i	P212, 256 MB
Power Supplies	2x 460W AC	1x 400W AC
NICS	4 Port, Motherboard	2 Port, Motherboard
Optical Drive	1x DVD+/-RW, SATA, INTERNAL	1x DVD+/-RW, SATA, INTERNAL
PCI Type	1-LP X8 PCIe & 1-FL/FH X16 PCIe Riser	1-HL/LP X8 PCIe & 1-FL/FH X16 PCIe Riser

**\* Note:**

You can configure a DL360 as Server Edition Primary, Server Edition Secondary. You can also configure a DL360 as Server Edition Expansion System (L), or a stand alone Avaya one-X<sup>®</sup> Portal for IP Office however, there is no increase in performance or capacity.

You can configure a DL360 as Server Edition Primary, Server Edition Secondary, Server Edition Expansion System, or a stand alone Avaya one-X<sup>®</sup> Portal for IP Office.

The Server Edition Primary and Server Edition Secondary must be on the same platform.

You can also configure an existing IP500 V2 as a Server Edition Expansion System (V2).

## Server Edition Manager

The following are the minimum hardware requirements to install IP Office Server Edition Manager on a personal computer:

- RAM: 4 GB
- Hard Disk free space: 4 GB
- Processor: Core 2 Duo 2.3 G Hz

### Note:

If not installed, the system installs additional application such as .NET2, with the IP Office Server Edition Manager.

### Related topics:

[Operating system support](#) on page 40

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## Operating system support

### Server support

The following server operating systems support IP Office Server Edition Manager:

- Windows Server 2003 (32 bit only)
- Windows Server 2008 Service Pack 2 (32 and 64 bit )

### Client support

The following client operating systems support IP Office Server Edition Manager:

- Windows Vista Enterprise Service Pack 2 (32 and 64 bit)
- Windows XP Professional Service Pack 3 (32 bit only)
- Windows 7 (32 and 64 bit)



# Chapter 6: Capacities and scalability

IP Office Server Edition Solution supports a maximum of 1000 users or extensions.

The following table lists the performance and capacity requirements when IP Office Server Edition Solution is deployed on an appropriate platform as defined in the *Reference Configuration* guide.

Feature	Capacity	Comments
<b>Users</b>		
Maximum Solution Users	1000 over whole solution	'NoUser' and RAS Users not counted
Maximum Users per Server/ Expansion	500/250 per Primary 500 per Secondary 500 per Linux Expansion 384 per IP500 V2 Expansion	Each Server Edition Primary can support up to 500 (250 for small server when one-X Portal active on that server) 'NoUser' and RAS Users not counted Total users throughout Server Edition cannot exceed 1000
<b>Extensions</b>		
Total Extensions	1000 over whole solution	Each Server Edition Primary can support up to 500 (250 for small server when one-X Portal active on that server) Each Server Edition Secondary or Server Edition Expansion System (L) can support up to 500 Each Server Edition Expansion System (V2) can support up to 384
<b>Multi-Site Network</b>		
Maximum devices	32	2 Core Servers
		30 Expansion systems
		Separate one-X Portal Server not counted as a device
<b>Trunks</b>		
Registered SIP Trunks	4250	Each Server can support up to 250 (small server 125)

Feature	Capacity	Comments
		Each Server Edition Expansion System (V2) can support up to 125
		Each Server Edition Expansion System (L) can support up to 125
Maximum possible active SIP Trunk channels	4352	Theoretical maximum only - in practice other device, system or network capacity constraints will degrade this figure
		Each server can support up to 256** (small server 128)
		Each Server Edition Expansion System (L) can support up to 128**
		Each Server Edition Expansion System (V2) can support up to 120**
		**Figures for indirect media.
		Direct media via SIP trunk supported in Server Edition R8.1 with following restrictions: DTMF support RFC2833 or INFO, trunk setting must match SIP endpoint setting. SIP, Avaya H.323 and IP DECT endpoint types
<b>Call Processing</b>		
DL360 Server call capacity (BHCC)	14400 with no one-X Portal users active	Primary and Secondary: 500 H.323 users/extensions, 1000 total users/extension, 100 active VM channels, 128 active conference channels, 200 logged in one-X Portal users, G.711 codec
	7200 with one-X Portal users active	Performance with SIP extensions may be lower
DL120 Server call capacity (BHCC)	10800 with no one-X Portal users active	Primary and Secondary: 250 H.323 users/extensions, 1000 total users/extension, 40 active VM channels, 128 active conference channels, 100 logged in one-X Portal users, G.711 codec

Feature	Capacity	Comments
	7200 with one-X Portal users active	Server Edition Expansion System: 250 H.323 users/extensions, 128 active conference channels, G.711 codec
		Performance with SIP extensions may be lower
IP500 V2 Expansion call capacity (BHCC)	7200	384 H.323 users/extensions, 128 active conference channels, G.711 codec
		Performance with Digital extensions may be higher
		Performance with SIP extensions may be lower
Overall call capacity (BHCC)	14400/7200	2 Servers, 32 Expansions, 1000 H.323 users/extensions, 128 active conference channels, 200/100 logged in one-X Portal users, G.711 codec .
		The overall solution call capacity is determined by a variety of external factors including the solution construct and network performance
Concurrent VoIP calls: direct media	1000	Note there are some IP Office networking constraints to achieve direct media
Concurrent VoIP calls: non direct media	256 per Server (small server 128)	
	128 per Linux Expansion	
	120 per V2 Expansion (VCM)	
	60 per V2 Expansion (RTP relay)	
	4352 maximum	Theoretical maximum only - in practice other device, system or network capacity constraints will degrade this figure
VCM/transcoding channels	256 each Server (small server 128)	Specified capacity is for G.711 a-Law/mu-Law
	128 each Server Edition Expansion System (L)	The codecs used have an effect on performance and capacity

Feature	Capacity	Comments
	148 Server Edition Expansion System (V2)	Two channels are required per call
	4352 maximum	Theoretical maximum only - in practice other device, system or network capacity constraints will degrade this figure
Maximum Hunt Groups	200	All hunt groups based on Primary
Hunt Group size	500 users	Maximum users in a single hunt group
Total Hunt Group members	2000 users	2000 members spread over up to 200 hunt groups with a single hunt group not exceeding 500
<b>Conferencing</b>		
Conference channels	4096	Each Server and Expansion can support up to 128
		Both ad-hoc and meet-me
		No dynamic allocation supported, only static via call flows
Conference size	64	Both ad-hoc and meet-me
Recording channels	100	
Paging group size	64	
<b>Messaging</b>		
Mailboxes	1000	
Voicemail/ Auto Attendants channels	100 (small server 40)	
Message store capacity	1000 hrs	Storage @ 1MB per minute
TTS Channels	40	
Voicemail Email – IMAP/SMTP/ MAPI	1000 users	SMTP Voicemail forwarding to email
		MAPI Voicemail forwarding to Exchange Server
		IMAP server
Exchange Integration – MAPI	490 users	Microsoft Exchange Server two-way integration
<b>Productivity</b>		

Feature	Capacity	Comments
One-X Portal active clients	100, 200 or 500	200 when one-X Portal based on the Primary Server (small server 100)
		500 when one-X Portal based on a separate server
		Lower Primary server call processing capacity (BHCC) will apply when one-X Portal users are active
<b>Resilience</b>		
Server backup extension/users capacity	500 or 250	Avaya 16xx/96xx H.323 phones only Each Primary/Secondary Server can support up to 500 (small server 250) in addition to their normal capacity
		Server Edition Expansion System (V2) and Server Edition Expansion System (L) do not support host user/extension backup operation
Single phone failover time	2-3 minutes	Typically just over 2 minutes No connection preservation – voice path may be lost immediately
Complete server failover time	Less than 10 minutes	500 extensions/users, voicemail, and hunt groups with 500 extensions/users already on Secondary Server
<b>Directory</b>		
System directory capacity	5000 entries	Over complete solution. Up to 2500 from configuration, 5000 from LDAP, 5000 from HTTP import
Personal directory capacity	100 per user	Total 10800 per device



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