

VCX Connect and VCX V7000 Unified Communications Series

VCX Release 9.5 Highlights

Technical Solution Brief

HP Networking Technical Marketing Engineering

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Introduction

This Technical Solution Brief (TSB) describes the highlights of the Hewlett-Packard (HP) VCX Connect Unified Communications Series and VCX V7000 Unified Communications Series release 9.5. The intended audience for this TSB is HP Solution Architects and HP Technical Consultants.

Value Proposition

The VCX is part of HP's E-Series networking family targeted at mid-market customers who are seeking **essential**, proven technology that's affordable and easy to use while providing scalability for future growth. The VCX is ideal for small to medium businesses with a single site or multiple sites and larger enterprises with distributed communications needs.

The VCX is a pure IP-PBX enterprise-class solution whose features and functionality are common from low end to high end and from core to branch. VCX runs as an appliance on a Linux operating system with additional security, and its architecture is designed for reliability, flexibility, and scalability. The VCX provides a compelling IP communications solution for enterprises of all sizes, from small single sites to those with locations that require centralized administration and full feature survivability. There are two VCX products: VCX Connect Unified Communications Series for simpler deployments and VCX V7000 Unified Communications Series for larger, more complex deployments.

The VCX is a comprehensive IP unified communications platform with a software based approach that enables voice as an application. VCX applications run under a Linux operating system on commercial off the shelf (COTS) HP DL servers and modular controllers that are integrated with HP's A-Series Multi Service Router Series (MSR) family of routers.



The VCX has been providing IP PBX and unified messaging services for businesses and institutions of all kinds since 2003, and was built from the ground up using SIP. With its use of end-to-end SIP signaling, the VCX provides a uniform protocol used by all the communications gear, which helps to lower costs through simpler maintenance and simpler integration.

SIP also provides the ability to integrate with other applications that provide additional value:

- Desktop Communicator provides a soft phone that allows click-to-dial, multi-party audio and video conferencing (no external MCU required plus supports HD quality video), presence, integration with MSN Messenger, T.140 chat capabilities, file transfer, plus an Outlook Edition that features a Microsoft Outlook plugin (Journal, Contacts, and click-to-call capabilities) and desktop call recording
- V7000 IP Conferencing Series provides a full-featured in-house conferencing solution
- IP Telecommuter Module Series allows users to work from home using VCX IP Phones
- IP Contact Centers for small to large and simple to complex environments

Some highlights of the VCX include:

- Based on open standards and end-to-end SIP signaling
- Provides centralized administration access for a distributed IP Telephony network
- Flexible architecture with strong resiliency characteristics
- Full feature survivability at remote sites
- New 350x series of IP phones
- Desktop Communicator and Desktop Communicator Outlook Edition
- Ease of Use with web based administration and user interfaces
- Single pane unified management with IMC and Voice Service Manager
- Provides strong unified messaging services like Find Me Follow Me, Fax To Email, Email Auto Delivery, Email Synchronization, and Fax Server
- Collaboration with Microsoft Active Directory and Exchange/Outlook
- Collaboration with Domino/Notes and Sametime
- Integration with HP A-Series Multi Service Router (MSR) family for use as a VCX media gateway, VCX Connect Unified Communications Series solution, or VCX V7000 Unified Communications Series Branch Office

The VCX helps enable cost savings through:

- A standards based converged voice/data network
- Simplicity and flexibility using end-to-end Session Initiation Protocol (SIP)
- Integrated network and voice services on a single box with VCX on MSR
- Reduce administration time and effort with features like LDAP Synchronization
- Control of telephony costs with features like Forced Account Codes
- Monitor telephony usage with centralized Call Detail Reporting
- Single pane network management with IMC Voice Service Manager

With VCX, increased productivity and customer satisfaction that comes with:

- Ability to integrate with business and desktop applications
- Ability to communicate in today's multi-media environment

The VCX can be deployed as a centralized system with co-located or geographically separated redundancy, or it can be deployed as a distributed system with centralized administration using servers located at branch offices that have redundancy to a central server across the WAN (such as with VCX V7000 Unified Communications Series products) or as independent VCX systems part of an enterprise-wide multi-region system (such as with VCX Connect Unified Communications Series solutions).

One of the key advantages of using an MSR is the ability to integrate and migrate according to the customer's needs. For example, at remote offices you can start with a MSR as a media gateway mixing analog and digital interfaces on a single chassis. The routing/security/switching capabilities of the MSR are always there to replace existing infrastructure or for green field deployments. Finally, use the MSR as a Branch Office controller to an existing VCX V7000 Regional Office by adding the VCX V7000 Branch MIM along with the application server RTU

license – or by deploying a standalone, redundant, or Multi Region VCX Connect MIM on MSR solution.

The Desktop Communicator provides soft phone functionality with high quality video, chat, conference, and other functions. The Desktop Communicator Outlook Edition adds Outlook Contact and Journal integration along with click to conference, desktop call recording, and click to call from within Outlook.

VCX Connect Unified Communications Series

- IP Telephony and IP Messaging applications on a Linux appliance
 - Redundancy is optional
- VCX Connect Unified Communications MIM on MSR Series runs on an HP A-Series Multi Service Router (MSR) module
 - Up to 100 devices/mailboxes per region
 - Up to 12 regions and up to 600 devices/mailboxes enterprise-wide
- VCX Connect 200 Unified Communications Series runs on an HP DL120G6 server
 - Up to 500 devices/mailboxes per region
 - Up to 12 regions and up to 3,000 devices/mailboxes enterprise-wide



VCX V7000 Unified Communications Series

- IP Telephony and IP Messaging applications on a Linux appliance
 - Redundancy is mandatory, providing continuity for your voice applications when disaster strikes or network failures occur
- Uses V7005 Unified Communications servers (HP DL120G6) or V7205 Unified Communications servers (HP DL360G6) at HQ
- VCX V7000 Branch Office solution provides full feature survivability, centralized administration, and IP Telephony redundancy across the WAN to HQ with the same feature set as HQ
 - Branch office locations use VCX V7000 Branch MIM on MSR Series or HP DL120G6/360G6 (V7005/V7205) servers

There are two VCX V7000 configurations that can be implemented in a region:

- VCX V7000 Classic configuration
 - Two server redundant solution at HQ
 - Up to 2,500 devices/mailboxes per region and up to 10 branch offices per region using V7005 Unified Communications servers, with up to 12 regions
 - Up to 5,000 devices/mailboxes per region and up to 20 branch offices per region using V7205 Unified Communications servers, with up to 12 regions
- VCX V7000 Expand configuration
 - Intended for highly distributed solutions
 - Up to 10,000 devices/mailboxes per region and up to 50 branch offices per region using V7005 Unified Communications servers, with up to 12 regions
 - Up to 20,000 devices/mailboxes per region and up to 75 branch offices per region using V7205 Unified Communications servers, with up to 12 regions



VCX Highlights

MSR for VCX

The HP A-Series Multi Service Router Series (MSR) provides a modular platform for the deployment of analog and/or digital voice access modules that perform media gateway functionality for the VCX. The MSR provides connectivity to standalone and redundant VCX configurations while providing Remote (PSTN) Survivability when primary and/or secondary VCX servers are not available.

- MSR 20 and 30 series can be deployed as standalone media gateways for VCX solutions
- Provides modular chassis for voice SIC and MIM modules
 - Analog FXO and FXS
 - Digital T1, E1, and BRI
 - Smart Interface Card (SIC)
 - Multi-function Interface Module (MIM)
 - Not available on MSR 20-xx models
- Voice functionality:
 - Number match, regular expressions, substitutions
 - Fax and modem settings
 - One to one FXO to FXS mapping
 - Remote (PSTN) Survivability
- There are different MSR 30-xx models that provide various capacity and scalability of analog and digital modules
- Plus can use switching, routing, and security functions of MSR
 - Comware 5.2 is common switch/router operating system



In addition to the media gateway functionality, the HP A-Series Multi Service Router Series (MSR) also provides an Open Application Architecture (OAA) platform for the deployment of VCX IP Telephony and IP Messaging services for VCX Connect Unified Communications Series and VCX V7000 Unified Communications Series. The MSR models 30-16, 30-20, 30-40, and 30-60 can be used as a VCX Connect Primary and/or Secondary within a VCX Connect solution or as a VCX V7000 Branch MIM within a VCX V7000 solution.

A VCX MIM runs on an Open Application Platform Support (OAPS) blade that is available on MSR 30-xx models. The MSR provides a modular platform to integrate VCX IP Telephony and IP Messaging services and VCX media gateway components, including analog (FXO and FXS) and digital (T1, E1, and BRI) modules. The VCX MIM uses an Intel Celeron 600 Mhz processor, has a 160GB disk, and can support up to 100 devices and 100 mailboxes per VCX MIM.



New 350x IP Phone Series for VCX

In the VCX 9.5 release, the VCX supports new 350x IP Phone Series which provide color backlit displays, gigabit Ethernet connectivity, icon and text driven menus, along with power saving options.

- Brand new, contemporary look and feel with large, backlit displays
- Green initiative – backlit power save mode and deep sleep mode
- Headset port and full duplex speaker phone on all models
- End user customizable digital soft labels
- High resolution color executive phone
- Gigabit interfaces
- Icon and text driven menus
- Linux operating system



Commitment to the Environment:

- Administrator configurable energy save options
- First Energy Save Option
 - Screen save mode
- Second Energy Save Option
 - Power save mode
 - MWI LED flashes intermittently to signal keep alive
 - Up to 50% less power consumption than active mode
- Options available on all 350x Series Phones
- Energy Star 2.0 rated AC Power Adapters

Attendant Console

- 3105 Attendant Console is compatible with both 350x and 310x IP Phones

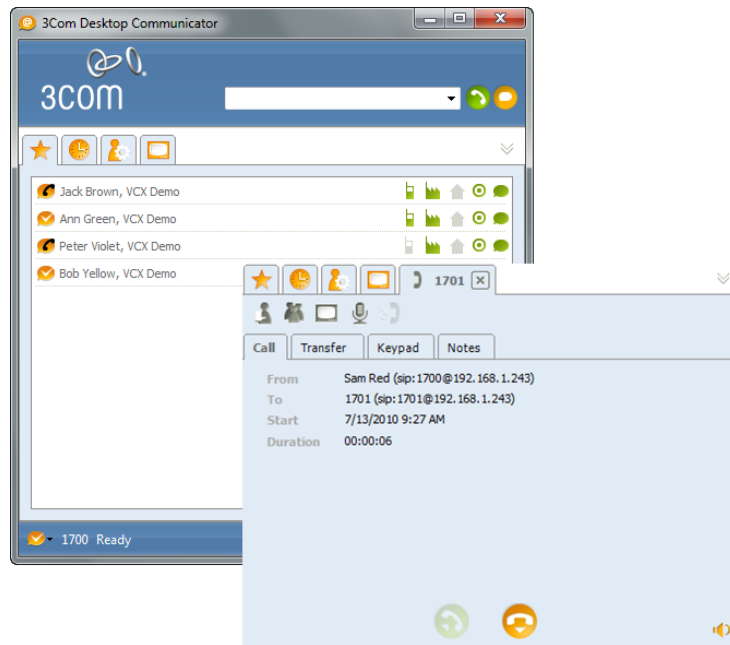
Licensing

- 3503 and 3502 IP Phones require VCX Business License
- 3501, 3500, and 3500B require VCX Basic License
- VCX 7.1 or older IP Phone licenses (Standard or Basic) will continue to work for the 350x IP Phones once the system is properly upgraded to 9.5 (and has the 9.x RTU licenses)

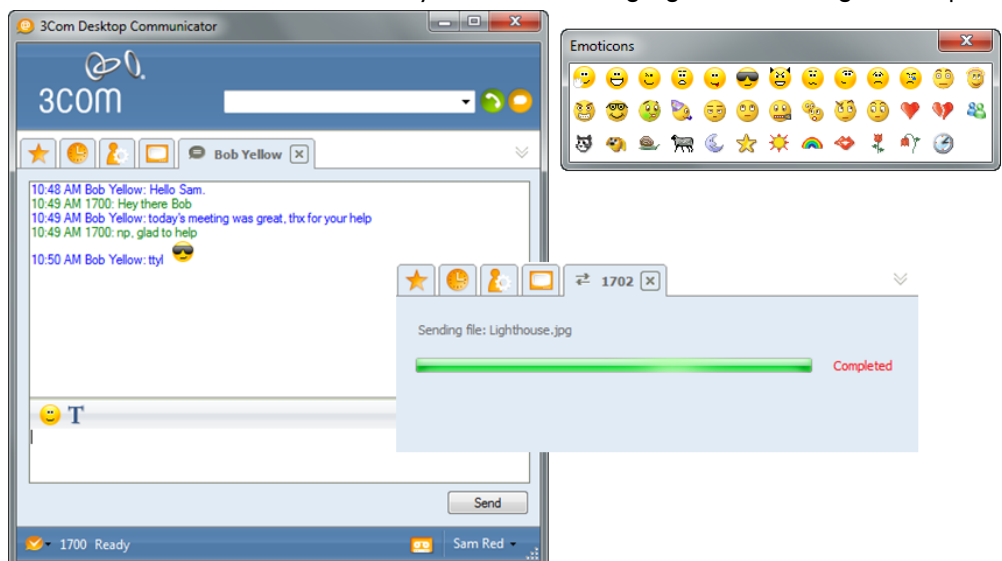
Desktop Communicator

The Desktop Communicator is a soft phone solution that provides collaborative multi-media functions such as video conferencing, text messaging, and the ability to create and use PBX feature codes. VCX users with Business or Basic IP Phone licenses are entitled to use the Desktop Communicator free of charge. The software is ready for installation on any standard Windows XP, Vista, and 32-bit/64-bit Windows 7 PC workstation or notebook.

- Soft Phone with full telephony controls
 - Hold, Transfer, Conference, Mute, Redial, VCX feature codes
- Native multi-party audio and desktop video conferencing
 - Native 6 party audio conferencing and 4 party video conferencing
- Presence directly to VCX Call Processor



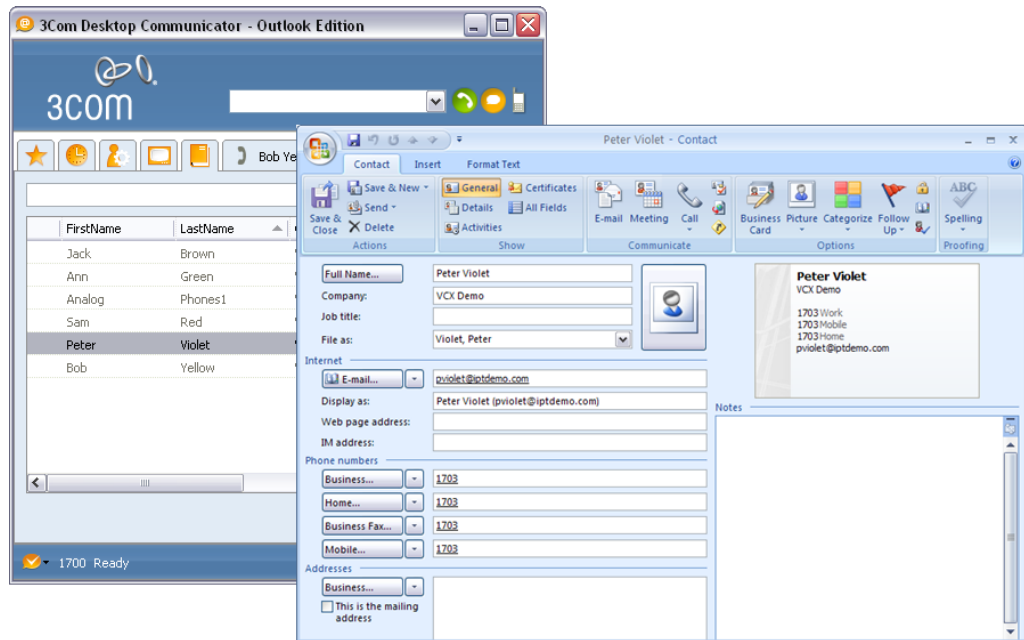
- Instant Messaging capabilities
 - Chat using T.140 text messaging and emoticons
- File Transfer capabilities
 - Send and receive files from your contacts using right-click or drag-and-drop



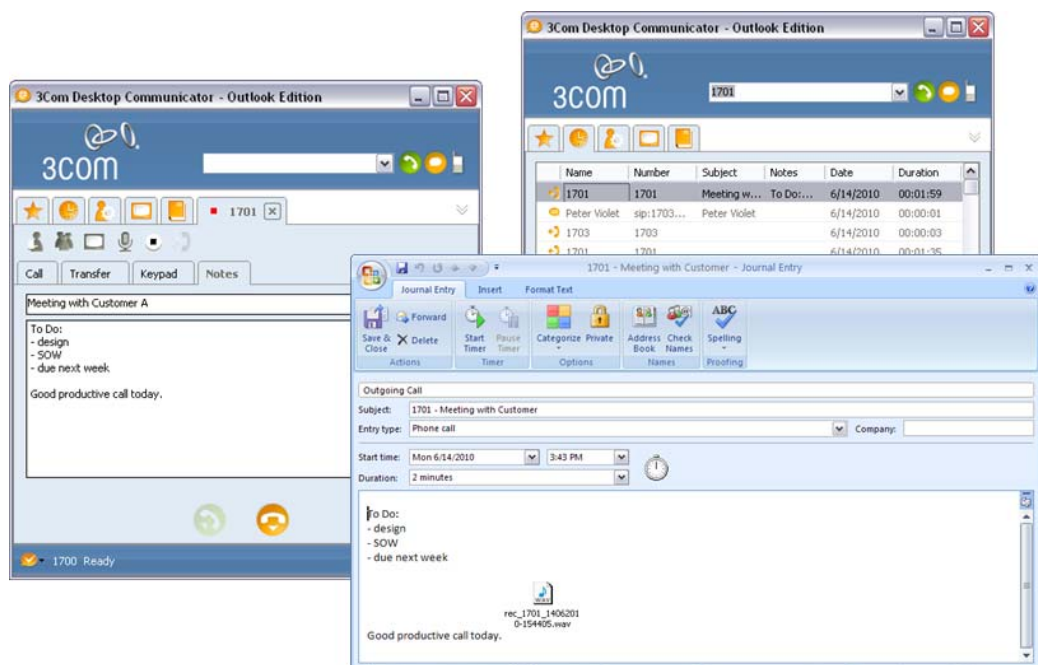
Desktop Communicator Outlook Edition

With the Outlook Edition, users can have direct access to any Microsoft Outlook contacts and their Microsoft Windows Live Messenger buddy list, in addition to taking notes and call recording via the soft phone with integration with Outlook Journal.

- Load Outlook Contacts, send email from soft phone
- MS Messenger support
- Upgrade licenses available

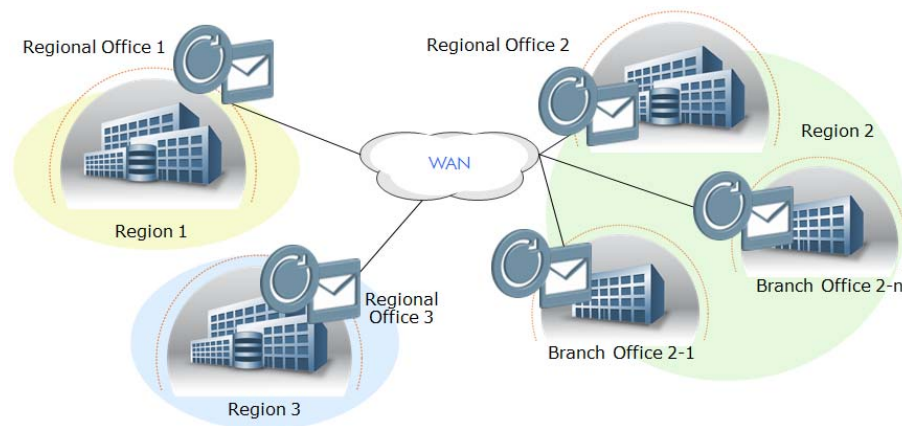


- Integrated desktop call recording
- Notes and recordings in Outlook Journal
- Click to Call from Contacts/Inbox



Multi Site Architecture

The VCX architecture allows multiple VCX systems to be connected together, linked by a global directory and global voice mail, providing centralized administration access to each VCX system and the look and feel of a single system to users. This VCX “Multi Region” design is used in both VCX Connect and VCX V7000 deployments.



- Easily link VCX V7000 platforms together to scale your IP-PBX network
- Provides look and feel of a single system to users while providing centralized administration access
- Up to 12 VCX systems can be connected together
- VCX Multi Region deployments must be homogenous (all VCX Connect or all VCX V7000)

A VCX “Multi Region” configuration is multiple independent VCX systems connected together. A VCX Multi Region configuration allows you to scale up by organizing users into VCX regions (systems) while preserving the look and feel of one system by using the Global Directory and optional Global Voice Mail features. This can be very advantageous when having local administration control over a particular “region” is important, but just as important as being able to lookup and seamlessly dial users in other regions. Also, each VCX system provides full feature survivability for users at the VCX server locations in addition to server and application redundancy.

Through the global directory, a VCX Multi Region configuration provides multi-site dialing, multi-site telephony features such as hunt groups and ACD groups, and multi-site voice mail features such as global name announcements and global message sending.

VCX Connect Multi Region deployments allow our customers to link multiple small-to-medium locations together, each with the same full feature survivability, administered and managed centrally from web provisioning interfaces and Intelligent Management Center. Businesses that have a group of similar sized locations where each location requires their own IP PBX, but the overall organization requires central administration and management, are good candidates for VCX Connect.

VCX V7000 deployments also allow Multi Region configurations along with the concept of a Branch Office. A VCX Branch Office server provides redundancy across the WAN to the HQ VCX, and provides centralized administration. Also, since the VCX V7000 solution can scale into the thousands of users with a single set of redundant HQ servers, the Multi Region configuration is used to scale up dramatically (refer to the example in the VCX V7000 Solutions section of this document).

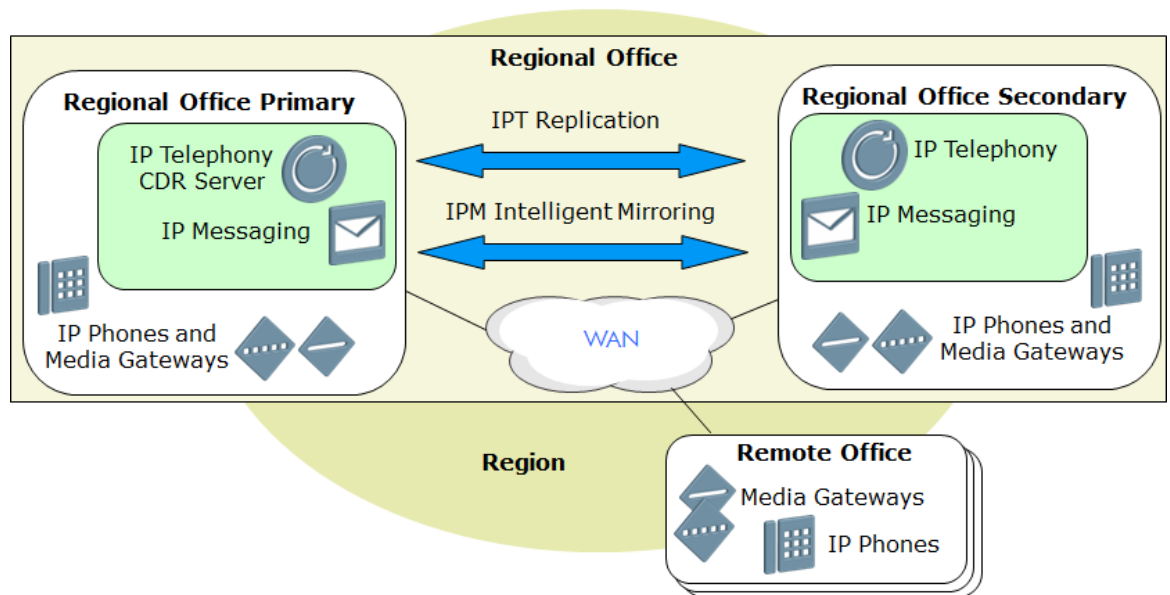
Resiliency

The VCX can be architected in a fully redundant fashion to help reduce the risk of “total system failure”. Call control and messaging servers will failover gracefully to backup servers. When the primary server is restored to service, which can be done automatically based on the nature of the failure, control will pass gracefully back to the primary server. In the case of messaging, after automatic recovery of a failed IP Messaging server, the Intelligent Mirroring feature automatically re-synchronizes the two messaging servers.

The VCX provides a primary/secondary non-load balancing IP Telephony redundancy design that replicates administration data in near-real-time. IP Phones and media gateways point to both the primary and secondary servers. The servers can be deployed either co-located on the same LAN or geographically separated over the WAN.

There is no load balancing of IP Telephony users, which means that regardless of location or proximity to the secondary server, all phones and gateways are configured with the primary server as primary and the secondary server as secondary. Because the audio/video traffic does not go through the VCX Call Processor this has no effect on existing calls for a server failure.

On the other hand, IP Messaging does support load balancing of mailboxes and auto attendants. In cases with geographical redundancy it is supported (desired by customers) to have the phones at the secondary location be configured with the secondary server as primary IPM and the primary server as secondary IPM. This allows customers to minimize the impact of WAN voice mail traffic in the event of a server failure.



In the event of a failure of the primary VCX call processor, the IP phones and media gateways in the solution will direct traffic to the secondary VCX call processor automatically. IP phones and media gateways will automatically re-connect with the primary VCX call processor when it is accessible and available. In the event when neither the primary or secondary VCX call processor is available, the VCX solution supports PSTN survivability for inbound calls to an IP phone and outbound calls to PSTN from any IP phone configured via DHCP.

Redundancy is optional with VCX Connect and is mandatory with VCX V7000.

Full Survivability at Branch Offices

The VCX V7000 supports the concept of a Branch Office, which is a VCX server deployed at a remote site that is the primary server for the local users. The VCX Branch Office server is also tied redundantly back to the VCX primary server at the HQ location, which provides secondary IP Telephony services if the Branch Office server becomes unavailable for any reason to the users at the Branch Office. In addition, the VCX Branch Office server can be administered locally at the Branch Office or centrally via the VCX HQ system.

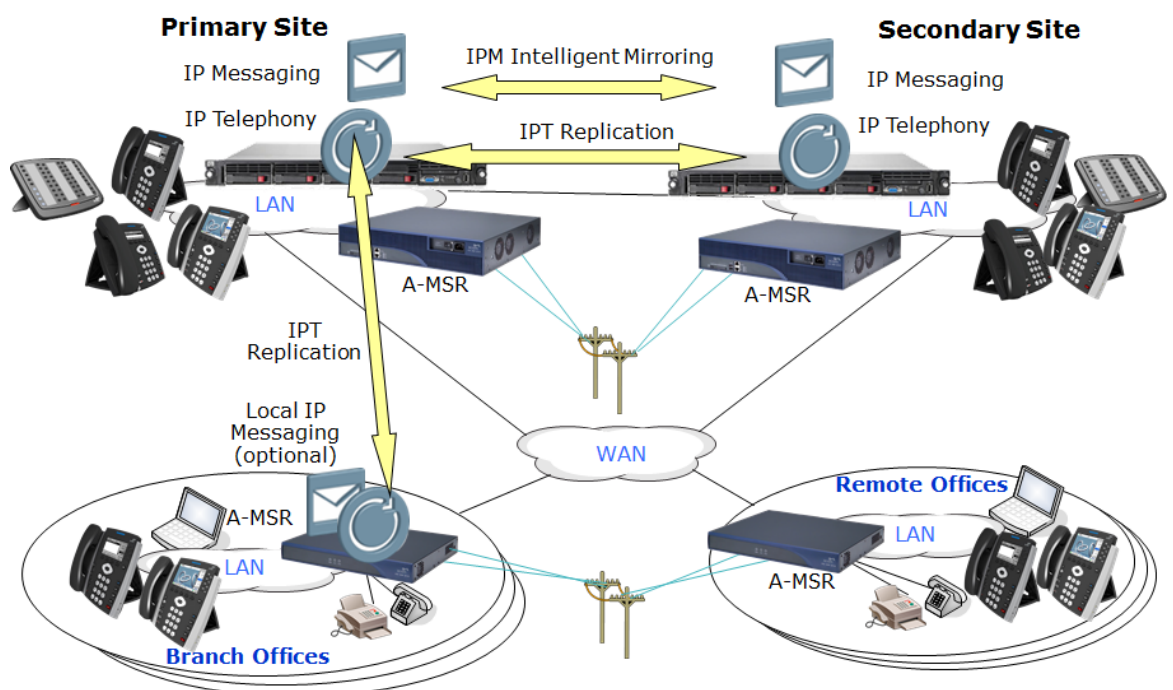
In the event of a WAN failure, a branch office VCX call processor provides full feature transparency and functionality as the region, and is equipped to enable local and long distance PSTN calls. In the event of a failure of the local VCX call processor, local IP phones and gateways automatically register with its secondary call processor located at the regional office.

IP Messaging services can be deployed locally to the Branch Office or centrally at the VCX HQ servers. The central solution provides redundant IP Messaging services for users at the Branch Office, and is used typically when there is plenty of WAN bandwidth and good quality of service. The local solution provides non-redundant IP Messaging services for users at the Branch Office, and is used typically when WAN bandwidth/quality of service is low and when the customer needs to have the voice mail, auto attendants, music on hold, etc. locally.

A VCX Region and Branch configuration is used for VCX V7000 deployments that meet these basic criteria:

- Full feature survivability is required at one or more VCX Remote Offices
 - This requirement turns these locations into VCX “Branch Offices”
- Need centralized administration of Branch Office locations
- Need redundancy of IP Telephony services at Branch Office locations
- WAN limitations necessitate a distributed system of IP Telephony and/or IP Messaging services together with centralized administration

The VCX Region and Branch configuration supports both single region and multi region configurations. The diagram below illustrates a single region “Region and Branch” VCX configuration.



IP Telephony Features

The VCX is a comprehensive IP Communications solution, with a robust feature set and easy to use interfaces. VCX features can be used by pressing programmable buttons on VCX IP phones, selecting from a menu on an IP phone, entering a feature code on an IP phone, entering a feature access code on analog phones, or from the Desktop Communicator PBX Features tab. Users can view their telephony feature configuration using the VCX web-based user interface.

There is no additional charge for enabling features on the VCX, they are all available based on dial plan, class of service, type of service, button mappings, phone profile, and individual phone configurations. To use features, users must have a valid VCX IP phone license based on their phone type and ACD agents must have VCX ACD Agent license.

Examples of VCX IP Telephony features include:

- Built-in Hunt Groups
 - VCX IP Telephony supports hunt groups native to the platform. Supports linear, circular, and calling group types.
 - Up to 75 members can be logged into a hunt group, and there can be up to 150 hunt groups per site.
- Built-in ACD Groups
 - With a foundation built upon native VCX Hunt Groups, optional VCX ACD Groups provide additional functionality with more distribution algorithms, delayed announcements with in-queue DTMF control, closed announcements, agent wrap-up time with extensions and over-ride, position-in-queue messages with estimated waiting time, define open and closed times, define multiple shifts per ACD Group, and view real time desktop statistics.
 - Each VCX user that answers calls from an ACD Group must have a VCX ACD Agent license.
 - Up to 75 members can be logged into an ACD group, and there can be up to 150 ACD groups per site.
- Forced Account Codes
 - VCX supports the ability for users to enter Forced Account Codes (FAC) to access dialing privileges. Forced account codes (FAC) are special digit sequences of 2-16 digits that are used to control external calls.
 - Forced account codes enforce and regulate the types of calls users can place based on the associated Class of Service.
 - FAC's can be flagged as roaming, which allows them to be used at any call processor in the system.
- Customer Accounting and Billing Codes
 - VCX IP Telephony supports the ability for users to enter Customer Accounting and Billing Codes (CABC), giving them the ability to manage client calls based on codes.
 - CABC's can be flagged as roaming, which allows them to be used at any call processor in the system.
- Built-in Six Party Conferencing
 - Phone users can create conference calls that include up to 6 participants (including initiator) without an external conference server.
 - Supports up to five 6 party conferences per call processor.
- Hot Desking
 - Ability for the user to login in from any IP terminal anywhere in the network and get the same feature set as his primary phone.
 - A user who is visiting a branch office or regional office in a multi site VCX system can log in, using their home site extension to a phone located at the remote branch or regional office.

Unified Messaging Features

As an integral component of the VCX, the IP Messaging application helps to reduce costs by replacing proprietary voice mail equipment with a network server-based solution and centralizing administration of the application. By providing centralized applications and key features that enhance contact with employees and customers, the IP Messaging application also helps to increase user productivity.

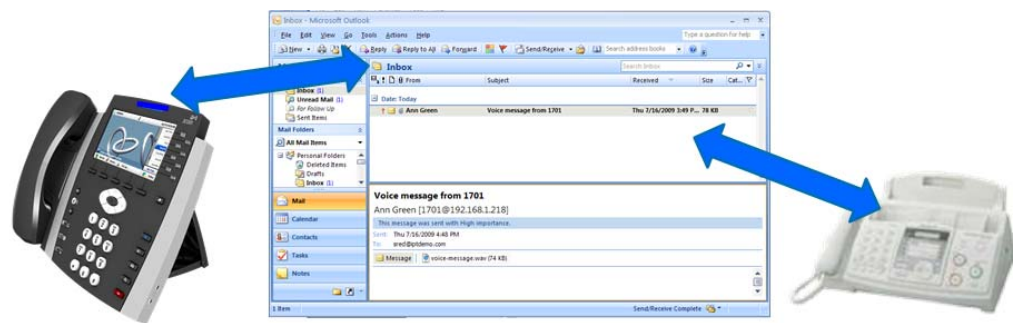
The IP Messaging application has several key differentiators for enterprises looking for a robust, centralized IP messaging system; including:

- All-IP SIP based solution
- Full-featured voice messaging and unified communications
- Advantages of centralized administration and global user directory
- Inter-operability with legacy PBX's
- High availability with geographically dispersed redundancy
- Scalability at all levels

The IP Messaging application supports two types of email integration: auto-delivery and synchronization. With auto-delivery, IP Messaging uses SMTP to automatically deliver new voice and/or fax messages to an email account, where the voice messages are .wav attachments and the fax messages are .tif (default) or .pdf (on a system-wide basis) attachments. The messages can be automatically deleted from the mailbox or left as new, and you can only deliver urgent messages if needed.

With email synchronization, the IP Messaging application uses POP3 or IMAP4 API protocols to synchronize the voice/fax messages between the user's email account and the mailbox, including message waiting indicator, using a periodic polling method (poll interval configurable on a per-mailbox basis). With the Unified Inbox feature, the IP Messaging application takes advantage of the Domino API to increase scalability using an event-driven API.

Modernize the way faxes are received forwarding incoming fax calls to an IP Messaging mailbox, where the fax can be auto-delivered to a fax, a network printer, or an email account. Fax messages can be sent to an email account as a TIF or PDF attachment. In addition, IP Messaging works as a fax server, which sends electronic faxes to specified fax machines through voice gateways and the PSTN. Up to 20 fax destinations can be specified in one email and IP Messaging sends a return receipt message for each destination indicating success or failure.



IP Messaging supports other features like distribution lists, group mailboxes, auto attendants, voice forms, and a native Find Me Follow Me feature (no additional charge). The Find Me Follow Me features allow you to define multiple numbers where you can be reached at, which the system automatically attempts when callers reach your Find Me Follow Me enabled mailbox.

Ease of Use System Administration

VCX administrators use web provisioning screens to complete moves, adds, and changes. System administration can be done through HTTP/HTTPS between the web client and web server or by directly accessing the system through secure shell (SSH). Access to telnet is disabled by default by the VCX solution, so it cannot be used to access any VCX server.

- Main web page provides easy access to IP Telephony, IP Messaging, and system administration
 - Also provides links for documentation and licensing information
- Web based user interface
 - Online help is available via the administrative web screens
- Multiple languages for:
 - System administration web interface
 - User web interface
 - Phone display
 - Voice mail prompts

System administration is performed through web browsers (i.e. firefox or Internet Explorer) on a PC or laptop that is connected to the corporate network. A single workstation can administer multiple remote sites. Multiple administrators can be created with different permissions. Administrators must have username/password access to the system before reviewing settings or making changes. Additionally, using VCX's web provisioning service, which is included with the VCX, changes to a single database (for subscriber information, dial plans, etc) are automatically synchronized to a secondary server or branch office server (where applicable).



English-US GO

3Com® VCX™ Connect Networked Telephony Solution

These interfaces will help you configure system and user settings.

- [VCX System Administration](#)
- [VCX IP Messaging Administration](#)
- [VCX Central Management](#)
- [VCX User Interface](#)

Website Links:

- [VCX Documentation Web Page](#)
- [VCX Licensing Web Page](#)

For more information click [Help](#)

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The screenshot shows a web browser window displaying the 3Com VCX Connect interface. The page has a blue header with the 3Com logo on the left and a language dropdown set to "English-US" with a "GO" button on the right. The main heading reads "3Com® VCX™ Connect Networked Telephony Solution". Below this is a white box containing a list of links for system and user settings, followed by website links for documentation and licensing, and a "Help" link. A copyright notice is at the bottom of the page.

LDAP Synchronization

VCX supports the ability to perform one-way synchronization from an LDAP server to the VCX using the LDAP protocol. VCX supports Domino, Active Directory, and OpenLDAP servers using this method. VCX supports the initial bulk load of users and phones from the LDAP server, and synchronization of user adds, changes, and deletes from the LDAP server.

LDAP Synchronization supports these LDAP Servers:

- IBM Domino on IBM System i/Power Systems i5/IBM i
- IBM Domino on Windows 2003/2008
- Microsoft Active Directory on Windows 2003/2008
- OpenLDAP on Linux

Administrators can use LDAP Synchronization for one or both of these activities:

- One time activity as part of first time provision of user accounts
- Periodic automatic synchronization of LDAP server additions, changes, or deletions from the LDAP server to VCX using a configurable interval



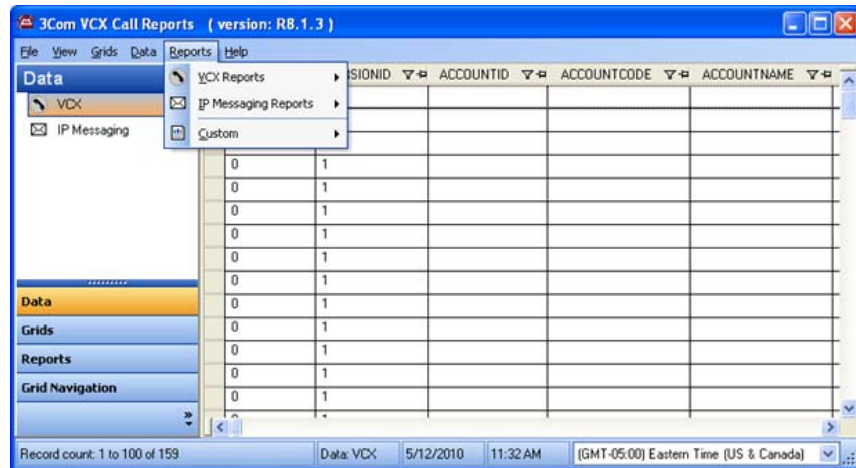
VCX LDAP Synchronization supports these LDAP user objects:

- InetOrgUser
 - Used with IBM Domino and OpenLDAP directories
 - Uses "uid" LDAP attribute
- User
 - Used with Microsoft Active Directory
 - Uses "sMAccountName" LDAP attribute

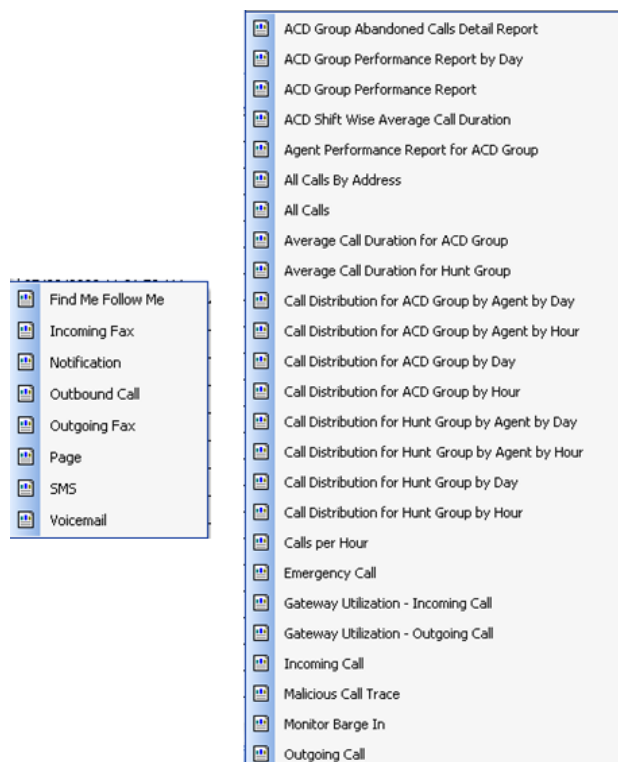
Reporting Applications

The VCX IP Telephony solution includes components that are responsible for accounting and Call Detail Record (CDR) functionality. CDRs contain call specific information that is used for billing, monitoring and analyzing traffic, and troubleshooting call failures.

The VCX Call Detail Record Reporting application is available for customers to obtain canned and customizable reports based on VCX CDR data. The VCX CDR Reporting application is a Windows-based (Windows XP, Vista, and Windows 7 32-bit) application that administrators use to analyze call reports based on extensions, destinations, and messages. The VCX CDR Reporting application is used on customer-provided PC equipment.



The CDR Reporting tool aggregates information from the billing support services and generates pre-canned reports. The VCX CDR Reporting application provides a modern GUI look and feel with advanced data viewing, sorting, and searching functions. This application retrieves CDR data directly from the VCX IP Telephony Call Record Service and the IP Messaging CDR Service using secure FTP on an on-demand or automatic basis.



Management with IMC VSM

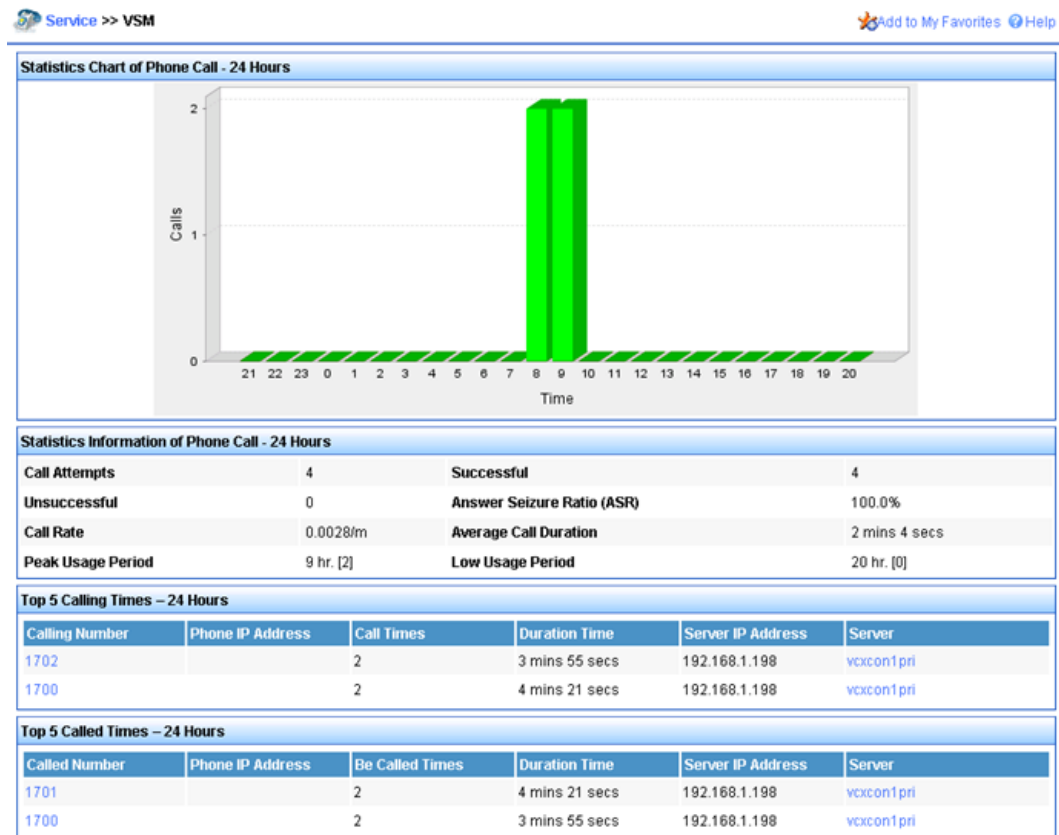
The VCX supports centralized management of the system using SNMP v2 and v3 to provide access for authorized stations to view, monitor, query, report, and configure VCX system components.

One of the advantages of a VCX solution is the integration of management with the help of the Intelligent Management Center (IMC) product. IMC provides single pane and unified management of the entire network, including switches, routers, wireless, security, and voice equipment.

The IMC is a modular solution with different components available based on the customer's needs. The IMC uses the Voice Service Manager (VSM) to provide management of the VCX system. Use the optional Intelligent Management Center (IMC) and Voice Services Manager (VSM) to configure, monitor, and optimize the performance of media servers, gateways and endpoints, to monitor VoIP traffic, and to control your voice network quality.

Intelligent Management Center:

- Fully integrated comprehensive management platform
 - Based on a Resources, Service and Users model
 - Delivers full FCAPS solution
- Service Orientated Architecture (SOA) & modular design
 - Enables highly integrated modules to deliver new functionality
- Supports 3Com, H3C and 3rd party devices
- Rich Enterprise class functionality
 - Topology, Alarm, Performance and Configuration Management
 - User Access Management (UAM) & Endpoint Active Defence (EAD)
 - MPLS VPN, Wireless Management



The Value of SIP

The VCX is based on end-to-end SIP signaling throughout the architecture, which keeps it simpler and improves SIP interoperability. Being a standards-based system, the VCX can be deployed on any standards-based network equipment.

With its use of end-to-end SIP signaling, the VCX solution provides a uniform protocol used by all the communications gear, which helps to lower costs through simpler maintenance and simpler integration.

SIP also provides the ability to integrate with other applications that provide additional value such as IP Conferencing, IP Presence, IP Tele Commuter, and IP Contact Center. SIP also enables integration with 3rd party devices like video phones or software attendant consoles.

- SIP is a standard for initiating interactive sessions
 - A single SIP infrastructure can support many different media and interactive applications – not just voice!
- Applications can be added or integrated at any stage
 - Conferencing, Software Consoles, Contact Center
- VCX is built from the ground up with SIP
 - Phones, gateways, and applications

What's New in VCX 9.5

The VCX 9.5 release includes these new features and enhancements:

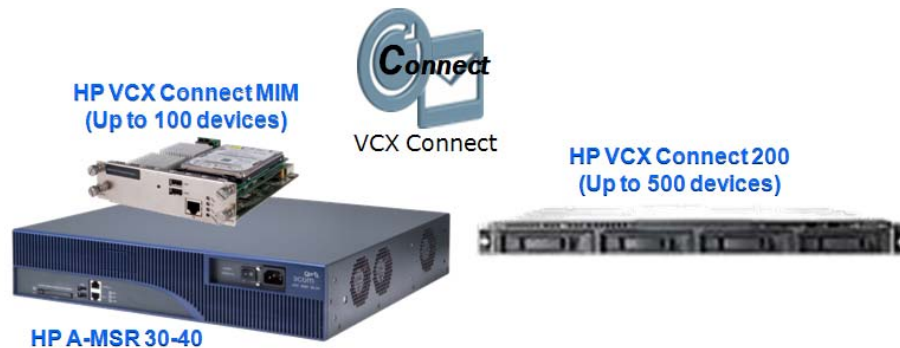
- New 350x Series of IP Phones
- Desktop Communicator enhancements
 - Files can be shared/transferred using the Desktop Communicator
 - Support for Windows 7 32-bit and 64-bit operating system
 - Presence indicator moved to bottom left of window
 - Rejected calls are automatically routed to voice mail
 - Change to Attended Transfer procedure
 - Forward typing and searching for company name is enabled
 - MSI installation is supported
 - Informational screen with version number appears at initialization
- IP Messaging enhancements
 - Secure IMAP connections
 - Electronic Fax Sending
 - IP Messaging Mailbox Seat License Bundles
- IP Telephony enhancements
 - CAC on VCX Secondary server
 - Extension length increased to 15
 - SIP User parameter
 - VCX User additional data

- Global Directory enhancement
 - Phone MIB enhancement
 - Phone display multi-language enhancement
- VCX Application enhancements
 - VCX applications supported on Windows 7 32-Bit Operating System
 - ACD Call Detail Record Reporting
- VCX now runs on HP servers
 - V7005 is now HP DL120 G6 server
 - V7205 is now HP DL360 G6 server
- Scalability enhancements
 - VCX Connect
 - VCX V7000

VCX Connect Unified Communications Series Solutions

The VCX Connect includes VCX IP Telephony and IP Messaging applications running on the same server and supports optional redundancy. There are two products available with VCX Connect:

- VCX Connect Unified Communications MIM on MSR Series
 - A standalone modular server gateway solution on an MSR or redundant pair that supports up to 100 devices/mailboxes per region, up to 12 regions, and up to 600 devices/mailboxes enterprise-wide
 - VCX Connect software on an MSR MIM
 - Bundles available with analog, ISDN, and digital modules
- VCX Connect 200 Unified Communications Series
 - A standalone server or redundant pair that supports up to 500 devices/mailboxes per region, up to 12 regions, and up to 3,000 devices/mailboxes enterprise-wide



Key target market characteristics of the VCX Connect include:

- Targeted at Small to Medium Enterprise (SME)
- Simpler, smaller deployments
- Ease of Use

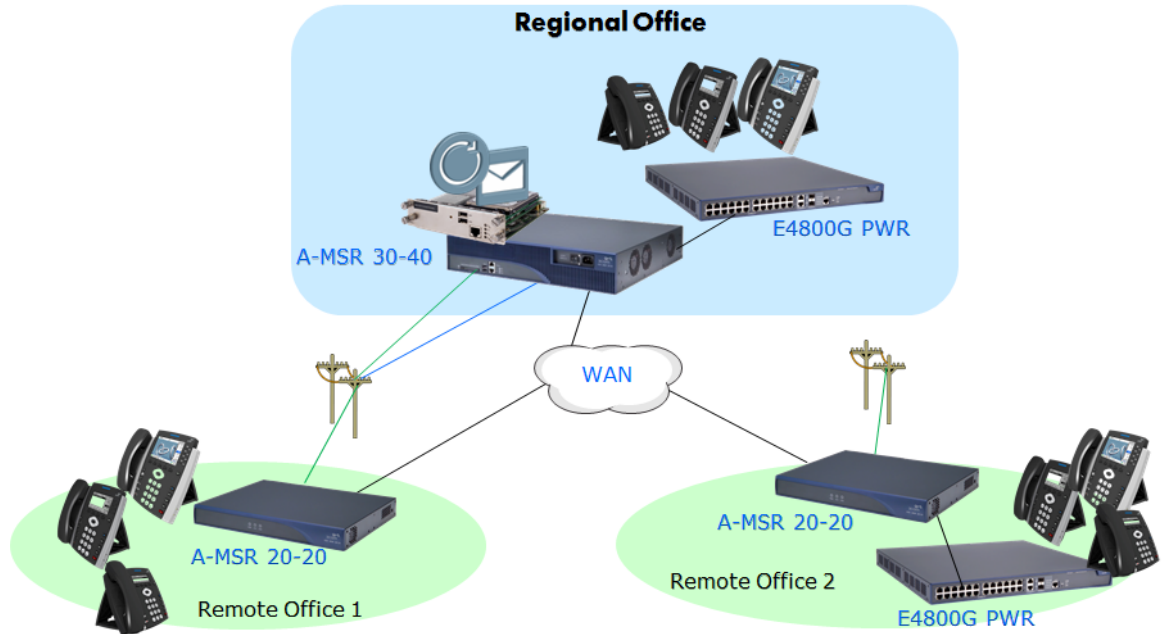
The VCX Connect is the simplest of the VCX products, with the key differences being:

- VCX Connect does not support VCX Branch Offices
- VCX Connect comes built-in with one VCX 9.5 IPT/IPM Server License, 25 Business phone licenses, 25 mailbox licenses, 25 Desktop Communicator soft phone licenses, 25 Convergence Center Client licenses, and 4 Entry/Analog phone licenses

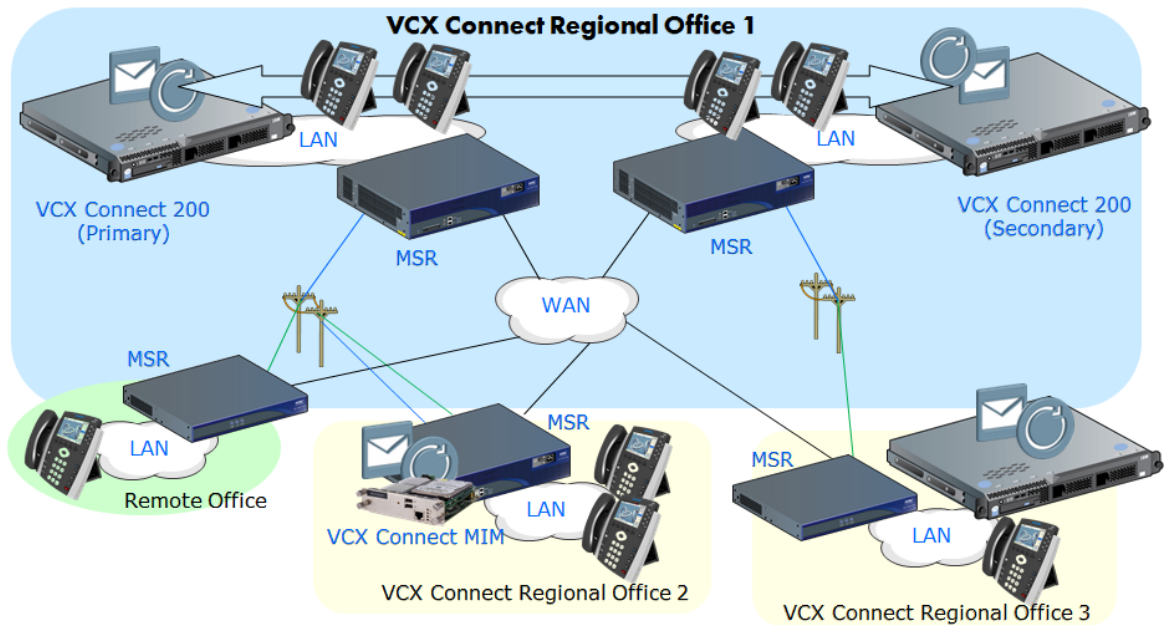
VCX Connect configuration guidelines include:

- Supports Single Region and Multi Region Office Configurations
 - Supports up to 12 regions (homogenous and mixed)
 - Can have a mixed system with one region as VCX Connect MIM and another region as VCX Connect 200
- Supports Global Directory
- Supports Regional Messaging in each region
- Supports Global Voice Mail
- Primary or standalone VCX Connect server must be primary part number
- Optional redundancy for Secondary IPT/IPM
 - Secondary VCX Connect server must be secondary part number
 - Secondary server must be same server type as primary
 - Secondary server can be co-located or geographically separated over WAN
- One region is configured as the System Speed Dial Master
- There is one CDR Server for the whole enterprise
 - Will run on the primary server for VCX Connect

An example of VCX Connect MIM in a non-redundant VCX Single Region configuration is shown below.



An example of VCX Connect 200 and VCX Connect MIM in a VCX Multi Region configuration is shown below.



VCX V7000 Unified Communications Series Solutions

There are two configurations available with VCX V7000 Unified Communications Series solutions:

- VCX V7000 “Classic” configuration
 - A redundant pair of servers that supports up to 2,500 or 5,000 devices/mailboxes per region, up to 12 regions, up to 10 or 20 branch offices, and up to 7,500 or 15,000 devices/mailboxes enterprise-wide (depending on the server type, V7005 or V7205 respectively)
- VCX V7000 “Expand” configuration
 - A redundant configuration with VCX IP Telephony and IP Messaging software distributed onto its own servers, supporting up to 10,000 or 20,000 devices/mailboxes per region, up to 12 regions, up to 50 or 75 branch offices, and up to 30,000 or 60,000 devices/mailboxes enterprise-wide (depending on the server type, V7005 or V7205 respectively)

VCX V7000 Classic Configuration

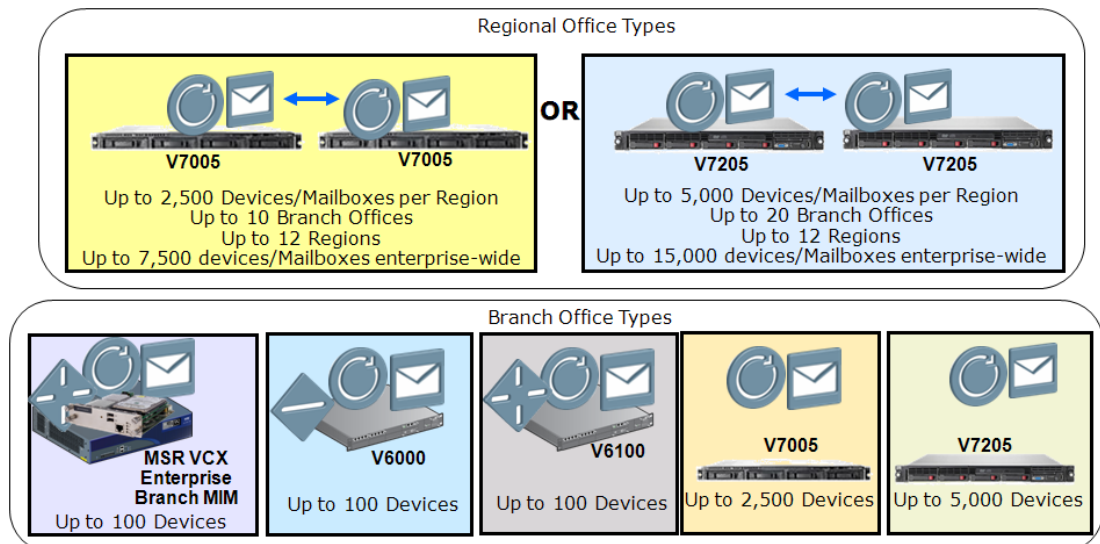
Key target market characteristics of the VCX V7000 Classic include:

- Targeted at Medium to Large Enterprise
- Medium size single sites
- Small to medium number of remote locations needing full feature survivability with redundancy across the WAN
- Implement HQ + distributed survivability with centralized administration
- Use V7005 or V7205 servers at Regional Office
- Use VCX V7000 Branch MIM for MSR, V6000, V6100, V7005, or V7205 as VCX Branch Offices

The VCX V7000 Classic configuration is a two-server solution within each region. Each server runs the IP Telephony and IP Messaging software, one is primary and the other is secondary.

In the VCX V7000 Classic configurations, two kinds of HP DL server are supported (V7005 or V7205 models), but it must be a homogenous combination of server models within a region; i.e. all V7005's or all V7205's. VCX V7000 Classic Branch Office servers can be any combination of VCX V7000 Branch MIM, V6x00, V7005, or V7205 server.

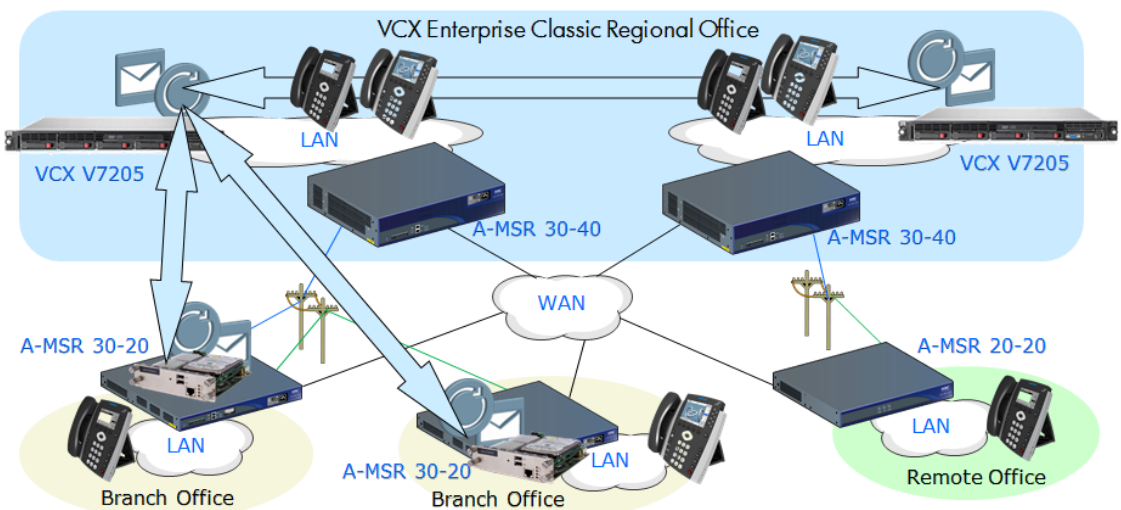
A VCX V7000 Classic solution uses the server configuration guidelines outlined in the diagram below.



VCX V7000 Classic configuration guidelines include:

- Supports Single Region, Multi Region, and Region and Branch configurations
- In Multi Region systems, each regional office can be all the same type of servers or can be mixed within the VCX V7000 product set, but must be homogenous within regional office
 - Can deploy VCX V7000 Classic with V7005's in one region, can deploy VCX V7000 Classic with V7205's in another region, and can even deploy another region as a VCX V7000 Expand configuration – but each region has to be VCX V7000
- Mandatory primary/secondary redundancy
 - Supports co-located or geographically separated redundancy
- V7005 Supports up to 2,500 devices/mailboxes per region, up to 12 regions, up to 10 branch offices per region, and up to 7,500 devices/mailboxes across the enterprise
- V7205 Supports up to 5,000 devices/mailboxes per region, up to 12 regions, up to 20 branch offices per region, and up to 15,000 devices/mailboxes across the enterprise
- Supports Regional Messaging or Local Messaging
 - You cannot mix Local and Regional Messaging within a region
 - In a Multi Region configuration, each region can have its own IP Messaging configuration
- Phones and gateways can be deployed at Branch Offices and Regional Office servers
- For Regional Messaging with Branch Offices:
 - Branch Office server has configuration type of "IP Telephony" only
- Supports Global Voice Mail
 - The Central Server runs at one of the Regional Offices
 - An additional IP Messaging Central Server in one of the regions is not required to provide the IP Messaging Central Server functionality
 - Up to 12 regions and 5,000 mailboxes are supported with VCX V7000 Classic when Central Server is co-resident
- There is one CDR Server for the whole enterprise
 - CDR Server resides on one of the regional office servers (recommended to be secondary server for VCX V7000 Classic)

An example of VCX V7000 Classic in a VCX Single Region "Region and Branch" configuration is shown below.



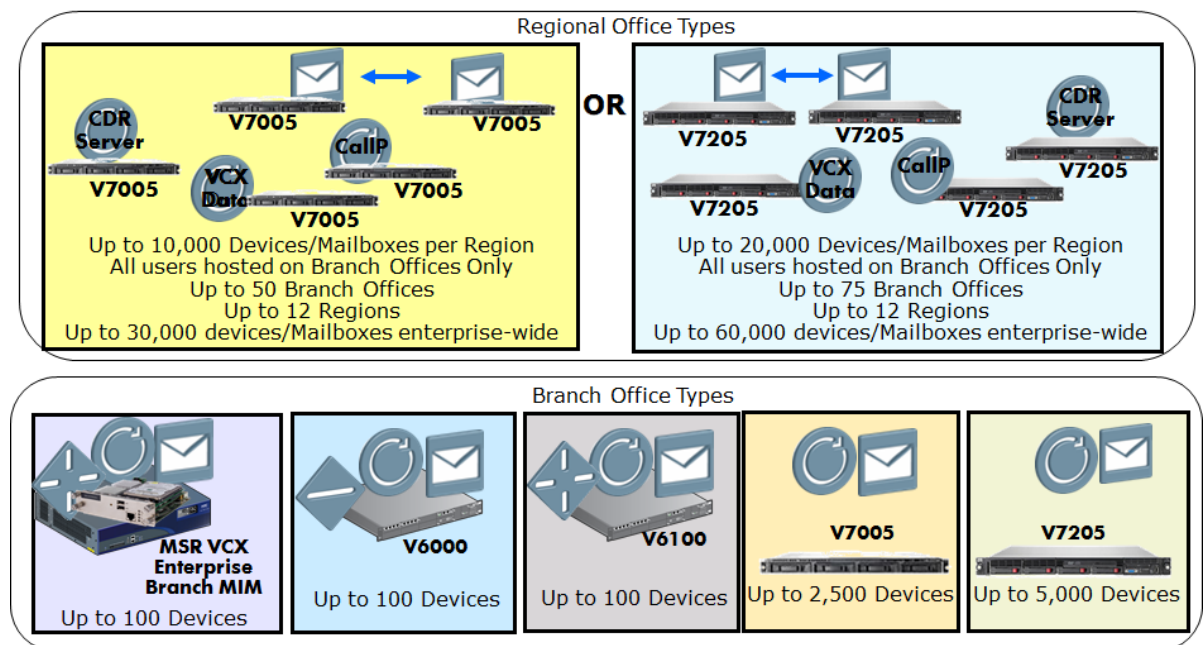
VCX V7000 Expand Configuration

Key target market characteristics of the VCX V7000 Expand include:

- Targeted at medium to large enterprises with a large number of remote locations needing full feature survivability with redundancy across the WAN
- Use V7005 or V7205 servers at Regional Office
- Use VCX V7000 Branch MIM, V6000, V6100, V7005, or V7205 as VCX Branch Offices
- Up to 50 VCX Branch Offices per region using V7005 servers
- Up to 75 VCX Branch Offices per region using V7205 servers

The VCX V7000 Expand configuration allows you to “expand” a VCX solution by distributing VCX IP Telephony and IP Messaging software onto their own servers and hosting all users on Branch Office servers.

A VCX V7000 Expand solution uses the server configuration guidelines outlined in the diagram below.

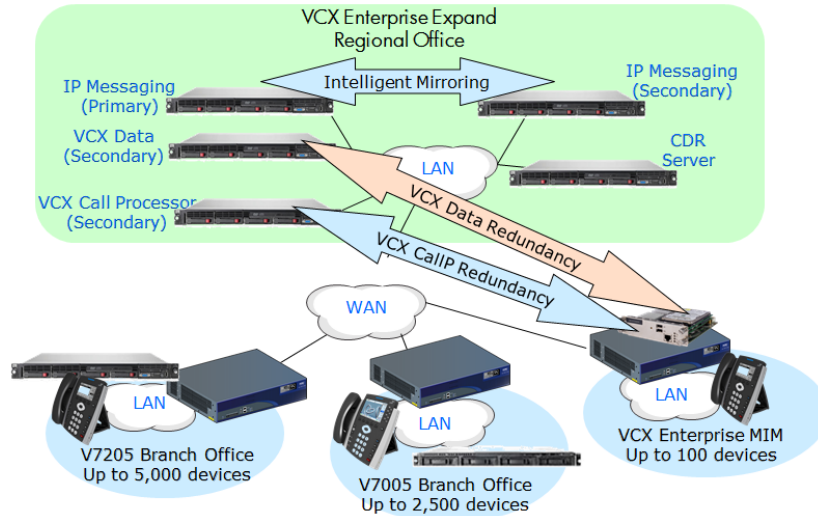


The keys to the VCX V7000 Expand configuration include:

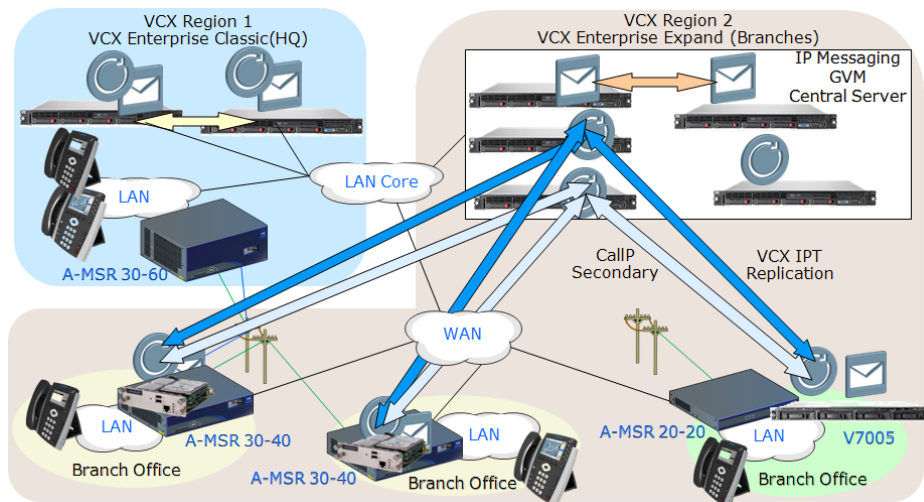
- Used when number of Branch Offices or the device count exceeds the VCX Classic specifications
- The Regional Office is intended as backup for all the Branch Offices (no users assigned to Regional Office)
- All users are assigned to Branch Office servers (even those at Regional Office location)
- At the “core” (or regional office), there is a minimum of 3 servers for IP Telephony: one for IP Telephony Data Server, one for IP Telephony Call Processor, and one for IP Telephony CDR Server
- An additional 2 IP Messaging servers are required when Regional Messaging is used
- Plus servers for each Branch Office
 - Users at Regional Office site(s) will be configured on their own Branch Office server
- If Local Messaging is used, only need IP Messaging servers at the Regional Office if Global Voice Mail is required
- VCX Data at primary Regional Office is secondary VCX Data for all Branch Offices (Master Site Definition Site)

- CallP at Regional Office is secondary CallP for all Branch Offices and main provisioning point for entire Region
 - Since no users are hosted at the Regional Office in a VCX V7000 Expand configuration, the Branch Offices all provide primary services for their users, and all the Branch Offices share this Regional Office CallP server as secondary for CallP services
- CDR Server runs on a separate server with one CDR Server per enterprise

An example of VCX V7000 Expand in a VCX Single Region “Region and Branch” configuration is shown below.



Take advantage of the VCX architecture to include HQ and many Branches. Combine HQ plus a large distributed network into a single entity that provides the look and feel of a single system to users with Global Directory and Global Voice Mail services. An example of VCX V7000 Expand in a Multi Region configuration is shown below, with a VCX V7000 Classic for the HQ and a VCX V7000 Expand for all the Branch Offices.



Observations of a Multi Region VCX V7000 Expand include:

- Each region can be either a VCX V7000 Classic or a VCX V7000 Expand
 - Users are assigned to primary/secondary VCX servers within their own region
- If using Global Voice Mail, use the IP Messaging servers in one of the VCX V7000 Expand regions
- Enable Global Directory as needed between regions and branch offices

For more information

To read more about VCX IP Telephony solutions, go to www.procurve.com/products/unified-communications/index.htm



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