



Cisco Intelligent Contact Management Software Release 6.0(0) Bill of Materials

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Cisco ICM Software Release 6.0(0) Bill of Materials

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Overview

This document is the recommended Bill of Materials for Cisco ICM Enterprise Edition and IPCC Enterprise Edition version 6.0(0) (referenced herein as “ICM/IPCC”). It provides platform hardware specifications and compatible 3rd party software version requirements across the major components of the Cisco ICM/IPCC platform.

Requirements for the ICM/IPCC systems are listed by major component, both basic ICM/IPCC nodes and corresponding options, including multi-media servers. Hardware specifications are supplied for these components across three broadly-defined categories of small, medium and large enterprise systems. Each category is loosely defined by system configuration and workload levels (see the “**Sizing Guidelines**” section below).

The Cisco ICM/IPCC product is, by design, highly scalable and is configured across multiple deployment and call routing scenarios. Optimal sizing and component configuration for a given deployment will vary based on a number of factors, including agent capacity, call rate and call flow model(s), call context size, historical data volume and retention requirements, and other factors. Given the deployment variables of the overall product, sizing categories contained herein are intended for use as guidelines only. Cisco strongly recommends consultation with your Cisco Certified Partner or with Cisco World Wide Voice Practice / Advanced Services prior to specific deployment selection.

Note that specific ICM/IPCC component nodes (e.g. ICM/IPCC Router or Logger) are described herein as being deployed on dedicated hardware servers. While typically deployed as such, the descriptions are not meant to imply that all components mandate a standalone server configuration. In most circumstances, however, components deployed in a co-resident fashion (e.g. a combined Router and Logger, or “Rogger” configuration) should target the next higher level of the deployment sizing guidelines. Consult your Cisco Certified Partner or Cisco World Wide Voice Practice / Advanced Services for additional information.

The hardware specifications supplied herein for CPU processor power, memory and disk storage requirements, and related parameters represent systems minimally configured for adequate performance in the given size category. As specified, such systems will afford a margin for reasonable incremental growth within the bounds of that category. While it is likely that lower capacity hardware would provide adequate performance in many scenarios, the specifications as stated are those on which the ICM/IPCC product is qualified by Cisco prior to release. Cisco thus stipulates that new system deployments meet these minimum requirements to ensure safe and adequate performance results. Customers upgrading to the ICM/IPCC 6.0(0) release from prior versions should carefully evaluate their hardware platforms and ascertain whether replacement is necessary; where processor family and speeds are significantly below those outlined here, consult your Cisco Certified Partner or Cisco World Wide Voice Practice / Advanced Services to determine whether a hardware upgrade is required.

Updated Information in this Document

This document updates the February, 2007 version with the following changes:

Topic	Notes
ICM/IPCC E-Mail Manager Option page 25	This section now makes clear that only in very small agent configurations (less than 10 concurrent agents) can the UI Server and WebView components be co-resident with the Application Server.
3rd Party Software Guidelines page 24	Qualification with McAfee VirusScan Enterprise 8.5i
Cisco E-Mail Manager page 29	Qualification with Cisco E-Mail Manager 50.SR7

Cisco Media Convergence Servers

Supplied hardware options include the Cisco Media Convergence Servers (MCS) platform, a Cisco supplied and qualified server platform built using components from several leading server hardware vendors. The BOM provides a mapping of ICM/IPCC component server requirements to the appropriate MCS model(s) across the configuration range. Where specific ICM/IPCC

component server requirements dictate certain hardware capabilities, e.g. SCSI disk drives for high transaction SQL Server or Oracle deployment, or dual processor configurations to achieve specific system performance metrics, the MCS server(s) selected from the available 7800 series is depicted. Note that the MCS processor chosen will generally exceed the performance characteristics of the corresponding representative “minimal” generic hardware specifications. Furthermore, both lower and higher end platforms may be recommended for a single sizing category. This is due in part to an effort to align more closely with the general hardware requirements and, additionally, to account for eventual increases in system load. The higher end specifications should be followed in deployments that are nearing the edge of the Sizing Guidelines specified below.

More information on Cisco 7800 Series Media Convergence Servers may be found at the following Cisco.com link:

<http://www.cisco.com/en/US/products/hw/voiceapp/ps378/index.html>

As stated above, this document addresses the general hardware requirements of the ICM Enterprise Edition and IPCC Enterprise Edition products. For more detailed information on IPCC Enterprise Edition deployments, please reference the *Cisco IP Contact Center Solution Reference Network Design Guide* (<http://www.cisco.com/go/srnd>).

Sizing Guidelines

In determining how to size a Cisco ICM Software implementation, it is important to consider the factors listed here. While there are additional factors to consider, we have chosen a representative subset and provided corresponding ranges. If, in your specific application, actual or estimated associated values are nearing the higher end of the range specified, the next higher end deployment size should be adopted. Discrete elements should be considered relative to one another, with any one capable of pushing recommended sizing to the next level. As an example, a deployment would be considered a “Medium Enterprise” if the number of users (Agents and Supervisors) is 200 Users (itself falling in the “Small Enterprise” range) but call variable use is considered Medium¹. If half the calls being processed involve the use of call variables (Peripheral or ECC) then this is Medium usage. Conversely, if the user count approximates 50 but call variable use is deemed Medium, then it is safe to assume the “Small Enterprise” deployment hardware recommendations are appropriate.

Deployment	Node		
	Small Enterprise	Medium Enterprise	Large Enterprise
Max Busy Hour Call Attempts (BHCA)	10,000	50,000	Greater than 50,000
Users ² (Agents and Supervisors)	10 – 250	250 – 1000	Greater than 1000
Call Variables (Peripheral and ECC) Usage	None – Low	None – Medium	None – High

General Hardware Performance Guidelines

The following is a high-level list of recommended use of server hardware options. Consult your hardware vendor for more detail and options.

Redundant Components

Redundant hardware options are found in power supplies, memory, and like components. Most of these options are supported, with some exceptions. One exception is redundant and/or load sharing Ethernet adapters. The ICM/IPCC application fault-tolerance mechanisms rely on a proprietary heartbeat scheme utilizing the “Visible” and “Private” networks. Using teamed or redundant

¹ Medium call variables use can be estimated based on a variety of parameters. For one, the total ECC (Extended Call Context) Variables size could be around 1000 bytes (maximum is 2000 Bytes). Another consideration is the extent to which call variables are used in call routing.

² Agent State Tracing Disabled – Enabling tracing, depending on the user count, may imply adopting the next higher end deployment size.

Ethernet adapters has been proven to introduce packet delivery/reception problems capable of generating latency sufficient to cause problems with ICM function. Also, it is common in ICM components for an Ethernet adapter to have more than one IP address, which is often not supported in redundant/load balancing configurations. Some other unsupported options include specific RAID configurations and the hardware/software configurations that go with them. This is discussed further in the “**RAID Controllers, Arrays, and Storage Options**” below. Redundancy in other components (power supplies and the like), however, is not only supported but recommended.

SCSI/ATA/IDE Hard Disk Drives

SCSI Hard Disk Drives are recommended for components that are expected to have high levels of disk I/O. This includes, but is not limited to, servers running database applications. Components where ATA/IDE drive use is acceptable are noted as such. Ultra 3/Ultra 160/Ultra 320 SCSI (based on availability) comes highly recommended. “High-end” installations can also benefit from higher rotational speed (e.g. 15K rpm for SCSI) drives, which further reduce access latency. (10K rpm drives are typically standard options for SCSI; ATA/IDE drives are typically 7200 rpm.)

RAID Controllers, Arrays, and Storage Options

Properly configured RAID disks are recommended for most components, due in part to the ICM/IPCC application being deemed “mission critical”. There are, however, many considerations to take into account with RAID. First, “software” RAID (without an embedded or add-on hardware controller) is generally not recommended, as its only advantage is some level of redundancy at the cost of decreased overall I/O performance. In general, all types of hardware RAID controllers are acceptable (embedded and add-on), with significant factors being the number of channels and on-controller cache of the controller. There are varying recommendations around configurations, but several primary factors to keep in mind.

In general, the performance of an array increases with the number of physical drives contained within. The following are representative configurations for a sample 144GB disk (listed in order of potential performance, from highest to lowest): 8 x 36.4 GB RAID 10 (1+0), 4 x 72.8 GB RAID 10 (1+0), 2 x 145.6 GB RAID 1. Maximizing the number of physical drives also increases the overall fault tolerance of the array. The limiting factor would be the number of physical drive bays available in the platform.

Multi-channel controllers offer a true performance advantage only when connected to discrete drive bays (“cages”) or backplanes. In situations where there are multiple drives connected to a single SCSI backplane connection, splitting those drives into multiple arrays and across multiple channels on the attached controller provides only a small amount of physical separation and negligible performance advantage. Ultimately, all communication is funneled through the single physical backplane connection – and that remains the bottleneck, regardless of the capabilities of the controller. Multiple controller channels can be of significant advantage when there are multiple drive “cages” and backplane connections. In this case, each channel of the controller can connect to a separate backplane connection, and arrays split between the channels and backplanes can take advantage of the increased throughput as well as increased resiliency.

There are several RAID configurations which can be deployed. Some manufacturers use proprietary configurations. Consult the manufacturer’s documentation to determine what “standard” RAID configuration their proprietary platform is based on.

In general, mirroring or RAID 1 is recommended as adequate for Contact Center server applications. 32MB of on-controller cache is a good baseline for PGs, Distributor AWs, and ICM Routers. 64MB should be considered the starting point for a Logger or AW with HDS and/or WebView option. Higher-end Loggers, HDSs and/or WebView machines should move to 128MB or more cache and consider a dual or multi-channel controller if additional throughput or number of arrays is needed.

Note: Given this recommendation, and the fact that the MCS servers as currently specified in this document utilize a single channel RAID controller with only 128 MB Battery-Backed Write Cache, these servers will not be appropriate for higher-end (e.g. carrier class) deployments.

Higher-end (Large Enterprise) deployment of ICM or IPCC should consider RAID 10 (1+0). With the increase in capability and cache size of even an “entry-level” embedded RAID controller, the move to RAID 10(1+0) from a basic RAID 5 array is often just the cost of 1 additional HDD. Cache, in this configuration, should be a minimum of 256 MB. Dual or multi-channel controllers are recommended to maximize throughput and offer the option of spreading the array across multiple backplanes or drive “cages” for

enhanced performance and fault-tolerance. It is also generally recommended that database servers like ICM Loggers and HDS/WebView Servers run multiple RAID arrays; one for OS and applications (RAID 1 is adequate) and a second for the database itself (using RAID 1 or RAID 10(1+0) – depending on system size).

External Storage Shelves

External “storage shelves” that run as external SCSI drive bays directly attached fall under the same application guidelines given above. In most cases these would be used to house a larger database and should be using a RAID 10(1+0) configuration.

Network Attached Storage

Application guidelines surrounding Network Attached Storage devices are difficult to clearly delineate. In general, the recommendation is for support of these products as an archiving solution, but not as the device for a core ICM database (e.g. Logger or HDS). This guideline is based on the potentially significant write-intensive nature, and overall I/O characteristics, of the ICM software. NAS or SAN products have not been generally qualified by Cisco for use in this manner and are therefore not supported.

Backup Devices

Backup device option decisions are left to the end user. For performance considerations it is recommended that backups be performed outside of business hours or during periods of lowest activity. There are no recommendations for specific backup devices or products, but internal and other direct-attached devices may have restrictions on what platforms they are compatible with. Consult your hardware vendor to determine what options you have for internal or external storage.

SQL Server 2000 Licensing

The following is provided as general guidelines to help determine the appropriate licensing methods needed for the deployment of Cisco ICM and IPCC Enterprise and Hosted Edition software. SQL Server licenses are not included in the cost of ICM or IPCC agent licenses.

Microsoft provides a number of different licensing options that apply to enterprises as well as service providers. SQL Server can be licensed through multiple programs including but not limited to Volume Licensing and Service Provider License Agreements (SPLA).

Refer to <http://www.microsoft.com/sql/howtobuy> and <http://www.microsoft.com/serviceproviders/licensing/default.msp> for information on SQL Server Licensing.

The following are SQL Server 2000 licensing options that would apply to Cisco ICM and IPCC Enterprise and Hosted Editions (Microsoft definition):

Server plus Device (or User) CALs: Under this model, a server license is required for each operating system environment running an instance of SQL Server, as well as a CAL for each client device (or user) that accesses a system running SQL Server.

Processor Licensing Model: Under this model, a license is required for each physical processor accessed by an operating system environment running SQL Server. This License does not require any device or user client access licenses (CALs).

Service Provider License Agreement (SPLA): The Service Provider License Agreement (SPLA) enables service providers and ISVs with a hosted offering to license Microsoft products on a monthly basis to provide services and hosted applications to their end customers.

As they pertain to SQL Server licensing with ICM/IPCC, users, devices, servers and processors are defined as the following:

- A *user* is a person who interacts with the ICM/IPCC software. ICM/IPCC agents, supervisors, and system and contact center administrators are among such users. The number of users, as it pertains to SQL Server 2000 licensing, is the cumulative and not the concurrent count.
- A *device* is client device used by a human user to interact with the ICM/IPCC software. The number of client devices, as it pertains to SQL Server 2000 licensing, is the cumulative and not the concurrent count.
- A *server* is a type of computer that runs SQL Server 2000. In ICM/IPCC deployments, Loggers and Distributors (AW/HDS) are examples of components that require SQL Server 2000. For the complete listing of ICM/IPCC components that require SQL Server, refer to the “Operating System and Database requirements” section of this document.
- A *processor* is described as a single physical Central Processing Unit (CPU).

SQL Server 2000 licensing is required for any and all ICM/IPCC deployments. Customers must determine the appropriate licensing methods based on the size of the deployment. It is not uncommon for a contact center environment to have more agent personnel than stations so the most appropriate method of licensing in this case would be using device CALs versus user CALs. In large installations, the cost of the total amount of user or device CALs required may surpass the cost of processor licensing so the latter may be the appropriate licensing method. A processor license for each of the processors on the database servers would be required.

Note: A license is required for every user of the system regardless of whether the deployment is distributed (for example, WebView and HDS on separate nodes). For more information, see <http://www.microsoft.com/sql/howtobuy/multiplexing.mspix>

In deployment scenarios where Cisco IPCC Hosted Edition or ICM Hosted Edition is used by service providers, Microsoft’s Service Provider License Agreement (SPLA) would apply in lieu of other licensing models. Under SPLA, SQL Server 2000 is licensed on a monthly basis to end customers of the service providers. Service providers should consult with Microsoft to determine the appropriate licensing model for their SQL Server 2000 deployments.

Cisco ICM or IPCC (Enterprise and Hosted) customers are encouraged to consult Microsoft documentation and other resources to determine the licensing that best fits their specific ICM/IPCC deployment. In many cases, ICM/IPCC customers may already have the necessary SQL Server licenses under an existing agreement with Microsoft. Consult your IT or Legal organization for more information.

Microsoft Licensing terms are subject to change. Customers are ultimately responsible for ensuring their SQL Server licensing is in compliance with Microsoft’s End User License Agreement (EULA).

3rd Party Software Guidelines

Node	All Nodes
Software	<p>Remote Administration:</p> <p>Symantec pcAnywhere 10.5 or 11.0 Symantec pcAnywhere 11.0.1 (Cisco ICM/IPCC 6.0 SR4 or later) Symantec pcAnywhere 12.0 (Cisco ICM/IPCC 6.0 SR8 or later) RealVNC 3.3.7 RealVNC 4.0 (Cisco ICM/IPCC 6.0 SR2 or later) Windows Terminal Services³</p> <p>Other:</p> <p>McAfee VirusScan Enterprise 7.0 McAfee VirusScan Enterprise 7.1 (Cisco ICM/IPCC 6.0 SR1 or later) McAfee VirusScan Enterprise 8.0i (Cisco ICM/IPCC 6.0 SR2 or later) McAfee VirusScan Enterprise 8.5i (Cisco ICM/IPCC 6.0 SR10 or later) Network Associates Netshield 4.5 SP1 Trend Micro ServerProtect 5.x Cisco Security Agent for Cisco ICM/IPCC Enterprise Software, Release 6.0(0) http://www.cisco.com/kobayashi/sw-center/contact_center/csa/</p> <p>Microsoft Internet Explorer 6.0 Service Pack 1 (minimum) Microsoft Internet Explorer 7.0 has now been qualified for Cisco ICM/IPCC 6.0 SR9. Note that any problems encountered on earlier versions will receive remediation by an upgrade to the minimally qualified later release.</p> <p>Optional:</p> <p>WinZIP Adobe Acrobat Reader</p>

³Terminal Services may only be used for Windows administration functions. Applications such as Script Editor, Configuration Manager and associated AW tools, etc. may not be used in a Terminal session.

Hardware Guidelines

Caution: In general, as an operating system, Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 is supported by the various components of Cisco ICM 6.0(0) SR4 or later.

However, when you restart a computer after you install Update Rollup 1 for Microsoft Windows 2000 Service Pack 4 (SP4), you may receive something similar to the following Stop error message:

```
***Stop 0x0000001e {0xc0000005,0x804a1a51,0x00000000,0x000000b0}
KMODE_EXCEPTION_NOT_HANDLED
```

This problem may occur if the computer has certain earlier non-Plug and Play ISA, EISA, or MCA SCSI controllers installed. This problem occurs because of a code problem in the Scsiport.sys driver that is included in Update Rollup 1 for Windows 2000 SP4.

For details on this problem, and to obtain a Microsoft hotfix that deals with the problem, see the Microsoft Knowledge Base on "Update Rollup 1 for Windows 2000 SP4 and known issues".

Note also that Windows 2000 is qualified by Cisco only with Hyper-Threading disabled. Enabling Hyper-Threading on Windows 2000 servers is known to cause performance and instability in production.

ICM Router

Node	Router		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1
Minimum Recommended Hardware	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports	2 x 700MHz or greater Intel "Xeon" processors 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports	2 x 2.6GHz or greater Intel "Xeon" class processors 2000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports
Operating System	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later]		

Node	Router		
	Small Enterprise	Medium Enterprise	Large Enterprise
Additional Items	<p><i>FOR ETHERNET CARRIER NETWORK INTERFACES (MCI, AT&T, etc.)</i></p> <p>+1 x 10/100/1000 Ethernet port</p> <p><i>FOR CO-RESIDENT PG</i></p> <p>+1 x 10/100/1000 Ethernet port</p> <p><i>FOR STENTOR NETWORK INTERFACE</i></p> <p>1 (2 if duplexed) x DSG Run-Time 4.2 license(s) from NE Technologies, Inc.</p> <p><i>FOR SPRINT NETWORK INTERFACE</i></p> <p>3 (5 if simplexed) x Eiconcard S94 66MHz Dual port X.25 adapter (Eicon #310-828)</p> <p>5 (10 if simplexed) x VHSI V.35 DCE cable (Eicon #300-076)</p> <p>Eiconcard Connections for Windows 2000 & XP</p>		

ICM Logger

Node	Logger		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1 MCS-7845H-3.0-CC1	MCS-7845-I1-CC1 ⁴ MCS-7845-H1-CC1 ⁴ MCS-7845H-3.0-CC1 ⁴
Minimum Recommended Hardware	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 or RAID 10(1+0) recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports	2 x 2.6GHz or greater Intel "Xeon" class processors 2000+ MB RAM 36.4+ GB usable disk space (2 or more RAID arrays recommended, RAID 10(1+0) recommended for database devices) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports	2 x 1.4GHz or greater Intel "Xeon MP" class processors (Quad Processors are strongly recommended) 4000+ MB RAM 36.4+ GB usable disk space (2 or more RAID arrays recommended, RAID 10(1+0) recommended for database devices) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports

⁴The limitations of this MCS server model with regards to the number of RAID controller channels and cache size, as noted in the "RAID Controllers, Arrays, and Storage Options" section, make it inappropriate for very large deployments (e.g. high throughput, carrier class). These deployments should opt for server hardware which follows the general server guidelines provided in this document.

Node	Logger		
	Small Enterprise	Medium Enterprise	Large Enterprise
Operating System and Database Management System	Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 3a Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 4 [Cisco ICM SR3 or later] Note: Microsoft Windows 2000 Advanced Server and SQL Server 2000 Enterprise Edition are required if using greater than 4 processors or greater than 2GB RAM.		
Additional Items	<i>FOR REMOTE MANAGEMENT/SUPPORT</i> 56K V.Everything/V.90 external modem		

Peripheral Gateway (PG)

The specification below covers all Peripheral interfaces including IPCC, IVR, Media Routing (MR), and TDM ACD – including co-residency with CTI OS, CAD and Outbound Option. The co-resident Outbound Option (IP) Dialer can scale up to 200 total blended agents. In the case where more outbound agents are required, CTI OS must be moved to another server and the dialer may remain co-resident with the PG. (CTI OS itself supports up to 500 agents in the co-resident configuration; beyond that number CTI OS must be run in a standalone server configuration. See details in the CTI OS Server section below.) Also, consult the CAD Server section for details about which server specifications are required for dedicated/standalone server configurations.

As a minimum, if Outbound Option is used, the Medium Enterprise specifications category should be used. In instances where multiple dialers are required, refer to the Outbound Option Dialer specifications.

Note: Peripheral Gateways connected to multiple CTI OS servers will require stepping up to the Large Enterprise specifications.

At most two monitor mode connections per CTI OS Server pair are allowed.

The maximum number of All-event clients (CTI Server) allowed is 4 with a single processor server and 7 with a dual processor server.

Node	PG		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1 MCS-7845H-3.0-CC1	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1

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Node	PG		
	Small Enterprise	Medium Enterprise	Large Enterprise
Minimum Recommended Hardware	1 x 1.4GHz or greater Intel Pentium processor 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports	2 x 2.6GHz or greater Intel "Xeon" class processors 2000+ MB RAM 36.4 GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet port ----- For Avaya Large Enterprise deployments (2000 CTI Agents, 60,000 BHCA, 4 All-event clients): 2 x 3.4GHz or greater Intel "Xeon" class processors 4000 MB RAM 72 GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet ports
Operating System	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later]		

Node	PG		
	Small Enterprise	Medium Enterprise	Large Enterprise
Additional Items	<p><i>FOR REMOTE MANAGEMENT/SUPPORT</i></p> <p>56K V.Everything/V.90 external modem</p> <p><i>FOR REDUNDANT PG INSTALLATION</i></p> <p>+1 x 10/100/1000 Ethernet port (if Peripheral does not reside on visible LAN)</p> <p><i>FOR NORTEL DMS-100 V.24/V.35 INTERFACE</i></p> <p>1 x Eiconcard S94 66MHz Dual port X.25 adapter (Eicon #310-828) 2 x VHSI V.35 DCE cable (Eicon #300-076) Eiconcard Connections for Windows 2000 & XP</p> <p><i>FOR ROCKWELL SPECTRUM SERIAL INTERFACE</i></p> <p>1 x Eiconcard S94 66MHz Dual port X.25 adapter (Eicon #310-828) 1 x 25' DB25 male to DB25 male cable (Alternative Tech EIC007-25) Synchronous null modem adapter (Belkin A4 A602-16298) 1 x DB25 male to DB9 female null modem cable (Black Box EVMBPC-0025) Eiconcard Connections for Windows 2000 & XP</p> <p><i>FOR ROCKWELL SPECTRUM TCP/IP INTERFACE</i></p> <p>1 x DB25 male to DB9 female null modem cable (Black Box EVMBPC-0025)</p> <p><i>FOR SIEMENS ROLM 9751 INTERFACE</i></p> <p>1 x Digi AccelePort Xp 2, 4, or 8-port adapter Cables for above terminating in DTE 232 male connector</p> <p><i>FOR NEC NEAX 2400/7400 INTERFACE</i></p> <p>1 x CTI Dongle (NEC part)</p>		

ICM/IPCC SS7 Network Interface Option

AT&T Network Gateway / SS7 Gateway

Node	SS7 NIC		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	<p>MCS-7825-I2-CCE1 (need to order the CCBU 3.3V SS7 Card separately) MCS-7825-H2-CCE1 (need to order the CCBU 3.3V SS7 Card separately) MCS-7825I-3.0-CC1 (need to order the CCBU 3.3V SS7 Card separately) MCS-7825H-3.0-CC1 (need to order the CCBU 3.3V SS7 Card separately)</p>		

Node	SS7 NIC		
	Small Enterprise	Medium Enterprise	Large Enterprise
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processor 128+ MB RAM 18.2+ GB usable disk space (ATA/IDE acceptable) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 2 x 10/100/1000 Ethernet port 1 x 4 port Cisco PCI SS7 card(s) Note: There are two models of SS7 cards; 3.3V PCI card and 5V PCI card. Only the 3.3V cards are supported with the MCS servers. The 5V PCI card requires a PCI 2.1 5V bus - This is NOT a PCI-X compliant card.		
Operating System	Microsoft Windows 2000 Professional or Server with Service Pack 4 Microsoft Windows 2000 Professional or Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later]		

ICM/IPCC Outbound Option

Cisco Outbound Option Dialer

In most environments, the IPCC Outbound Option Dialer can be co-resident with the PG. See the PG section for more details. The specifications below apply to a standalone IPCC dialer and to the Avaya dialer.

Node	Outbound Agent Dialer		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1		
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processor 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports		
Operating System	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later]		
Additional Items	For Avaya Based Deployments: – Standalone Dialer Required – 1 (or more) x Intel Dialogic board (D/120JCT-L-S, D/240SC, D/160SC, D/480JCT, D/240PCI-T1, D/240JCT-T1, D/300PCI-E1, D/300JCT-E1) Dialogic System Releases 5.0 or greater (tested with 5.1.1 Service Pack 1) and GlobalCall protocol package 3.0		

ICM/IPCC CTI Options

CTI OS Server

Refer to the PG specifications for recommendations for servers where CTI OS is co-resident with a PG. Where CTI OS is hosted on a separate server (500 Agent limit exceeded), the guidelines below should be followed. Standalone CTI OS servers can themselves scale up to 500 agents, after which an additional CTI OS instance is required (up to a maximum of four). For servers hosting up to 250 agents, the Small Enterprise specifications or greater will suffice. Supporting in the range of 250 – 500 agents will require stepping up to the Medium Enterprise specifications.

Note: At most two monitor mode connections per CTI OS Server pair are allowed.

Node	CTI OS Server	
	Small Enterprise	Medium Enterprise
Cisco Media Convergence Servers	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1 MCS-7845H-3.0-CC1
Minimum Recommended Hardware	1 x 1.4GHz or greater Intel Pentium processor 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port
Operating System	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later]	

CTI OS Agent and Supervisor Desktops

Node	CTI OS Agent and Supervisor Desktops		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	Not Applicable		

Node	CTI OS Agent and Supervisor Desktops		
	Small Enterprise	Medium Enterprise	Large Enterprise
CTI OS Supervisor Desktop	<p>Hardware: 800MHz or greater Intel Pentium processor 256+ MB RAM 100+ MB available disk space (ATA/IDE acceptable) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port Windows compatible full-duplex sound card (if using Media Termination and/or Silent Monitor)</p> <p>Operating System: See support matrix table below</p>		
CTI OS Agent Desktop	<p>Hardware: 500MHz or greater Intel Pentium processor 256+ MB RAM 100+ MB available disk space (ATA/IDE acceptable) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port Windows compatible full-duplex sound card (if using Media Termination)</p> <p>Operating System: See support matrix table below</p>		

Cisco Agent Desktop (CAD) Server

The CAD server specifications below apply to (1) servers running base CAD services, (2) servers running the VoIP Monitor service, and (3) servers running the Recording & Playback service. More details on system configurations can be found in the *CAD 6.0 Installation Guide for IPCC Enterprise Edition 6.0(0)*. Refer to the PG specifications for recommendations for servers where CAD and CTI OS services are co-resident with a PG (less than 300 Agents). The “Medium Enterprise” guidelines below should be followed where CAD and CTI OS services are hosted on a dedicated server (301-1000 Agents). VoIP Monitor services can also be configured co-resident with these CAD and CTI OS services but if SPAN port-based silent monitoring is used (less than 100 Monitored Agents). Exceeding 100 agents with SPAN port based monitoring will require allocating a dedicated VoIP monitor server as specified below in the “Small Enterprise” guidelines. Recording & Playback Server supports up to 32 simultaneous recordings when it is co-resident with the CAD/CTI OS/PG server. Scaling up above 32 simultaneous recordings requires moving the Recording & Playback services to a dedicated server as specified below in the “Small Enterprise” guidelines.

Node	CAD Server	
	Small Enterprise	Medium Enterprise
Server Configurations	Dedicated VoIP Monitor server for SPAN port based monitoring (up to 400 Agents) Dedicated Recording & Playback Server (up to 80 simultaneous recordings)	Dedicated CAD and CTI OS server. (CAD and CTI OS co-resident with PG supports up to 300 agents)

Node	CAD Server	
	Small Enterprise	Medium Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7825-I2-CCE1 MCS-7825-H2-CCE1 MCS-7825I-3.0-CC1 MCS-7825H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1 MCS-7845H-3.0-CC1
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processor 1000 MB RAM 18.2+ GB usable disk space ⁵ (ATA/IDE acceptable) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port	2 x 1.4GHz or greater Intel Pentium processors 2000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port
Operating System and Database Management System	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Microsoft SQL Server 2000 Desktop Engine SP3a (Cisco provided)	

CAD Agent and Supervisor Desktops

Node	CAD Agent and Supervisor Desktops		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers	Not Applicable		
CAD Supervisor Desktop (CSD)	<p>Hardware: 500MHz or greater Intel Pentium processor 128+ MB RAM 100+ MB available disk space (ATA/IDE acceptable) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port Windows compatible full-duplex sound card (if using Media Termination and/or Silent Monitor)</p> <p>Software: See support matrix table below</p>		

⁵ Recordings require additional disk space at 2MB per minute for each recording.

Node	CAD Agent and Supervisor Desktops		
	Small Enterprise	Medium Enterprise	Large Enterprise
CAD Agent Desktop	Hardware: 500MHz or greater Intel Pentium processor 128+ MB RAM 100+ MB available disk space (ATA/IDE acceptable) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port Windows compatible full-duplex sound card (if using Media Termination)		
	Software: See support matrix table below		

CTI Platform Support Matrix

	Operating System						
	Server Platform	Client Platform					
	Windows 2000 Server SP4 ⁶	Windows 98	Windows 2000 Pro SP4	Windows XP Professional SP1a	Windows NT 4.0 SP6a	Windows XP Professional SP2	Red Hat Enterprise Linux V3.0
CTI OS 6.0 Server	✓						
Cisco Data Store	✓						
CTI Driver for Siebel 6.0 ⁷ (thin client)	✓						
CTI Driver for Siebel 6.0 ⁷ (thick client)	✓	✓	✓	✓	✓		
CTIOS - Supervisor Desktop		✓	✓	✓			
CTI OS - Agent Desktop		✓	✓	✓	✓		

⁶ with Rollup 1 [Cisco ICM SR4 or later]

⁷ or Siebel 7.8.2 [Cisco ICM SR6 or later]

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	Operating System						
	Server Platform	Client Platform					
	Windows 2000 Server SP4 ⁶	Windows 98	Windows 2000 Pro SP4	Windows XP Professional SP1a	Windows NT 4.0 SP6a	Windows XP Professional SP2	Red Hat Enterprise Linux V3.0
CTIOS - Custom Apps using C++ or COM CIL (Not using Silent Monitor)		✓	✓	✓	✓		
CTIOS - Custom Apps using Silent Monitor (Supervisor)		✓	✓	✓			
CTIOS – Custom Apps using Silent Monitor (Agent)		✓	✓	✓	✓		
CTI OS - Custom Apps using Java CIL			✓	✓			✓
CTI OS – Monitor Mode Apps using Java CIL			✓	✓			✓
CTI Desktop (GeoDCS) V4.7 only		✓	✓	✓	✓		
Custom Apps using GeoDCS or CtiClient32, V4.7 only		✓	✓	✓	✓		
CAD Agent and Supervisor Desktops		✓	✓	✓	✓	✓ ⁸	

⁸ Windows Firewall must be turned off for CAD Agent and Supervisor Desktops version 6.0(1).

System Manager AW – Real-Time Distributor with WebView and Historical Database Server (HDS) option (Internet Script Editor Optional)

Sizing an HDS and WebView Server also depends on other factors not highlighted in the “**Sizing Guidelines**” section. It’s important to consider here not only the size of the database, but also the amount of Client AWs, the expected number of configuration transactions and scripting modifications. Web server sizing and capacity planning and therefore choosing a specific deployment size and hardware specifications will depend on the anticipated number of Web clients and/or browser sessions, the number and size of the reports to be executed, report refresh rates, etc.

Node	Administrative Workstation (WebView and HDS)		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1 MCS-7845H-3.0-CC1	MCS-7845-I1-CC1 ⁷ MCS-7845-H1-CC1 ⁷ MCS-7845H-3.0-CC1 ⁹
Minimum Recommended Hardware	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 or RAID 10(1+0) recommended) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended	2 x 2.6GHz or greater Intel "Xeon" class processors 2000+ MB RAM 36.4+ GB usable disk space (2 or more RAID arrays recommended, RAID 10(1+0) recommended for database devices) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended	2 x 1.4GHz or greater Intel "Xeon MP" class processors (Quad Processors are strongly recommended) 4000+ MB RAM 36.4+ GB usable disk space (2 or more RAID arrays recommended, RAID 10(1+0) recommended for database devices) 3.5" floppy drive Internal CD/DVD-ROM 1 x 10/100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended

⁹The limitations of this MCS server model with regards to the number of RAID controller channels and cache size, as noted in the “RAID Controllers, Arrays, and Storage Options” section, make it inappropriate for very large deployments (e.g. high throughput, carrier class). These deployments should opt for server hardware which follows the general server guidelines provided in this document.

Node	Administrative Workstation (WebView and HDS)		
	Small Enterprise	Medium Enterprise	Large Enterprise
Operating System, Database Management System and Application Specific Software	<p>Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 3a Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 4 [Cisco ICM SR3 or later]</p> <p>Note: Microsoft Windows 2000 Advanced Server and SQL Server 2000 Enterprise Edition are required if using greater than 4 processors or greater than 2GB RAM.</p> <p>Other:</p> <p>IIS 5.0 (Required for WebView and/or Internet Script Editor) Sybase InfoMaker 8.0.1.9056 (for custom report creation only) Sybase InfoMaker 8.0.4.10784 (for custom report creation only) [Cisco ICM SR2 or later]</p> <p>WebView 3rd Party Tools Installer provided applications:</p> <p>Sun JRE Version 1.3.1 New Atlanta ServletExec 4.1.1 (provided by Cisco with a 2-CPU license; if the customer has more than 2 CPUs, an appropriate license must be obtained from New Atlanta, which license can be purchased online at http://www.newatlanta.com) Sybase EAServer 4.1.1</p>		

System Manager AW – Real-Time Distributor (Internet Script Editor Optional)

Node	Administrative Workstation (Real-Time Distributor)		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers	MCS-7815-I2-CCE1 MCS-7825-I2-CCE1 MCS-7825-H2-CCE1 MCS-7815-I1-CC1 MCS-7815I-3.0-CC1 MCS-7825I-3.0-CC1 MCS-7825H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835I-3.0-CC1 MCS-7835H-3.0-CC1
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processor 512+ MB RAM 18.2+ GB usable disk space (ATA/IDE acceptable) 3.5" floppy drive Internal CD/DVD-ROM drive 1 x 10/100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended.	1.4GHz or greater Intel Pentium processor 1000+ MB RAM 18.2+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD/DVD-ROM drive 1 x 10/100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended	1.4GHz or greater Intel Pentium processor 1000+ MB RAM 36.4+ GB usable disk space (RAID 1 recommended) 3.5" floppy drive Internal CD/DVD-ROM drive 1 x 10/100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended

Node	Administrative Workstation (Real-Time Distributor)		
	Small Enterprise	Medium Enterprise	Large Enterprise
Operating System, Database Management System and Application Specific Software	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Microsoft SQL Server 2000 Standard with Service Pack 3a Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 4 [Cisco ICM SR3 or later] Other: IIS 5.0 (Required for Internet Script Editor) Sybase InfoMaker 8.0.1.9056 (for custom report creation only) Sybase InfoMaker 8.0.4.10784 (for custom report creation only) [Cisco ICM SR2 or later] Apache Tomcat 4.0.6 Sun JRE Version 1.3.1		

System Manager AW – Real-Time Client only (Client AW) (Cisco Support Tools Server Optional)

These specifications can be used for either co-residing the Cisco Support Tools Server with the Client AW machine (small deployment) or dedicating for the Support Tools Server application (a dedicated Support Tools Server is preferable, especially if it will support a large number of nodes and/or be used extensively).

Node	Administrative Workstation (Real-Time Client)		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers	MCS-7815-I2-CCE1 MCS-7815-I1-CC1 MCS-7815I-3.0-CC1	MCS-7815-I2-CCE1 MCS-7815-I1-CC1 MCS-7815I-3.0-CC1	MCS-7815-I2-CCE1 MCS-7815-I1-CC1 MCS-7815I-3.0-CC1
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processor 512+ MB RAM 18.2+ GB usable disk space (ATA/IDE acceptable) (36.4+ GB, RAID 1 recommended for Cisco Support Tools Server) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better (17" or larger display recommended)		
Operating System, and Application Specific Software	Microsoft Windows 2000 Professional with Service Pack 4 Microsoft Windows 2000 Professional with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Other: Sybase InfoMaker 8.0.1.9056 (for custom report creation only) Sybase InfoMaker 8.0.4.10784 (for custom report creation only) [Cisco ICM SR2 or later]		

ICM/IPCC Remote Monitoring Suite (RMS) Option

RMS Release 2.0 SR1 [Cisco ICM SR1 or later]

RMS Release 2.1 [Cisco ICM SR6 or later]

Listener

Node	Listener		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers	MCS-7825-I2-CCE1 MCS-7825-H2-CCE1 MCS-7825H-3.0-CC1 MCS-7825I-3.0-CC1	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835H-3.0-CC1 MCS-7835I-3.0-CC1	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports
Operating System	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later]		
Additional Items	<i>FOR MODEM BANK USE</i> Multi-port serial adapter and modems (Digi AccelePort Xp)		

LGMapper/LGArchiver

Node	LGMapper/LGArchiver		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7835-I1-CC1 MCS-7835-H1-CC1 MCS-7835H-3.0-CC1 MCS-7835I-3.0-CC1	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processors 1000+ MB RAM 36+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 36+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 36+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports

Node	LGMapper/LGArchiver		
	Small Enterprise	Medium Enterprise	Large Enterprise
Operating System and Database Management System	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Microsoft SQL Server 2000 Standard with Service Pack 3a Microsoft SQL Server 2000 Standard with Service Pack 4 [Cisco ICM SR3 or later]		
Additional Items	<i>FOR MODEM BANK USE</i> Multi-port serial adapter and modems (Digi AccelePort Xp)		

AlarmTracker Client

Node	AlarmTracker Client		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7815-I2-CCE1 MCS-7815I-3.0-CC1		
Minimum Recommended Hardware	1.4GHz or greater Intel Pentium processor 256+ MB RAM 18.2+ GB usable disk space (ATA/IDE acceptable) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet port		
Operating System	Microsoft Windows 2000 Professional with Service Pack 4 Microsoft Windows 2000 Professional with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later]		
Additional Items	<i>FOR MODEM BANK USE</i> Multi-port serial adapter and modems (Digi AccelePort Xp)		

ICM/IPCC Web Collaboration Option

ICM Web Collaboration Server

Note: If the Web Collaboration database resides on separate server, then the specifications below are the same for that machine.

Node	Collaboration Server		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1		
Minimum Recommended Hardware	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports		
Operating System, Database Management System and Application Specific Software	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Microsoft SQL Server 2000 Standard with Service Pack 3a Microsoft SQL Server 2000 Standard with Service Pack 4 [Cisco ICM SR3 or later] or Oracle Database 8i (8.1.7.4) Oracle Database 8i (9.2.0.6) (Cisco ICM 6.0 SR 2 and later) Other: JDK 1.3.1 (provided by Cisco) New Atlanta ServletExec 4.1.1 (provided by Cisco with a 2-CPU license; if the customer has more than 2 CPUs, an appropriate license must be obtained from New Atlanta, which license can be purchased online at http://www.newatlanta.com)		
Additional Items	<i>FOR REMOTE MANAGEMENT/SUPPORT</i> 56K V.Everything/V.90 external modem		

ICM/IPCC Media Blender for Web Collaboration Option

Node	Media Blender		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7835 and equivalent servers if fewer than 100 agents. MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1		
Minimum Recommended Hardware	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended		
Operating System and Application Specific Software	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Other: Sun JDK Version 1.4 (provided by Cisco) New Atlanta ServletExec 4.1.1 (provided by Cisco with a 2-CPU license; if the customer has more than 2 CPUs, an appropriate license must be obtained from New Atlanta, which license can be purchased online at http://www.newatlanta.com)		
Additional Items	<i>FOR REMOTE MANAGEMENT/SUPPORT</i> 56K V.Everything/V.90 external modem		

ICM/IPCC Dynamic Content Adapter (DCA) for Web Collaboration Option

Node	DCA Server		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco Media Convergence Servers (MCS)	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1		
Minimum Recommended Hardware	2 x 1.4GHz or greater Intel Pentium processors 1000+ MB RAM 18.2+ GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports		

Node	DCA Server		
	Small Enterprise	Medium Enterprise	Large Enterprise
Operating System and Application Specific Software	Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows 2000 Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Other: JDK 1.3.1 (provided by Cisco) New Atlanta ServletExec 4.1 (provided by Cisco with a 2-CPU license; if the customer has more than 2 CPUs, an appropriate license must be obtained from New Atlanta, which license can be purchased online at http://www.newatlanta.com)		

ICM/IPCC E-Mail Manager Option

The ICM E-Mail Manager is comprised of several components: Application Server, UI Server, WebView, and Database Server. In addition, the E-Mail Manager can utilize the Cisco Independent Reporting Database (CIR DB) for reporting. In all configurations, the Application Server must be separate from the Database Server. In very small agent configurations (**less than 10 concurrent agents**), the UI Server and WebView components can be co-resident with the Application Server. The configuration options are listed below.

Note: Each UI Server can support up to 200 Agents. Additional UI Servers are required to support additional Agents beyond 200.
 SQL Server clustering is not supported.
 Up to 25 POP accounts are supported.

Important Note: Customers who have existing instances with co-located UI or WebView servers can upgrade to the latest Service Releases. However, they cannot add any new instances on that server if they plan to have the UI or WebView servers co-located with the Cisco E-Mail Manager server.

Node	Cisco E-Mail Manager Servers		
	Small Enterprise	Medium Enterprise	Large Enterprise
	150,000 messages/year average volume (Primary DB) 1000 messages/day peak volume (Primary DB) 1-100 concurrent agents; 15 concurrent WebView users		
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA and CIR Database Server
Cisco Media Convergence Servers	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1		
Minimum Recommended Hardware	Dual Xeon CPU 1.5 GB RAM 36 GB usable disk space (SCSI) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Dual Pentium CPU 2 GB RAM 36 GB usable disk space (SCSI) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Dual Pentium CPU 1 GB RAM 36 GB usable disk space (SCSI) 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports

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Node	Cisco E-Mail Manager Servers		
	Small Enterprise 150,000 messages/year average volume (Primary DB) 1000 messages/day peak volume (Primary DB) 1-100 concurrent agents; 15 concurrent WebView users		
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA and CIR Database Server
Operating System and Database Management System	Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Database and CIR DB Server Only: Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 3a Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 4 [Cisco ICM SR3 or later] or Oracle Database 8i/9i Note: Microsoft Windows 2000 Advanced Server and SQL Server 2000 Enterprise Edition are required if using greater than 4 processors or greater than 2GB RAM.		

Node	Cisco E-Mail Manager Servers			
	Medium Enterprise 300,000 messages/year average volume (Primary DB) 1500 messages/day peak volume (Primary DB) 100-200 concurrent agents; 25 concurrent WebView users			
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA Database Server	CIR DB Server
Cisco Media Convergence Servers	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1 Note: A quad cpu MCS is not available at this time			
Minimum Recommended Hardware	Quad Xeon CPU 2 GB RAM 18.2 GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Dual Pentium CPU 2 GB RAM 18.2 GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Dual Xeon CPU 4 GB RAM 4 x 72 GB 10000 RPM RAID 1+0 drives = 144 GB 64 MB RAID Controller Cache 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Dual Xeon CPU 4 GB RAM 4 x 72 GB 10000 RPM RAID 1+0 drives = 144 GB 64 MB RAID Controller Cache 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports

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Node	Cisco E-Mail Manager Servers			
	Medium Enterprise 300,000 messages/year average volume (Primary DB) 1500 messages/day peak volume (Primary DB) 100-200 concurrent agents; 25 concurrent WebView users			
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA Database Server	CIR DB Server
Operating System and Database Management System	Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Database and CIR DB Server Only: Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 3a Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 4 [Cisco ICM SR3 or later] or Oracle Database 8i/9i Note: Microsoft Windows 2000 Advanced Server and SQL Server 2000 Enterprise Edition are required if using greater than 4 processors or greater than 2GB RAM.			

Node	Cisco E-Mail Manager Servers			
	Large Enterprise 460,000 messages/year average volume (Primary DB) 2500 messages/day peak volume (Primary DB) 200 or more concurrent agents; 25 concurrent WebView users			
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA Database Server	CIR DB Server
Cisco Media Convergence Servers	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1 Note: A quad cpu MCS is not available at this time			
Minimum Recommended Hardware	Quad Xeon CPU 2 GB RAM 18.2 GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Dual Pentium CPU 2 GB RAM 18.2 GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Quad Xeon CPU 4 GB RAM 6 x 72 GB 15000 RPM RAID 1+0 drives = 216 GB 64 MB RAID Controller Cache 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Quad Xeon CPU 4 GB RAM 6 x 72 GB 15000 RPM RAID 1+0 drives = 216 GB 64 MB RAID Controller Cache 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports

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Node	Cisco E-Mail Manager Servers			
	Large Enterprise 460,000 messages/year average volume (Primary DB) 2500 messages/day peak volume (Primary DB) 200 or more concurrent agents; 25 concurrent WebView users			
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA Database Server	CIR DB Server
Operating System and Database Management System	Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 Microsoft Windows 2000 Server or Advanced Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Database and CIR DB Server Only: Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 3a Microsoft SQL Server 2000 Standard or Enterprise Edition with Service Pack 4 [Cisco ICM SR3 or later] or Oracle Database 8i/9i Note: Microsoft Windows 2000 Advanced Server and SQL Server 2000 Enterprise Edition are required if using greater than 4 processors or greater than 2GB RAM.			

Important Note: 20,000 messages per day support is available from Cisco E-Mail Manager 5.0 (0) SR4 onwards only.

Node	Cisco E-Mail Manager Servers			
	Extra Large Enterprise 1,000,000 messages/year average volume (Primary DB) 5000 to 20,000 messages/day peak volume (Primary DB) 200 or more concurrent agents; 50 concurrent WebView users			
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA Database Server	CIR DB Server
Cisco Media Convergence Servers	MCS-7845-I1-CC1 MCS-7845-H1-CC1 MCS-7845H-3.0-CC1 Note: A quad cpu MCS is not available at this time			
Minimum Recommended Hardware	4 x 2.6GHz or greater Intel "Xeon" class processors 2 GB RAM 18.2 GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	2 x 1.4GHz or greater Intel Pentium processors 2 GB RAM 18.2 GB usable disk space 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Quad Pentium Xeon 6 GB RAM 12 x 72 GB 15000 RPM RAID 1+0 drives = 432 GB 128 MB RAID Controller Cache 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports	Quad Pentium Xeon 6 GB RAM 12 x 72 GB 15000 RPM RAID 1+0 drives = 432 GB 128 MB RAID Controller Cache 3.5" floppy drive Internal CD-ROM or DVD-ROM drive 1 x 10/100/1000 Ethernet ports

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Node	Cisco E-Mail Manager Servers			
	Extra Large Enterprise 1,000,000 messages/year average volume (Primary DB) 5000 to 20,000 messages/day peak volume (Primary DB) 200 or more concurrent agents; 50 concurrent WebView users			
	Application Server	UI Server (WebView co-loaded on 1st UI Server only)	Primary & LAMBDA Database Server	CIR DB Server
Operating System and Database Management System	Microsoft Windows 2000 Advanced Server with Service Pack 4 Microsoft Windows 2000 Advanced Server with Service Pack 4 with Rollup 1 [Cisco ICM SR4 or later] Database and CIR DB Server Only: Microsoft SQL Server 2000 Enterprise Edition with Service Pack 3a Microsoft SQL Server 2000 Enterprise Edition with Service Pack 4 [Cisco ICM SR3 or later] or Oracle Database 8i/9i Note: Microsoft Windows 2000 Advanced Server and SQL Server 2000 Enterprise Edition are required if using greater than 4 processors or greater than 2GB RAM.			

Important Note:

1. Windows XP SP2 support is available from Cisco E-Mail Manager 5.0 (0) SR7 onwards only.
2. Windows XP/Windows XP SP1 support is available from Cisco E-Mail Manager 5.0(0) SR3 onwards only.
3. MS JVM is supported for Windows 2000.
4. Sun JRE 1.5 is supported for Windows 2000 and Windows XP from Cisco E-Mail Manager 5.0(0) SR4 onwards.

Node	Cisco E-Mail Manager Agent and Administrator Desktops		
	Small Enterprise	Medium Enterprise	Large Enterprise
Cisco E-Mail Manager Administrator Desktop	Minimum Hardware Requirement		
	Pentium CPU with 2.40 GHz 512 MB RAM	Pentium CPU with 2.40 GHz 512 MB RAM	Pentium CPU with 2.40 GHz 1 GB RAM
	Supported Operating System		
	Windows 2000 Server SP4 Windows XP SP1 Windows XP SP2	Windows 2000 Server SP4 Windows XP SP1 Windows XP SP2	Windows 2000 Server SP4 Windows XP SP1 Windows XP SP2
Cisco E-Mail Manager Agent Desktop	Minimum Hardware Requirement		
	Pentium CPU with 2.40 GHz 512 MB RAM	Pentium CPU with 2.40 GHz 512 MB RAM	Pentium CPU with 2.40 GHz 512 MB RAM
	Supported Operating System		
	Windows 2000 Server SP4 Windows XP SP1 Windows XP SP2	Windows 2000 Server SP4 Windows XP SP1 Windows XP SP2	Windows 2000 Server SP4 Windows XP SP1 Windows XP SP2

ICM/IPCC Interactive Voice Response (IVR/VRU) Options

Cisco Customer Voice Portal [formerly Internet Service Node (ISN)]

Consult the *Cisco Customer Voice Portal (CVP) Bill of Materials* for hardware and software specifications. This is accessible from <http://www.cisco.com/univercd/cc/td/doc/product/icm/isn/index.htm>

Cisco IP Interactive Voice Response (IP IVR)

Consult the *Cisco IP IVR Installation Guide* for hardware and software specifications at http://www.cisco.com/en/US/products/sw/custcosw/ps3651/products_installation_and_configuration_guide_book09186a008009181a.html