



# **Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM / Contact Center Enterprise & Hosted**

**Release 7.5(x)**

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*Hardware and System Software Specification (Bill of Materials) for Cisco Unified Intelligent Contact Management/Unified Contact Center Enterprise & Hosted, Release 7.5(x)*

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# 1 Overview

The purpose of this document is to specify the hardware and system software compatible with and required for the Cisco Unified Intelligent Contact Management (Unified ICM) and Cisco Unified Contact Center (Unified CC) products<sup>1</sup> for Release 7.5(1) and subsequent 7.5(x) maintenance releases (MR). This document is applicable to both the Enterprise and Hosted options of the Unified ICM and Unified Contact Center solutions.

The information contained herein is intended for use by Certified Partners and Cisco sales and system engineers, for pre-sales hardware planning and third-party software selection, as well as for incremental system updates. In all cases, the reader is assumed to be familiar with the Unified ICM/Contact Center product at an overview level, and to understand high level deployment models and essential application server types such as Logger and PG.

Document content will be updated periodically for technical clarification and to align with subsequently qualified hardware and third-party software. Document updates are typically synchronized with minor and maintenance releases and include updated support policy details for Microsoft Service Pack (SP) support qualified for the release. Note that while newly available hardware might be added to this document following initial publication, existing hardware server specifications originally published for a specific configuration will not be rendered obsolete by any subsequent release 7.5 specification update.

## Release Terminology: Major, Minor and Maintenance Releases

Despite adhering to the numbering identification scheme of a minor release, release 7.5(1) of the Enterprise and Hosted editions of Unified ICM and Unified Contact Center is a major release of the software. This is the case based on product scope, packaging, and installation considerations. The 7.5(1) release is installed using full media, and not the Cisco Patch Installer utility used for Minor and Maintenance Releases. All additional Cisco lifecycle and maintenance considerations of a major release thus apply to 7.5(1).

## Hardware, System Software<sup>2</sup>, and Capacity Sizing

To simplify mapping of the hardware server configurations across various deployments, server hardware is identified as a “server class” for both MCS and vendor-sourced (“generic”) servers. A server class contains one or more hardware types, based on category of processor family, memory, and hard drive configuration appropriate for the specified application. Server classes are detailed in [Appendix A – Server Classes](#).

Hardware and associated system software are specified by Unified ICM/Contact Center system server configuration with consideration for both the overall deployment model and the specific server software component configuration. Capacity sizing is an integral factor in proper requirement specification. Where requirements are tiered by system sizing, defined operating conditions and representative sizing thresholds (such as the maximum number of supported agents) are indicated. Special consideration is provided for installations upgrading to Release 7.5(1) on existing hardware. A summary of system configuration boundaries is also provided, followed by specific Unified ICM/Contact Center solution deployments and the applicable corresponding hardware and software requirements, by server node type and capacity range. Each configuration is prefaced with a representative set of primary operating conditions on which sizing is based, with exceptions and special considerations called out under the applicable server node.

Cisco strives to enhance the usefulness of this document by ensuring accurate detailed technical information backed by an extensive in-house testing and qualification effort. We have increased the amount of sizing and system boundary information to more accurately portray expected capacity and sizing limitations of specific deployments. The reader must recognize, however, that the Unified ICM and Unified Contact Center systems are by design highly scalable and complex distributed systems, and it is often difficult to characterize representative configuration and workload / call flow scenarios – particularly for the high-end Unified ICM Enterprise and Unified ICM Hosted customer. Cisco often defaults to a conservative stance in sizing limitations to arrive at capacities that have the broadest level of applicability. For this reason,

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<sup>1</sup> See the Note on Cisco Contact Center Product Names on page 3.

<sup>2</sup> System software consists of the operating system, database server, and other third-party applications.

the system sizing and configuration limitation information contained herein should be considered as guidelines which are applicable to the vast majority of customers, but which might also have exceptions. Where specific circumstances and/or complex system designs dictate, Cisco strongly encourages Partners and customers to consult with our Advanced Services / World Wide Voice Practice teams for further analysis and approval of specific deployments.

## 1.1 Updated Information in this Document

**Table 1-1: Publication Updates**

Rev.	Section	Notes
1.00	-	Initial revision for 7.5 release
1.10	7.9	Added virtualization support and related requirements
	7.6	CTI Supported Platforms
	6.7.28	Added server requirements for Unified Expert Advisor
	6.4	Increased CCMP Web App Server capacity
	7	Fixed section numbering
	Various	Miscellaneous minor edits
1.20	Appendix A	Add new MCS-7825-I4 and MCS-7825-H4 server as MCS-20-006-Class server
	Table 6-44, Table 6-68	Add MCS-20-006-Class server
	Table 6-54	Update part number for null modem cable
	Table 7-2	Note that the Danish language is not supported with Windows Server 2003 R2; change Latin1 to Latin1_General.
	Table 7-7	Restore support for RealVNC (inappropriately removed in prior versions)
	Table 7-9	Decrease VRU PG VM guest CPU and RAM requirements.
	6.1.2, 6.1.3	Change Outbound Option (Dialer) capacity formula and revise associated text.
1.21	7.4	Remove localization limitations and configuration requirements content; content moved to a more appropriate end-user guide.
1.22	Section 6-4	Updated CCMP Server Roles, capacities and requirement details.
1.23	Appendix A	Added new servers
	6, 7	Updated tables with new servers
	6.22	Updated capacity
1.22	Table 7.7	Updated with the latest supported third-party software versions
1.24	Sections 7-1, 7-2	Added the support of Cisco OEM versions of Windows Server 2003 and Cisco OEM version of Microsoft SQL 2005.
1.25	Section 3.1	Added note on PG tech-refresh guidelines
1.26		SP3 or higher Service Pack is required for Microsoft SQL Server 2005
1.26	Section 7.7	Added the support of Internet Explorer 8.0 for ICM 7.5(7) or later
1.26	Table 7.3, Table 7.4	Moved support for some components to Table 7.3 from Table 7.4
1.27	Section 6.7.16.2	Updated section CRM Connector for SAP
1.27	Section 7.9	WIM/EIM virtualization support
1.27	Section 6.1.4	Updated note on VXML gateway requirement when deploying RSM with CVP.
1.28	Section 6.7.20	Updated Cisco Media Blender OS support
1.29	Section 6.7.1 and 6.7.9	Updated Eicon card support from VR65 to VR68
1.30	Table 5.1	Updated notes on Duplexed PGs per ICM instance
1.31	Section 7.5	Added note on Database Requirements
1.34	Table 7.1	Updated LoggerB information
1.35	Table 5.1	Added limits for number of active campaigns.

## 2 References

Cisco Unified Intelligent Contact Management / Unified Contact Center Enterprise and Hosted product information can be found on [www.cisco.com](http://www.cisco.com).

Product documentation, including planning, upgrade, install, configuration, reporting, reference, and developer documentation, is available at [Cisco Product Support](#).

Other useful documents include:

- ◆ *Cisco ICM Software ACD Supplements*  
[http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod_technical_reference_list.html)
- ◆ *Cisco ICM ACD PG Supportability Matrices*  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cust\\_contact/contact\\_center/icm\\_enterprise/acd\\_supplements/icm\\_acdmx.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/icm_enterprise/acd_supplements/icm_acdmx.pdf)
- ◆ *Cisco Unified Contact Center Enterprise Software Compatibility Guide*  
[http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html)
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- ◆ *Virtualization Guide for Cisco Unified Intelligent Contact Management and Contact Center Enterprise*  
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### 2.1 Note on Cisco Contact Center Product Names

As of Release 7.0, the following name changes were introduced. However, the name changes have not yet been consistently integrated into the documentation set or the software.

Cisco Intelligent Contact Management Enterprise Edition, is renamed “Cisco Unified Intelligent Contact Management Enterprise” (abbreviated as Unified ICME).

Cisco Intelligent Contact Management Hosted Edition, is renamed “Cisco Unified Intelligent Contact Management Hosted” (abbreviated as Unified ICMH).

Cisco IP Contact Center (IPCC) Enterprise Edition and Cisco IPCC Hosted Edition are renamed “Cisco Unified Contact Center Enterprise” (abbreviated as Unified CCE) and “Cisco Unified Contact Center Hosted” (abbreviated as Unified CCH), respectively. Cisco System IPCC is renamed “Cisco Unified System Contact Center Enterprise” (abbreviated as Unified SCCE).

The use of the generic abbreviation “ICM” is intended to include both Unified ICMH and Unified ICME.

The use of the generic abbreviation “CC” in this document is intended to include Unified CCH, Unified CCE and Unified SCCE, but not Unified Contact Center Express (Unified CCX).

### 3 Servers for Cisco Contact Center Products

The Unified ICM/Contact Center solutions are fully supported on the Cisco 7800 Series Media Convergence Server (MCS) family of Intel-based, high performance hardware servers. The MCS 7800 family is an integral part of a complete and scalable Cisco Voice architecture solution for the enterprise, thoroughly tested for compatibility and optimal performance with the Unified ICM/Contact Center product. MCS servers have a proven track record of high reliability, offer a common consistent architecture across Cisco Voice applications, and accommodate value-added support services such as Cisco's SMARTnet (technical support services).

The range of MCS server sizes aligns with specific Unified ICM/Contact Center server node types and the corresponding anticipated capacity of a given solution. As explained in Section 1 and listed in [Appendix A – Server Classes](#), MCS servers are categorized in this document by “server class” designation. Specific class(es) are, in turn, listed as applicable to a given Unified ICM/Contact Center server node type and capacity in Section 5.1.2, [Unified ICM/Unified Contact Center Operating Conditions](#). Where specific Unified ICM/Contact Center component server requirements dictate certain hardware capabilities (for example, SCSI disk drives for high transaction SQL Server or Oracle deployment, or dual processor configurations to achieve specific system performance metrics), the applicable MCS server(s) is depicted.

Full detail on the range of MCS servers and their features can be found at the following reference:

<http://www.cisco.com/go/mcs>.

Unlike the Cisco Unified Communications Manager (Unified CM) and associated products, MCS servers ordered for Unified ICM/Contact Center deployments do not include a customized distribution of the operating system. Users ordering MCS for Unified ICM/Contact Center must also order the appropriate editions of Windows Server 2003 (or R2) and, for database, SQL Server 2005. **Unified ICM/Contact Center MCS customers assume primary maintenance responsibility for their Windows environment.** Cisco does, however, provide as a service ongoing Microsoft security patch certification for Unified ICM/Contact Center; refer to the *Security Best Practices for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 7.x(y)* guide, available at:

[http://www.cisco.com/en/US/customer/products/sw/custcosw/ps1001/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/customer/products/sw/custcosw/ps1001/prod_technical_reference_list.html)

For a 7.5 release, the MCS server solution is required for all Unified Contact Center Enterprise (including System CCE) deployments. Only exact-match OEM servers from Cisco-selected manufacturers (refer to <http://www.cisco.com/go/swonly> for details), or generic hardware for those components specifically indicated, can be substituted for Cisco MCS servers for Unified Contact Center deployments. **This requirement applies to new deployments and expansions on physical servers as well as on ESX server.**

If you have non-MCS hardware, you can upgrade to a 7.5 release and remain on that hardware as long as your hardware specifications comply with [Appendix A – Server Classes](#), and your contact center capacity requirements are within the capacity limits listed in [Section 5](#). For Unified ICME and Unified ICMH customers, non-MCS (“generic”) servers that essentially match MCS specifications for a given server class can be deployed; these are separately specified in [Appendix A – Server Classes](#). Note that high-end carrier-class generic servers are specified for specific applications that have no current MCS equivalent.

### **3.1 Server Hardware Configuration Guidelines**

This section provides system integrators and customers with guidelines, supported and unsupported server hardware, and storage configurations. Cisco MCS servers pre-package a number of the specified options; however, Cisco Unified ICM and Unified CC applications require special consideration to meet the high performance demands of the system. Whether acquiring Cisco MCS servers or third-party hardware, special care should be given to choose the appropriate level of hardware redundancy and a storage solution specific to the application nodes for which the servers are intended. Of particular importance are the storage controller, number (and capacity) of disks, and RAID configuration available. Furthermore, for customers with large configurations and/or long historical data retention period requirements, additional guidelines are provided.

Note that Cisco does not currently fully support deployment of the Unified ICM/Contact Center solution on a server “blade” chassis form factor. Evaluation of blade deployment is under consideration; in the interim, customers interested in pursuing blade deployments have an option available to them that provides flexibility but limits Cisco support liability should hardware or chassis control software negatively affect Unified ICM/Contact Center operation (including fault tolerant recovery). Refer to Cisco’s policy paper on the topic for more information:

[http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1001/prod\\_bulletin0900aecd802d04e5.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1001/prod_bulletin0900aecd802d04e5.html)

Note: Any tech-refresh planned for the PG machine, should ensure at least 40 GB of Hard Disk space mandatorily free, to ensure that the OPC capture serviceability feature is properly turned ON. This would be very vital for troubleshooting any PG related issues.

#### Recommended Redundant Hardware

**Supported components:**

- ◆ Power supplies
- ◆ Fans
- ◆ Memory
- ◆ Storage controllers
- ◆ Disks (RAID)

**Unsupported components:**

- ◆ Redundant network interface cards

**Caution**  
*Using network interface card teaming or other forms of redundant Ethernet adapters has been proven to introduce packet delivery/reception problems capable of generating latency sufficient to cause application problems.*

#### Central Processing Unit (CPU)

Each individual core in a multi-core processor does not count as a processor towards server requirements given in [Appendix A – Server Classes](#). A processor is considered a single physical CPU, regardless of the number of cores.

#### Network Interface Card (NIC) Speed/Duplex Configuration

NIC Capability ↓	Switch Port Capability	
	10/100 Mbps	1000 Mbps
10/100 Mbps	10/100 Mbps Full Duplex	10/100 Mbps Full Duplex
1000 Mbps	10/100 Mbps Full Duplex	Auto

**Note:** Severe network communication problems are likely when 10/100 Mbps NICs and switch ports are not BOTH explicitly set to the capable speed in Full Duplex operation.

**Cisco highly recommends the use of gigabit (1000 Mbps) server network interface cards and gigabit network switches.**

#### Storage Hardware

Cisco Unified ICM and Unified CC are I/O intensive applications that handle call routing, process logging, and historical archiving. I/O write operation capacity is of particular criticality. The use of SCSI hard disk drives is the default required unless otherwise specified. Components where Serial or Parallel ATA (Advanced Technology Attachment) drive use is acceptable are explicitly identified in the applicable node's hardware specifications.

#### Required controllers:

- SCSI/SAS
  - Ultra160/3 (minimum)
  - Ultra320 (recommended)
  - SAS 3.0Gb/s (highly recommended)<sup>3</sup>
- ATA
  - Serial (recommended)
  - Parallel

#### Disk Drives:

- SCSI/SAS
  - 3.5" Form Factor
    - 15,000 RPM for Cisco Unified ICM and Unified CC Loggers, Historical Data Servers and other database servers
    - 10,000 RPM (minimum) for all other nodes
  - 2.5" Form Factor
    - 15,000 RPM preferred for database servers (if available)
    - 10,000 RPM (standard) for all other nodes
- ATA
  - 7,200 RPM

#### Additional Media:

- DVD drive (software installation)

#### Configuration guidelines:

- A dedicated on-board or add-in RAID controller must be used with a minimum of 128 MB of battery backed cache.
- Increasing the number of physical drives increases the overall fault tolerance of the disk array.
- Use controllers with multiple channels connected to discrete drive bays or backplanes.

*Note:*

*Multiple controller channels can be of significant advantage when there are multiple drive bays and backplane connections. 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.*

- Two channels per external storage enclosure.

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<sup>3</sup> Serial Attached SCSI

- Multiple external storage enclosures are desirable (when needed) for increased performance and fault tolerance.
- External storage enclosures with dedicated RAID controllers are supported with MCS server systems.

Supported configurations:

- Fibre Channel is supported only in a point-to-point topology deployment.
- Dedicated on-board or add-in RAID controllers are required to use any of the RAID levels supported.
- RAID 1 (Mirroring and Duplexing) – This is the minimum RAID level for all critical Unified ICM and Unified Contact Center components. See [Appendix B – RAID Configuration Requirements](#) for details. Mirroring is typically used for boot drives on all servers to prevent loss of data and down time in the event of a disk failure.
- RAID 10 (A Stripe of Mirrors) – This is the required RAID level for all medium to large Unified ICM/Contact Center Logger and HDS nodes. RAID 10 offers the highest performance needed to meet the demands of SQL Server and the Logger or HDS, while still maintaining a safe level of redundancy.

Unsupported configurations:

- Fibre Channel Arbitrated Loop (FC - AL) fabric topology
- Software-based RAID provided by the operating system or other software
- Proprietary RAID solutions
- RAID 5 (Block Interleaved Distributed Parity)
- RAID 0 (Striped Disk Array without Fault Tolerance)
- RAID 0+1 (A Mirror of Stripes)

*Caution*

*Typically used for redundancy in file server applications, RAID 5 has been observed in product testing to manifest considerable performance degradation in write-intensive applications. Therefore, RAID 5 is not supported for new deployments. When “technology refresh” upgrading, configure the target server array (that which is replacing the existing RAID 5 array) for RAID 10.*

*RAID 0 is not supported due to the lack of fault tolerance. If one drive fails, then all data in the array is lost. RAID 0+1 is not supported due to increased risks of data loss or down time in the event of a failure.*

- Network Attached Storage (NAS)

NAS solutions pose unacceptable risk due to the variability of the interface between the server and the NAS device; specifically, latency and bandwidth of the network link can introduce performance delays that put the solution at risk. Because of this variability, Cisco cannot support NAS for Unified ICM or Unified Contact Center.

Alternative storage option:

Unified ICM and Unified CC server components are qualified and tuned for optimal operation on a dedicated storage solution – direct attached (internal/external) SCSI or SAS. However, recognizing that some deployments have data retention needs that exceed the storage capabilities of direct attached disk arrays, Cisco is prepared to endorse the use of a Storage Area Network (SAN) under the following conditions:

1. The SAN must be dedicated to Unified ICM/CC only; the SAN might not be shared with other applications.
2. The SAN must be used for historical databases (HDS) only.

3. The SAN host interface (for example, Fibre Channel) must meet or exceed the performance specifications of supported (direct attached) SCSI/SAS interfaces (see [Storage Hardware, Required Controllers](#), above).
4. Each individual drive in the SAN array must meet or exceed the performance specifications of supported (direct attached) disk drives (see [Storage Hardware, Disk Speed](#), above). (**Note:** SATA drives are not supported with SAN.)
5. The SAN disk array must be configured as RAID 10, for added performance and fault tolerance.

SAN solutions are typically deployed in a shared environment where multiple applications are contending for storage access. Because of the real-time nature of the Unified ICM/Contact Center application, such an environment cannot be supported; the conditions listed above are necessary to ensure that the deployment performs within published capacity limits. If the SAN storage deployment is identified as affecting the functions of the contact center solution, the customer will be required to deploy a direct attached storage solution instead. Moreover, if in the process of troubleshooting, the SAN itself is identified as the problem, the customer must contact the system integrator or the SAN vendor for resolution.

Unqualified backup options:

- Backup device/software option decisions (and procedures) are left to the end customer; no backup products are explicitly qualified by Cisco.

**Caution**

*For performance reasons, backups must be performed outside of business hours or during periods of lowest activity. Cisco does not provide recommendations for specific backup devices or products, but internal and other direct-attached devices might have restrictions on which platforms they are compatible with. Consult your backup product vendor to determine options for internal or external backup storage.*

## 4 Software Upgrade and Installation Considerations

Upgrading a Unified ICM/Contact Center installation from Release 5.0 or 6.0 requires that you first upgrade the entire system to 7.0(0) SR4. You can then install the 7.5(1) release (and subsequent maintenance releases) on your (upgraded) 7.0(0) SR4 system.

This section describes the considerations for the upgrade process.

### 4.1 Upgrading to Unified ICM/Unified Contact Center Release 7.5(1)

Upgrading to Unified ICM/Contact Center Release 7.5(1) is explained in the *Upgrade Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted Editions*. For Cisco Unified System Contact Center Enterprise, please refer to the *Upgrade Guide for Cisco Unified System Contact Center Enterprise* for detailed guidance on upgrading that product.

This section highlights some of the considerations to be aware of.

There are two distinct approaches for upgrading an existing Unified ICM/Contact Center installation to the 7.5(1) release of the software:

- **Technology Refresh:** Installing and configuring the system and product software on newly acquired hardware, migrating historical and configuration data from the prior hardware environment.
- **Common Ground:** Upgrading software in-place on pre-existing hardware, migrating data in place.

In both of the above cases, the Unified ICM/Contact Center database is migrated using a migration utility (introduced in 7.0(0)) known as the Enhanced Database Migration Tool (EDMT). EDMT streamlines the upgrade process by migrating data and schema efficiently in bulk (usually over the course of a single maintenance window) and with an improved user interface. This replaces the prolonged “shadow copy” process of prior upgrades. Both EDMT and detailed procedures for the overall upgrade and migration can be found in the *Upgrade Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted Editions*.

Deciding on the appropriate upgrade path depends in part on whether a customer’s existing hardware is suitable for the 7.5(1) deployment. Cisco recognizes the importance of protecting a customer’s investment in recent generation hardware, and for that reason ongoing qualification of the Unified ICM/Contact Center product is extended to address older hardware. At the same time, given significant strides in processor speeds (and multiple cores) as well as increasing computational demand from both the system and application software, a level of relative concurrency in supported hardware is maintained. As a guideline, Cisco minimally certifies and supports the current release hardware that met the corresponding product *Hardware and System Software Specification (Bill of Materials)* when purchased new two major releases back. Capacity and sizing numbers differ between those for “minimum recommended” and currently available hardware models – and capacity profiles presented in Section 5.1.2, [Unified ICM/Unified Contact Center Operating Conditions](#), reflect that difference between capacities shown for new deployments (and technology refresh) versus common ground upgrades. The current generation (new deployments) hardware specified is strongly encouraged for all upgrades, to fully exploit the call processing capacity designed into the Unified ICM/Contact Center products.

Unified ICM/Contact Center Release 7.x is optimized for the Windows Server 2003 operating system (both Standard and Enterprise Edition), and all new installs must be performed on that operating system. Ongoing support for Release 7.0(0) (Unified ICM and Unified CC) running on Windows 2000 Server effectively ended in October 2006 (one year following the General Availability date of the Windows Server 2003-compatible 7.0 product)<sup>4</sup>.

Recognizing the significant impact of an operating system deployment in the upgrade scenario, Cisco will support transitional 7.0(0) SR4 or 7.1(x) deployments on Windows 2000 Server, provided customers subsequently migrate to Windows Server 2003 *within 30 days of the upgrade to 7.0(0) SR4 or 7.1(x)*. This policy will NOT continue with any

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<sup>4</sup> Windows 2000 mainstream support from Microsoft ended on June 30, 2005. Microsoft offers Extended Support for five (5) years after the end of mainstream support, or for two (2) years after the second successor product (N+2) is released—whichever is longer. Refer to the *Windows Product Family Lifecycle* at <http://www.microsoft.com/lifecycle> for the latest information.

subsequent version updates beyond 7.1(x), either major or minor versions; subsequent versions require Windows Server 2003 or R2 as a prerequisite to their installation.

Although PGs are supported back two previous versions, to eliminate defects and add feature enhancements, the PGs should be upgraded to the same version as the Central Controller. In addition, to minimize upgrade complications Cisco recommends that all components be at the same version prior to performing the upgrade.

**System CCE Caveat:** After upgrading your Unified System Contact Center Central Controllers and Administration & WebView Reporting servers, you must upgrade your Agent/IVR Controller(s), and Outbound Controller (and Multichannel Controller, if deployed) at your earliest convenience. Until that time, they will continue to function properly, but might not be re-configurable from the Web Administration tool until upgrade is complete.

**Hosted Note:** Assure Central Site PGs are the first PGs to be upgraded. All other sites can be subsequently upgraded due to the sheer volume of PGs that are involved.

An equally important consideration for hardware compatibility requirements are those derived from the Microsoft operating system and system software (most notably Microsoft SQL Server). Note that the Unified ICM/Contact Center solution requirements outlined in this document match and in some cases exceed similar requirements from Microsoft. For example, while Microsoft SQL Server Enterprise Edition is not technically required (over SQL Server Standard Edition) with a total of 4GB of physical memory and four or fewer processors, there are mission critical, high database load scenarios where Enterprise Edition is suitable with the Unified ICM/Contact Center application. (Because Cisco performs all SQL Server Enterprise Edition qualification on Windows Server 2003 Enterprise Edition, the latter is likewise required whenever SQL Server Enterprise Edition is itself deployed.) Details are covered in [Section 7.1.2](#). In all cases, the Microsoft operating system and SQL Server software Service Pack (SP) updates must be applied to meet the levels specified herein. This is important for operational integrity as well as for security. Cisco tests extensively against published service pack support levels, and each new Maintenance Release is tested against all relevant security updates.

Unified ICM/Contact Center Release 7.5 supports Microsoft SQL Server 2000 for a period of 90 days following an upgrade to a 7.5 release. Customers must upgrade the SQL Server software to Microsoft SQL Server 2005 (including the appropriate service pack as specified in Section 7.2) within this period, typically once the upgraded 7.5 deployment is stabilized. Customer deployments running Microsoft SQL Server 2000 will not be supported beyond this transitional period.



***Important Note: Unified ICM/Contact Center Release 7.5(7) and later versions require Microsoft SQL 2005 with SP3. Earlier releases only support Microsoft SQL 2005 with SP2.***

Additional important upgrade information follows:

- ◆ A Unified ICM/Contact Center system is always upgraded from a prior release starting with the central controller (Router and Logger) servers.
- ◆ Upgrades of duplexed systems are typically done one “side” at a time.
- ◆ As with a major release upgrade, Release 7.5(1) requires that the HDS systems be themselves upgraded to coincide with the Logger to which they communicate.
- ◆ Since release 7.5(1) is a full media distribution release, once a server has been upgraded to 7.5(1), it cannot be “rolled back”. Because of this, a full backup of the server prior to upgrade is a critical step in the upgrade process.
- ◆ Peripheral Gateway (PG) nodes are typically the last servers to be upgraded; the 7.0(0) SR4 transitional upgrade will support 4.6.2 PGs through the upgrade transition, but all PGs must be running a minimum of release 6.0(0) for a fully supported system configuration on Release 7.5.
- ◆ Unified ICM Hosted and Unified CC Hosted customers can, as with prior major releases, upgrade their NAM and CICM servers in either order to best suit their operational requirements. Also like prior releases, however, the NAM-to-CICM protocol support inherent in the Hosted Edition software supports only a single major back-level release.

- ◆ The documented procedures for upgrading to Unified ICM/Contact Center Release 7.5(1) require a starting baseline of Unified ICM/Contact Center 7.0(0) SR4, running on the Microsoft Windows Server 2003 (or R2) SP2 operating system with Microsoft SQL Server 2000 (SP4). Upgrade customers currently deploying releases earlier than release 7.0(0) will need to provide a transitional upgrade to 7.0(0) SR4 as a staging release before upgrading to 7.5(1). These steps require a database migration from the earlier release to the destination release; for that reason the upgrade requires stabilization on the transitional release and is thus not a multi-step process accomplished in a single maintenance window. You must perform an upgrade of the operating system to Microsoft Server 2003 once the 7.0(0) SR4 upgrade is stabilized (assuming upgrade from release prior to 7.0(0)); only after the operating system is upgraded to Windows Server 2003 (or R2) can one install the Unified ICM/Contact Center 7.5(1) release. Finally, once the system is stabilized on the target 7.5 release, upgrade SQL Server 2000 to SQL Server 2005.
- ◆ Customers on a 7.0(0) service release prior to SR4 need to apply SR4 to their current deployment before upgrading to release 7.5(1).

## ***4.2 Installing Unified ICM/Unified Contact Center 7.5(1)***

Cisco Unified ICM/Contact Center 7.5(1) is distributed on new media and can be installed directly from the distribution media on new deployments. Although upgrades require a base installation of 7.0(0) SR4, new deployments do not; for new deployments, install the 7.5(1) release as you would any major release.

## ***4.3 Installing Unified ICM/Unified Contact Center Maintenance Releases***

For all ICM/Contact Center Releases 7.1(2) and later, “service releases” (SR) have been renamed to “maintenance releases” (MR). Cisco Unified ICM/Contact Center Enterprise & Hosted maintenance releases are cumulative updates to previous releases. As a result, installing Release 7.5(1) installs all the functionality and updates contained in all prior release 7.x base and service/maintenance releases. Due to this, you might want to review all relevant Release Notes prior to installing Release 7.5(1).

All Unified ICM/Contact Center Release 7.5(1) customers must make plans to apply the 7.5(2) or 7.5(3) MR coincident with the upgrade to 7.5(1) to take advantage of updates contained in subsequent 7.5 MRs.

Customers are encouraged to apply the most recent maintenance release.

## 5 Software Constraints and Operating Conditions

### 5.1 Unified ICM/Contact Center Configuration Limits and Scalability Constraints

The following table specifies the configuration limits and scalability constraints for the Unified ICM/Contact Center products. These configuration limits are part of the Unified ICM/Contact Center product design constraints and were used for system sizing characteristics as tested by Cisco. Most of these system parameters (or combinations of these system parameters) form contribution factors which impact system capacity.

When you design your contact center, take special care to ensure your design is deployed within these limits. (See applicable specific comments in the table below for additional detail.) Consult Cisco if you have special configuration requirements that might exceed specific parameter(s).

The check mark in the table indicates that a given parameter is applicable to the indicated Unified ICM/Contact Center product edition.

**Table 5-1: Configuration Limits and Scalability Constraints, Unified ICM, Unified CC**

Maximum Limit	Limit Value	Unified SCCE	Unified CCE	Unified ICME	Unified CCH	Unified ICMH	Comments
ECC (Extended Context Call) and User Variables Size (bytes) <sup>5</sup>	2,000	✓	✓	✓	✓	✓	CVP, CEM, and Outbound rely on a subset of this max limit for integration with Unified ICM.
Number of Peripheral Variables (Call Variables)	10	✓	✓	✓	✓	✓	Also known as User Variables in System CCE.
Peripheral Variable Length (characters)	40	✓	✓	✓	✓	✓	40 characters, excluding terminating NULL
VRU PIMs per VRU PG	10	✓ <sup>6</sup>	✓	✓	✓	✓	
VRU PIMs per Generic PG	8	N/A	✓	N/A	✓	N/A	
VRU PIMs per System PG	5	✓	✓	N/A	N/A	N/A	IP-IVR PIMs

<sup>5</sup> The maximum indicated is independent from the number of ECC and user variables used, with each representing approximately 50 bytes additional storage per record. Note also that with the introduction of selective ECC variable persistence in Unified ICM/Contact Center 7.1, the maximum includes both persistent and non-persistent variables.

<sup>6</sup> These VRU PIMs are for CVP in a Unified System CCE deployment and will be deployed on a separate server – not on the Agent/IVR Controller.

**Cisco Unified ICM/Contact Center Enterprise & Hosted Editions, Release 7.5,  
Hardware and System Software Specification**

Maximum Limit	Limit Value	Unified SCCE	Unified CCE	Unified ICME	Unified CCH	Unified ICMH	Comments
TDM PIMs per PG	5	N/A	N/A	✓	N/A	✓	Multiple PIMs on a PG can impact performance, thus lowering the total number of agents and IVR ports and call volume supported when compared to a single PIM per PG. There is a maximum of one PIM per TDM PG with CTI OS co-resident.
MR PIMs per PG	10	N/A	✓	✓	✓	✓	
MR PIMs per PG in System CCE	1	✓	N/A	c	N/A	N/A	
PGs per server	2	N/A	✓	N/A	N/A	✓	This is not applicable to multi-instance CTI OS in a Unified CCH environment.
PGs per CICM instance	80	N/A	N/A	N/A	✓	N/A	This is only applicable to Unified CCH with multi-instance CTI OS deployment.
PGs per server for System CCE	3	✓	N/A	N/A	N/A	N/A	One each: Agent PG, VRU PG, MR PG
Duplex PGs per ICM instance	150	N/A	✓	✓	✓	✓	Not to exceed maximum number of PIMs per system and also not to exceed configured agents per system (see below)
PIMs per system (total)	200	N/A	✓	✓	✓	✓	
Configured agents per system (total) *	65,000	N/A	N/A	✓	✓	✓	Maximum of 150 PIMs
Configured agents per system (total) *	36,000	N/A	✓	N/A	N/A	N/A	Maximum of 150 PIMs
Skill groups per peripheral gateway	3000	N/A	✓	✓	✓	✓	
HDS servers per Logger side	2	✓	✓	✓	✓	✓	

\* Deployments approaching these limits are at risk of performance degradation and failed call routing, especially if one or more contending capacity limitations are themselves approaching maximum thresholds. For this reason, Cisco strongly recommends partner and/or professional services engagement for expert assistance with capacity-related system planning. The set of most impacting related parameters with large numbers of configured agents include total number of system peripherals, routes, number of active (vs. configured) agents, and overall call load. The point at highest risk for degradation are busy hours and the half-hour update period, during which PG-generated reporting data is sent to the Central Controller. System administrators can lessen their exposure to these issues by purging unused configured agents, retiring inactive peripherals, and maintaining systems at current maintenance release levels.

**Cisco Unified ICM/Contact Center Enterprise & Hosted Editions, Release 7.5,  
Hardware and System Software Specification**

Maximum Limit	Limit Value	Unified SCCE	Unified CCE	Unified ICME	Unified CCH	Unified ICMH	Comments
Instances per CICM platform	25	N/A	N/A	N/A	✓	✓	This assumes that the total offered load for all instances and their configurations are within the limit of a maximum capacity of a single instance.
CICMs per NAM platform	75	N/A	N/A	N/A	✓	✓	The maximum CICM physical servers per NAM are six. Consult your Cisco representative if you need more than six.
CTI OS per PIM	1	✓	✓	✓	N/A	✓	
Instances per PG/CG/CTI OS server	10	N/A	N/A	N/A	✓	N/A	Hosted limitation; related to item above
HDS instances per Hosted Distributor server	10	N/A	N/A	N/A	✓	✓	
Provisioning Operations per hour	120	✓	✓	✓	✓	✓	For Configuration Manager, Web reskilling, CCMP, or AAS – maximum number of save operations across all AWs in the solution in a 1-hour period
Dialer ports per dialer side	96	✓	✓	✓	✓	✓	
Dialers per PG pair (Side A + Side B)	2	N/A	✓	✓	✓	✓	
Dialers per PG pair (Side A + Side B) - System CCE	2	✓	N/A	N/A	N/A	N/A	
Dialers per system (total)	32	✓	✓	✓	✓	✓	<b>Note:</b> When the number of dialers per system exceeds 16, the Logger and HDS must be updated to GEN-50-005-Class.
Campaigns per system	100	✓	✓	—	✓	—	Campaigns per system
Campaign skill groups per system	100	✓	✓	—	✓	—	Total skill groups from all campaigns
Campaign skill groups per campaign	20	✓	✓	—	✓	—	Limitation on skill groups for any given campaign (as long as the max 100 campaign skill

Maximum Limit	Limit Value	Unified SCCE	Unified CCE	Unified ICME	Unified CCH	Unified ICMH	Comments
							groups per system not exceeded)
All-event clients (CTI Server)	7	✓	✓	✓	✓	✓	In the case where CTI OS is used, the number available decreases to 5 since CTI OS will use 2 of the 7 maximum.

**Note:** For Unified CCH, there is only one instance of Outbound Option per CICM with a maximum of 2 Dialers per machine.

## 5.2 Unified ICM/Unified Contact Center Operating Conditions

Except when explicitly specified, the Unified ICM/Contact Center hardware selection described in this section is based on the following operating conditions. In determining how to size a Unified ICM or Unified CC software implementation, it is important to consider the factors listed here. While there are additional variables that would impact system capacity, Cisco has chosen a representative subset and provided a set of values on which the sizing limitations herein are based.

**Table 5-2: Operating Conditions, Unified ICM, Unified CC**

Operating Condition	Value	Unified CCE	Unified ICME	Unified CCH	Unified ICMH	Comments
Maximum number of CTI OS Servers per PG	1	✓	✓	✓	✓	Simplex CTI OS System
	2	✓	✓	✓	✓	Duplex CTI OS System
Average skill groups per agent per team	5	✓	✓	✓	✓	Does not include default skill group Assumes 17 stats per skill group enabled
Number of Supervisors	10%	✓	N/A	✓	N/A	10% of total agent population
Number of Teams	10%	✓	N/A	✓	N/A	10% of total agent population (9 agents and one supervisor per team)
Monitor mode applications (CTI OS)	2	✓	✓	N/A	✓	
	10	N/A	N/A	1 per instance	N/A	
All-event clients (CTI Server) with single processor server	4	✓	✓	✓	✓	
ECC Variables	5 scalars	✓	✓	✓	✓	40 bytes each
Call Flow Traffic on straight Calls	85%	✓	✓	✓	✓	

**Cisco Unified ICM/Contact Center Enterprise & Hosted Editions, Release 7.5,  
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Call Flow Traffic on transfer Calls	10%					
Call Flow Traffic on conference Calls	5%					

## 6 Server Hardware Requirements

### 6.1 Unified Contact Center Enterprise

This section assists you in selecting the hardware servers for your Unified Contact Center solution, including both the Unified CCE and Unified System CCE deployment models.

**Note:** VRU ports for Agent PG and System PG should not exceed half of the maximum supported agents listed in the capacity column. This is applicable to both Unified CCE and Unified System CCE. Additional VRU PGs can be deployed to accommodate a greater number of VRU ports. VRU PG can be found in Section 6.7.7, [VRU Peripheral Gateway \(PG\)](#). (Additional VRU PGs are not applicable to System CCE).

[See Section 6.2, [Unified System Contact Center Enterprise](#) for details about System CCE.]

#### Agent PG Configuration Options

The following table illustrates various configuration options for the Agent PG (which components are necessary for each PG configuration). Agent PG capacity varies based on specific component configuration.

**Table 6-1: Agent PG Configuration Options with CTI OS, Unified CCE**

Unified CM + VRU	With Generic PG or Unified CCE System PG	With Unified Communications Manager PG	With Outbound Option
CM PG (CM PIM)	Generic PG (CM PIM + VRU PIM)	CM PG (CM PIM)	Generic PG (CM PIM + VRU PIM)
VRU PG (VRU PIM)		CM PG (2) (CM PIM)	
CTI Server	CTI Server	CTI Server	CTI Server
CTI OS	CTI OS	CTI OS	CTI OS
		CTI OS (2)	MR PG
			Dialer

**Table 6-2: Agent PG Configuration Options with Cisco Agent Desktop, Unified CCE**

Unified CM + VRU	With Generic PG or Unified CCE System PG	With Unified Communications Manager PG	With Outbound Option
CM PG (CM PIM)	Generic PG (CM PIM + VRU PIM)	CM PG (CM PIM)	Generic PG (CM PIM + VRU PIM)
VRU PG (VRU PIM)			
CTI Server	CTI Server	CTI Server	CTI Server
CTI OS	CTI OS	CTI OS	CTI OS
			MR PG
			Dialer
CAD Services	CAD Services	CAD Services	CAD Services

### 6.1.1 Notes on Agent Capacity Calculation

For the following sections, the agent count in the capacity specification refers to the number of concurrently logged-in agents. Consider the following factors when sizing call center resources:

#### CTI OS

Agent Capacity is decreased by 25% when CTI OS Security is enabled.

#### Mobile Agents

Mobile Agents are defined as agents using phones not directly controlled by Unified CC, irrespective of their physical location. (The term local agent refers to an agent who uses a phone that is under control of Unified CC, irrespective of physical location.) Note that agent capacity is decreased for mobile agents.

Mobile agents can be configured using either of two delivery modes. The weighting of the decreased capacity is based on the call delivery mode.

- Call by Call – In this mode, the mobile agent’s phone is dialed for each incoming call. When the call ends, the mobile agent’s phone is disconnected before being made ready for the next call.
- Nailed Connection – In this mode, the agent is called once at login, and the line stays connected through multiple customer calls.

For more details about sizing Mobile agents, refer to *Cisco Unified Contact Center Enterprise 7.x Solution Reference Network Design (SRND)* at

[http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html).

### 6.1.2 New Deployments and Technology Refresh

Option 1 - Supports up to 450 Agents

**Progger Configuration** – The Progger configuration consists of Unified CCE Router, Unified CCE Logger, Agent PG (Unified CM PIM, VRU PIM, CG, CTI OS, and CAD Services when CAD is required) on the same server.

**Table 6-3: Progger Servers, Unified CCE, New Deployments / Tech. Refresh**

Server Class	Capacity (agents)	
	Progger with no options	Progger with CAD Services
MCS-30-004-Class MCS-30-005-Class	100	N/A
MCS-40-005-Class MCS-40-011-Class	450	297

**NOTE:** To estimate Outbound Option agent capacity for Agent PGs, use the following formula:

$$\text{Max agents} = (\text{Maximum PG agent capacity}) - (4 \times (\text{number of dialer ports}))$$

This is an indicator of platform capacity; this is not an indicator of outbound resources in terms of how many agents can be kept busy by the number of dialer ports in the deployment. A quick but inexact rule of thumb is 2 ports required for each outbound agent, but your outbound resources may vary depending on hit rate, abandon limit, and talk time for the campaigns in the deployment. Use the sizing tool to determine outbound resources required for your campaigns.

Please refer to the Outbound Option chapter of the SRND

([http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html)) for more details.

Option 2 - Supports up to 4000 Agents

- **Rogger Configuration** – This server has the Unified CCE Router and Unified CCE Logger collocated. Consider this option if the expected growth of your contact center will not exceed 4,000 agents.

**Table 6-4: Rogger Servers, Unified CCE, New Deployments / Tech. Refresh**

Server Class	Capacity (agents)
	Rogger
MCS-30-004-Class MCS-30-005-Class	500
MCS-40-007-Class MCS-40-013-Class	4,000

Option 3 - Supports up to 8000 Agents

- **Standalone Router and Standalone Logger** – Consider this option if the expected growth of your contact center will exceed 4,000 agents.

**Table 6-5: Router/Logger Servers, Unified CCE, New Deployments / Tech. Refresh**

Server Class	Capacity (agents)	
	Router	Logger
MCS-40-005-Class MCS-40-011-Class	8,000	N/A
MCS-40-010-Class MCS-40-016-Class	N/A	6,000
GEN-50-005-Class	N/A	8,000

**Table 6-6: Agent PG Servers, Unified CCE, New Deployments / Tech. Refresh**

Server Class	Capacity (agents)			
	Agent PG with no options	Agent PG with CAD Services	# PIMs	# CTI OS Servers
MCS-30-004-Class MCS-30-005-Class	450	297	1	1
MCS-40-005-Class MCS-40-011-Class	2,000	1,000	1	1
MCS-40-005-Class MCS-40-011-Class	4,000	N/A	2-10 <sup>7</sup>	2-10 <sup>8</sup>

**NOTES:**

- The CAD Server component (if CAD services are required) should be collocated on the Agent PG server. For prior installations where CAD server was installed on a separate server, capacity numbers will remain the same (as shown below) regardless of whether it is collocated or separate.
- Agent capacity is decreased by 25% from the above when CTI OS Security is enabled.
- Agent capacity is further decreased for mobile agents. The weighting of the decreased capacity is based on the call delivery mode for the mobile agent.

For more details about sizing Mobile agents, refer to *Cisco Unified Contact Center Enterprise 7.x Solution Reference Network Design (SRND)* at [http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html).

- To estimate Outbound Option agent capacity for Agent PGs, use the following formula:

**Max agents = (Maximum PG agent capacity) – (4 x (number of dialer ports))**

This is an indicator of platform capacity; this is not an indicator of outbound resources in terms of how many agents can be kept busy by the number of dialer ports in the deployment. A quick but inexact rule of thumb is 2 ports required for each outbound agent, but your outbound resources may vary depending on hit rate, abandon limit, and talk time for the campaigns in the deployment. Use the sizing tool to determine outbound resources required for your campaigns. Please refer to the Outbound Option chapter of the SRND ([http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html)) for more details.

- All outbound call scenarios are supported when a mobile agent is deployed using nailed connection call delivery mode. Outbound call scenarios are not supported when a mobile agent is deployed using call-by-call call delivery mode.
- See Section [6.7.17](#), CAD Agent and Supervisor Desktops, for hardware and system software requirements.

### 6.1.3 Common Ground Upgrade

Option 1 - Supports up to 450 Agents

**Progger Configuration** – The Progger configuration consists of Unified CCE Router, Unified CCE Logger, Agent PG (Unified CM PIM, VRU PIM, CG, CTI OS, and CAD Services if CAD is required) on the same server.

<sup>7</sup> A PIM has a maximum agent capacity of 2,000 agents.

<sup>8</sup> For each PIM, there must be one associated CTI OS server; there is always a 1-to-1 relationship between CTI OS server and PIM

**Table 6-7: Progger Servers, Unified CCE, Common Ground Upgrade**

Server Class	Capacity (agents)	
	Progger with no options	Progger with CAD Services**
MCS-30-002-Class	85	N/A
MCS-30-003-Class	100	N/A
MCS-40-002-Class	270	85
MCS-40-003-Class	450	297

**NOTE:** To estimate Outbound Option agent capacity for Agent PGs, use the following formula:

**Max agents = (Maximum PG agent capacity) – (4 x (number of dialer ports))**

This is an indicator of platform capacity; this is not an indicator of outbound resources in terms of how many agents can be kept busy by the number of dialer ports in the deployment. A quick but inexact rule of thumb is 2 ports required for each outbound agent, but your outbound resources may vary depending on hit rate, abandon limit, and talk time for the campaigns in the deployment. Use the sizing tool to determine outbound resources required for your campaigns.

Please refer to the Outbound Option chapter of the SRND for more details:

[http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html).

Option 2 - Supports up to 1275 Agents

- **Rogger Configuration**

This server has the Unified CCE Router collocated with the Unified CCE Logger, and separate agent PGs.

**Table 6-8: Rogger Servers, Unified CCE, Common Ground Upgrade**

Server Class	Capacity (agents)
	Rogger
MCS-30-002-Class	300
MCS-30-003-Class	425
MCS-40-002-Class	900
MCS-40-003-Class	1,275

**Note:** For agent counts exceeding 1275, separate Router and Logger servers are required - Option 3.

Option 3 - Supports up to 5100 Agents

- **Standalone Router and Standalone Logger**

This option has the Unified CCE Router and Unified CCE Logger on separate servers and also separate agent PGs.

**Table 6-9: Standalone Router/Logger Servers, Unified CCE, Common Ground Upgrade**

Server Class	Capacity (agents)	
	Router	Logger
MCS-40-002-Class	3,600	3,000
MCS-40-003-Class	5,100	4,250
GEN-50-003-Class	5,100	3,600
GEN-50-004-Class	5,100	5,100

**Table 6-10: Agent PG Servers, Unified CCE, Common Ground Upgrade**

This applies to both Option 2 and 3.

Server Class	Capacity (agents)	
	Agent PG with no options	Agent PG with CAD Services**
MCS-30-002-Class	270	178
MCS-30-003-Class	382	252
MCS-40-002-Class	1,200	600
MCS-40-003-Class	1,700	850

**NOTES:**

- The CAD Server component (if CAD services are required) should be collocated on the Progger server. For prior installations where CAD server was installed on a separate server, capacity numbers will remain the same (as shown below) regardless of whether it is collocated or separate.
- Agent Capacity is decreased by 25% when CTI OS Security is enabled.
- Agent capacity is further decreased for mobile agents. The weighting of the decreased capacity is based on the call delivery mode for the mobile agent.

For more details about sizing Mobile agents, refer to *Cisco Unified Contact Center Enterprise 7.x Solution Reference Network Design* at:

[http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html).

- To estimate Outbound Option agent capacity for Agent PGs, use the following formula:

**Max agents = (Maximum PG agent capacity) – (4 x (number of dialer ports))**

This is an indicator of platform capacity; this is not an indicator of outbound resources in terms of how many agents can be kept busy by the number of dialer ports in the deployment. A quick but inexact rule of thumb is 2 ports required for each outbound agent, but your outbound resources may vary depending on hit rate, abandon limit, and talk time for the campaigns in the deployment. Use the sizing tool to determine outbound resources required for your campaigns.

Please refer to the Outbound Option chapter of the SRND for more details:

[http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html)

- All outbound call scenarios are supported when a mobile agent is deployed using nailed connection call delivery mode. Outbound call scenarios are not supported when a mobile agent is deployed using call-by-call call delivery mode.

### 6.1.4 Remote Silent Monitoring

Remote Silent Monitoring (RSM) is available with Cisco Unified Contact Center Enterprise and Unified Contact Center Hosted. The following tables define the system requirements for both the basic and enhanced environments for RSM.

Basic Environment - Supports less than 750 agents

**Table 6-11: Remote Silent Monitoring, Basic Environment, Unified CCE, Unified CCH**

Server Class	Capacity	Other requirements and Remarks
MCS-30-004-Class MCS-30-005-Class	<b>Less than 40 simultaneous monitoring sessions</b>	Windows Server 2003 or R2, SP2 4 GB RAM <sup>1</sup> 2x72GB SAS Hard Disk Drive in RAID 1 configuration

<sup>1</sup> **Note:** An additional 2 GB RAM must be ordered separately. The Remote Silent Monitoring server must have 4 GB RAM installed.

Enhanced Environment - Supports 750 agents or more

**Table 6-12: Remote Silent Monitoring, Enhanced Environment, Unified CCE, Unified CCH**

Server Class	Capacity	Other requirements and Remarks
MCS-40-005-Class MCS-40-011-Class	<b>Less than 80 simultaneous monitoring sessions</b>	Windows Server 2003 or R2, SP2 4 GB RAM 2x72GB SAS Hard Disk Drive in RAID 1 configuration

**Note:** When RSM is used with CVP, the gateway 'IVR prompt streaming for HTTP' needs to be enabled. Note that this setting is not recommended for other CVP applications. Therefore RSM requires a dedicated VXML gateway. This gateway must not be used for other CVP applications. Also, 1GB of gateway memory is recommended for use with RSM. This will support up to 40 concurrent monitoring sessions per gateway.

## 6.2 Unified System Contact Center Enterprise

### Agent PG Configuration Options

The following table illustrates various configuration options for the Agent/IVR Controller (which components are necessary for each PG configuration). Unified System CCE Agent/IVR Controller agent capacity varies based on specific component configuration.

**NOTE:** Agent capacity is further decreased for mobile agents. For more details about sizing mobile agents, refer to *Cisco Unified Contact Center Enterprise 7.x Solution Reference Network Design (SRND)* at: [http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html).

**Table 6-13: Agent PG Configuration Options, Unified SCCE**

With IP-IVR	With CVP	With CAD	With Outbound
System PG: CM PIM + IVR PIMs	System PG: CM PIM	System PG	System PG
CTI Server	CTI Server	CTI Server	CTI Server
CTI OS	CTI OS	CTI OS	CTI OS
	VRU PG	CAD Services	MR PG
			Dialer

### 6.2.1 Unified SCCE Deployment Options

Option 1 - Supports up to: 450 agents

This solution requires the following servers:

1. Central Controller + Agent/IVR Controller:
  - Router
  - Logger
  - System PG
  - CTI Server
  - CTI OS Server
  - Optional Components:
    - VRU PG if Unified Customer Voice Portal (CVP) is the deployed IVR
    - Outbound Option: Campaign Manager, Import, Media Routing PG and Dialer
    - CAD Services
2. Administration & WebView Reporting:
  - Distributor Administrative Workstation
  - Internet Script Editor server
  - WebView
  - HDS
  - Web Administration Server
  - Optional Component:
    - CCMP (MCS-40 class only)

**Table 6-14: Central Controller + Agent/IVR Controller Servers, Unified SCCE**

Server Class	Capacity (agents)	
	Central Controller + Agent/IVR Controller (without CAD Services)	Central Controller + Agent/IVR Controller (with CAD Services)
MCS-30-004-Class MCS-30-005-Class	100	N/A
MCS-40-005-Class MCS-40-011-Class	450	297

Option 2 - Supports up to: 2000 agents

This solution requires the following servers:

1. Central Controller:
  - Router
  - Logger
  - Optionally:
    - Outbound Option: Campaign Manager, Import
2. Agent/IVR Controller
  - System PG
  - CTI Server
  - CTI OS Server
  - Optional Components:
    - VRU PG if Unified Customer Voice Portal (CVP) is the deployed IVR
    - Outbound Option: Media Routing PG and Dialer
    - CAD Services
3. Administration & WebView Reporting
  - Administrative Workstation
  - Internet Script Editor server
  - WebView
  - HDS
  - Web Administration Server
  - Optional Component:
    - CCMP (MCS-40 class only)

**Table 6-15: Central Controller, Agent/IVR Controller Servers, Unified SCCE**

Server Class	Capacity (agents)		
	Central Controller Server	Agent/IVR Controller (without CAD Services)	Agent/IVR Controller (with CAD services)
MCS-30-004-Class MCS-30-005-Class	N/A	450	297
MCS-40-005-Class MCS-40-011-Class	2,000	2,000	1,000

## 6.2.2 Unified SCCE Server Configuration

Central Controller and/or Agent PG Server

**Table 6-16: Central Controller, Agent/IVR Controller Disk Configuration, Unified SCCE**

Server Class	Disk Configuration
MCS-30-004-Class MCS-30-005-Class	<b><u>Disk Configuration - 2 disks</u></b> Disks 1-2: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s), Database files - RAID 1
MCS-40-005-Class MCS-40-011-Class	<b><u>Disk Configuration - 4 disks – Agent/IVR Controller</u></b> Disks 1-4: OS, ICM and other third-party software - RAID 1.
MCS-40-007-Class MCS-40-013-Class	<b><u>Disk Configuration - 8 disks – Central Controller or Central Controller + Agent/IVR Controller</u></b> Disks 1-*: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s), Database files - RAID 10

**Note:** Unified System Contact Center Enterprise supports only one disk partition.

Administration & WebView Reporting Server

An Administration & WebView Reporting server is required whether you choose Option 1 or Option 2.

**Table 6-17: Administration & WebView Reporting Server Disk Configuration, Unified SCCE**

Server Class	Capacity	Other requirements
	Reporting Users	
MCS-30-004-Class MCS-30-005-Class	5	<b><u>Disk Configuration – 2 disks</u></b> Disks 1-2: OS, ICM, SQL Server and other third-party software, Database files, ICM Database Transaction Log(s) - RAID 1 (CCMP not supported on this class.)
MCS-40-005-Class MCS-40-011-Class	10	<b><u>Disk Configuration – 4 or more disks</u></b> Disks 1-*: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s), CCMP - RAID 10

## 6.3 Unified Contact Center Hosted

This section assists you in selecting hardware servers for Unified CC Hosted, including new deployments / technology refresh and common ground upgrade. (The following are minimum requirements.)

**Table 6-18: NAM Rogger Servers, Unified CCH**

Server Class	Capacity (cps)
GEN-50-003-Class	120
GEN-50-004-Class	170
GEN-50-005-Class	200

**Table 6-19: CICM Router/Logger Servers, Unified CCH, New Deployments / Tech. Refresh**

Server Class		Capacity	
CICM Router	CICM Logger	Agents	Instances
MCS-40-005-Class	MCS-40-009-Class MCS-40-015-Class	8,000	3
MCS-40-011-Class	MCS-40-010-Class MCS-40-016-Class	6,400	10
GEN-50-005-Class	GEN-50-005-Class	6,400	25

**Table 6-20: CICM Router/Logger Servers, Unified CCH, Common Ground Upgrade**

Server Class		Capacity	
CICM Router	CICM Logger	Agents	Instances
MCS-40-002-Class	MCS-40-002-Class	2,250	3
MCS-40-003-Class	MCS-40-003-Class	3,190	3
MCS-40-003-Class	MCS-40-004-Class	3,750	3
MCS-40-003-Class	GEN-50-003-Class	3,750	10
GEN-50-003-Class	GEN-50-004-Class	3,825	25

**Table 6-21: Multi-Instance Agent PG with CTI OS Servers, Unified CCH**

Server Class	Capacity (agents)	Operating Conditions
MCS-40-003-Class	1,600	CTI OS Security Disabled
MCS-40-003-Class	1,200	CTI OS Security Enabled

**Note:** For more details about sizing mobile agents, refer to *Cisco Unified Contact Center Enterprise 7.x Solution Reference Network Design (SRND)* at: [http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html).

## 6.4 Unified Contact Center Management Portal

This section assists you in selecting hardware servers for Unified Contact Center Management Portal (CCMP) for both Contact Center Hosted and Enterprise environments.

Each of the deployment models described in this section assumes the possibility of an n-sided server configuration that replicates data between sites.

With regard to resource management, the best practice is to map folder structure to organizational structure.

### Hardware Requirements

**Table 6-22: Hardware Requirements, Unified CCMP**

Server Class	Capacity					Server Role	Intended Use
	Agents	CCMP Users <sup>1</sup>	Provisioning Ops/ Hour <sup>2</sup>	Folders	Folder Depth		
MCS-40-006-Class	200 <sup>3</sup>	5	120	100	5	Co-Located	Lab or PoC
	1,500 <sup>4</sup>	150	120	200	5	Single Server	Standard Deployment
MCS-40-009-Class	8,000 <sup>4</sup>	800	120	N/A	N/A	Dual-Server Web Server	Large Systems
MCS-40-010-Class				600	6	Dual-Server DB Server	

<sup>1</sup> This number is configured users, not concurrent.

<sup>2</sup> Provisioning Operations are any configuration changes, such as Add, Edit or Delete, that can be performed with any of the following configuration tools on an AW Distributor or a Client AW: the Configuration Manager, Web reskilling, CCMP, or AAS. This limit reflects the results of laboratory tests of throughput. Exceeding this limit will have a detrimental impact on the AW Distributor.

<sup>3</sup> Co-Located systems support 200 Named agents, not concurrent.

<sup>4</sup> For Single- and Dual-Server systems, this is the number of concurrent agents.

Additional Limitations

In addition to the limits above, the following standard limits apply to all deployment models:

**Table 6-23: Additional Resource Limitations, Unified CCMP**

Resource	Limit (items)
IP Phone for Agent Use	2,000
Labels	30,000
Additional Resources (e.g. Skill Groups, Agent Teams, Dialed Numbers, etc.)	15,000

Systems exceeding these published limits should be referred to Cisco CCBU via the A2Q process, or before by the Cisco Project Team. Larger (even much larger) deployments are possible but require careful configuration to avoid unsatisfactory user experience.

Server Configuration

**Table 6-24: Server Configuration, Unified CCMP**

CCMP Server Type	Server Configuration
Single Server System	<b>Disk Configuration – 6 Disks</b>
Dual Server System - Web Application Server	Disks 1-2: OS, program executables, Windows page file: RAID 1 Disks 3-6: Database files and transaction log: RAID 10
Dual Server System – Database Server	<b>Disk Configuration – 8 Disks</b>
	Disks 1-2: OS, program executables, Windows page file: RAID 1 Disks 3-8: Database files and transaction log: RAID 10

**Notes:**

- With RAID configured systems Windows 2000 disk write caching is disabled, and therefore the write caching has to be set in the RAID controller BIOS available on boot-up (before the operating system loads).
- Resilient systems will require duplicate hardware, with identical systems being specified on both sides of the deployment

Drive Partition Layout

**Table 6-25: Physical Drive Layout, Unified CCMP**

Drive	Disk Array Minimum Size	Function
C:	72 GB	Windows operating system, program executables and Windows page file
D:	146 GB	Database data files and transaction log
Z:	N/A	CD/DVD-ROM

Database Sizing

The size of the RDBMS is calculated by the following formula:

$$4 * \text{Cisco Unified ICM size} * (\text{Desired retention period} / \text{Cisco purge period})$$

For example, if the Cisco HDS is sized at 1GB for 8 weeks of storage and the customer wishes to retain data for 52 weeks, the formula would then be:

$$4 * 1GB * 52/8 = 26GB$$

#### Network Recommendations

LAN – CCMP systems should be connected to ICM and other servers via gigabit (1000 Base-T) connections.

WAN – CCMP systems connecting to ICM or a distributed CCMP deployment across a WAN should be allocated a dedicated link of at least 1.5 Mbps capacity.

Load Balancing – Distributed CCMP Systems may use a Load Balancer to distribute load across the sites. We recommend that this is done using a dedicated Load Balancer, rather than using Windows built-in functionality.

## **6.5 Unified ICM Enterprise**

This section assists you in selecting hardware servers for Unified ICM Enterprise, including new deployments and technology refresh as well as common ground upgrade.

### **6.5.1 Note on Agent Capacity**

Agent capacity numbers are based on the assumption that 'Enable agent reporting' is *unchecked* on the Agent Distribution tab for the PG configuration (which is the default). When 'Enable agent reporting' is *checked*, agent capacity numbers for central controller servers are virtually identical to Unified Contact Center Enterprise – the Progger and Standalone Router/Logger capacity tables in Section 6.5.2, [New Deployments and Technology Refresh](#) and Section 6.5.3, [Common Ground Upgrade](#) are applicable instead of those that follow.

### **6.5.2 New Deployments and Technology Refresh**

**Table 6-26: Rogger Servers, Unified ICME, New Deployments / Tech. Refresh**

<b>Server Class</b>	<b>Capacity (agents)</b>
MCS-40-005-Class MCS-40-011-Class	2,000

**Note:** The Rogger server has the Unified ICM Router and Unified ICM Logger collocated.

**Table 6-27: Standalone Router/Logger Servers, Unified ICME, New Deployments / Tech. Refresh**

Server Class		Capacity	
Router	Logger	BHCA	Agents
MCS-30-004-Class	MCS-40-005-Class	30,000	1,000
MCS-30-005-Class	MCS-40-011-Class	18,000	1,800
		12,000	2,400
MCS-40-005-Class	MCS-40-006-Class	150,000	5,000
MCS-40-011-Class	MCS-40-012-Class		
MCS-40-005-Class	GEN-50-005-Class	360,000	12,000
MCS-40-011-Class		216,000	21,600
		144,000	28,800

**PG Servers, ICME:** see Section 6.7.9, [TDM ACD Peripheral Gateway \(PG\)](#) for TDM ACD PG server requirements.

**Table 6-28: MR PG Servers (Standalone), Unified ICME, New Deployments / Tech. Refresh**

Server Class	Capacity (agents)	Other requirements and remarks
MCS-30-004-Class MCS-30-005-Class	1,000	Maximum of 5 MR-PIMs per MR PG
MCS-40-005-Class MCS-40-011-Class	2,000	Maximum of 10 MR-PIMs per MR PG

### 6.5.3 Common Ground Upgrade

**Table 6-29: Rogger Servers, Unified ICME, Common Ground Upgrade**

Server Class	Capacity (agents)
MCS-40-002-Class	1,200
MCS-40-003-Class	1,700

**Note:** The Rogger server has the Unified ICM Router and Unified ICM Logger collocated.

**Table 6-30: Standalone Router/Logger, Unified ICME, Common Ground Upgrade**

Server Class		Capacity	
Router	Logger	BHCA	Agents
MCS-30-002-Class	MCS-40-002-Class	18,000	600
		10,800	1,080
		7,200	1,440
MCS-30-003-Class	MCS-40-003-Class	25,500	850
		15,300	1,530
		10,200	2,040
MCS-40-002-Class	MCS-40-002-Class <sup>1</sup>	90,000	3,000
MCS-40-003-Class	MCS-40-003-Class <sup>1</sup>	127,500	4,250
MCS-40-002-Class	GEN-50-003-Class	216,000	7,200
		129,600	12,960
		86,400	17,280
MCS-40-003-Class	GEN-50-004-Class	306,000	10,200
		183,600	18,360
		122,400	24,480

<sup>1</sup> Requires 6 disks. See Section 6.7.2, [ICM Logger](#) for 6 disk configuration.

**Table 6-31: Logger with Other Generic Hardware, Unified ICME, Common Ground Upgrade**

Server Class	Capacity	
	BHCA	Agents
GEN-30-002-Class ( < 10GB of data )	1,500	50
GEN-40-002-Class	7,500	250
GEN-40-003-Class	30,000	1,000

**PG Servers, ICME:** Section 6.7.9, [TDM ACD Peripheral Gateway \(PG\)](#) for TDM ACD PG server requirements.

**Table 6-32: MR PG (Standalone) Servers, Unified ICME, Common Ground Upgrade**

<b>Server Class</b>	<b>Capacity (agents)</b>	<b>Other requirements and remarks</b>
MCS-30-002-Class	600	Maximum of 5 MR-PIMs per MR PG
MCS-30-003-Class	850	Maximum of 5 MR-PIMs per MR PG
MCS-40-002-Class	1,200	Maximum of 10 MR-PIMs per MR PG
MCS-40-003-Class	1,700	Maximum of 10 MR-PIMs per MR PG

**Table 6-33: CTI OS Servers, Unified ICME, Common Ground Upgrade**

<b>Server Class</b>	<b>Capacity (agents)</b>
MCS-30-002-Class	60
MCS-30-003-Class	85
MCS-40-002-Class	1,200
MCS-40-003-Class	1,600

## 6.6 Unified ICM Hosted

This section assists you in selecting hardware servers for ICM Hosted,<sup>9</sup> covering new deployments and technology refresh as well as common ground upgrade. **(These are minimum requirements.)**

For clarity, only MCS family processors are specified below for the NAM and CICM Router nodes. Where non-MCS hardware is deployed (or being purchased), the equivalent type / number of processors (including speed), available memory (RAM), disk (capacity and controller architecture), and overall server capacity profile must meet or exceed that of the corresponding MCS model. Refer to [Appendix A – Server Classes](#) for full server class explanatory detail.

**Table 6-34: NAM Router and NAM Logger Servers, Unified ICMH**

Server Class		Capacity (cps)	Other Requirements
NAM Router	NAM Logger		
MCS-40-002-Class	GEN-50-003-Class	180	NAM Routers require addition of a third network interface card to connect to a Signaling Access Network. Refer to the <i>Setup and Configuration Guide for Cisco Unified ICM Hosted</i> .
MCS-40-003-Class	GEN-50-004-Class	255	
MCS-40-003-Class	GEN-50-005-Class	300	

**Table 6-35: CICM Router and CICM Logger Servers, Unified ICMH**

Server Class		Capacity (agents)	
CICM Router	CICM Logger	BHCA	Agents
MCS-40-002-Class	GEN-50-003-Class	216,000	7,200
		129,600	12,960
		86,400	17,280
MCS-40-003-Class	GEN-50-004-Class	306,000	10,200
		183,600	18,360
		122,400	24,480
MCS-40-003-Class	GEN-50-005-Class	360,000	12,000
		216,000	21,600
		144,000	28,800

**Note:** A quad processor class server should be substituted for the CICM Router server where greater than ten (10) customer instances are deployed.

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<sup>9</sup> The Multiple-NAM deployment model, which provides for NAM pair redundancy for high availability and increased scalability, is outside the scope of this document. Consult Cisco directly for capacity and sizing consultation with Multiple-NAM configurations.

## 6.7 Unified ICM/Unified Contact Center Common Components

This section describes the Unified ICM/Contact Center common standalone server requirements. These Unified ICM/Contact Center components can be used in various Unified ICM/Contact Center product editions.

### 6.7.1 Unified ICM/Unified Contact Center Router

The following table contains the Router hardware requirements for network interface required for pre-routing in Unified ICM Enterprise and Unified ICM Hosted.

**Table 6-36: Network Interface Requirements, Unified ICM Router Servers**

Network Interface	Hardware	
For Ethernet Carrier Network Interfaces (MCI, AT&T, etc.)	+1 x 10/100/1000 Ethernet port	
STENTOR Network Interface	1 (2 if duplexed) x DSG Run-Time 4.2 license(s) from NE Technologies, Inc.	
SPRINT Network Interface	<ul style="list-style-type: none"> <li>▪ 3 (5 if simplex) x Eiconcard:</li> </ul>	
	PCI 2.2 (normal PCI slot)	S94 66MHz <ul style="list-style-type: none"> <li>• Motorola 68360 @ 33MHz</li> <li>• 1 MB Flash &amp; 8MB DRAM</li> <li>• Bus Type: PCI 2.2 64bit / 66 MHz (3V)</li> </ul>
		S94 V2 <ul style="list-style-type: none"> <li>• Motorola Freescale 852T @ 98 MHz</li> <li>• 16 MB SDRAM</li> <li>• Bus Type: PCI 2.2 64bit / 66 MHz (3.3V)</li> </ul>
	PCIe (PCI Express)	S94 PCI Express <ul style="list-style-type: none"> <li>• Motorola Freescale 852T @ 98 MHz</li> <li>• 16 MB SDRAM</li> <li>• PLX 8111 Express Interface</li> <li>• Bus Type: Single lane PCIe 1.0a 2.5Gbit/Sec</li> <li>• Two VHSI connectors</li> </ul>
	<ul style="list-style-type: none"> <li>▪ 5 (10 if simplex) x VHSI V.35 DCE cable (Eicon #300-076)</li> <li>▪ Eicon "Connections for Windows Server 2003 and Windows XP software V6R8 "</li> </ul>	

Refer to the Unified ICM/Contact Center Hardware and Software Requirements for information on Router server selection based on system capacity requirements.

## 6.7.2 Unified ICM/Unified Contact Center Logger

Refer to the Unified ICM/Contact Center Hardware and Software Requirements for information on Logger server hardware selection based on capacity requirements. This section provides Logger server disk configuration information based on the hardware you selected, and other Logger configuration information.

For Operating System and Database Requirements, go to Section 7.5.

**SQL Server Note:** High load/performance environments that reach the 2 GB maximum boundary — including carrier class customers deploying quad processor servers — require the deployment of Microsoft Windows Server 2003 Enterprise Edition (with the /3GB switch) and SQL Server 2000 Enterprise Edition, to address additional server memory. Microsoft SQL Server 2005 Standard and Enterprise Editions are not limited by the maximum memory boundary.

For Remote Management/Support

A 56K V. Everything/V.90 external modem is needed for remote management and support. See Section 7.1.7, [Supported Third-Party Software](#).

### 6.7.2.1 New Deployments and Technology Refresh

**Table 6-37: Logger Servers, Unified ICM/CC, New Deployments / Tech. Refresh**

Server Class	Other requirements and remarks
MCS-40-005-Class MCS-40-011-Class	<p><b><u>Disk Configuration - 4 disks</u></b></p> <p>Disks 1-2: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s) RAID 1</p> <p>Disks 3-4: Database files RAID 1 (alternately RAID 10 can be used to gain better write performance by adding 2 additional disks – see below)</p>
MCS-40-006-Class MCS-40-012-Class	<p><b><u>Disk Configuration - 6 disks</u></b></p> <p>Disks 1-2: OS, ICM, SQL Server and other third-party software, RAID 1</p> <p>Disks 3-6: Database files, ICM Database Transaction Log(s), RAID 10</p>
MCS-40-007-Class MCS-40-013-Class	<p><b><u>Disk Configuration – 8 disks</u></b></p> <p>Disks 1-2: OS, ICM, SQL Server and other third-party software, RAID 1</p> <p>Disks 3-8: Database files, ICM Database Transaction Log(s) RAID 10</p>
GEN-50-005-Class	<p><b><u>Disk Configuration – 8 or more disks</u></b></p> <p>Disks 1-2: OS, ICM, SQL Server and other third-party software, RAID 1</p> <p>Disks 3-8: Database files, ICM Database Transaction Log(s) RAID 10 with dedicated 2 channel external RAID Controller, minimum of 256 MB cache with battery backup.</p>

## 6.7.2.2 Common Ground Upgrade

**Table 6-38: Logger Servers, Unified ICM/CC, Common Ground Upgrade**

Server Class	Other requirements and remarks
GEN-30-002-Class MCS-30-002-Class MCS-30-003-Class	<b><u>Disk Configuration - 2 disks</u></b> Disk 1-2: 2 x 72 GB Drives, RAID 1
MCS-40-002-Class MCS-40-003-Class	<b><u>Disk Configuration - 4 disks</u></b> Disks 1-2: 2 x 72 GB Drives: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s) RAID 1 Disks 3-4: 2 x 72 GB Drives: Database files RAID 1
GEN-40-002-Class MCS-40-004-Class	<b><u>Disk Configuration - 6 disks</u></b> Disks 1-2: 2 x 72 GB Drives: OS, ICM, SQL Server and other third-party software, RAID 1 Disks 3-6: 4 x 72 GB Drives: Database files, ICM Database Transaction Log(s), RAID 10
GEN-40-003-Class GEN-50-003-Class GEN-50-004-Class	<b><u>Disk Configuration – 8 or more disks</u></b> Disks 1-2: 2 x 72 GB Drives: OS, ICM, SQL Server and other third-party software, RAID 1. Disks 3-*: Database files, ICM Database Transaction Log(s) RAID 10. Dedicated 2 channel external RAID Controller, minimum of 256 MB cache with battery backup.

### 6.7.3 AW – Distributor, HDS, and WebView

For Unified CC Enterprise and Unified CC Hosted, Internet Script Editor is optional, and unlike in previous releases, it is no longer required that a WebView Server be installed on an AW/HDS. This option increases reporting scalability for large and hosted customers. Separating a database server and web server is also an important security consideration.

In order to deploy a standalone WebView server, an HDS-enabled AW must be accessible via TCP/IP for database connectivity; therefore, you have two options:

- AW – Real-Time Distributor, HDS, and co-resident WebView
- Real-Time Distributor, HDS, and separate dedicated WebView Server(s)

For a Unified System Contact Center Enterprise Deployment, Internet Script Editor is part of the standard installation and WebView is co-resident on the AW Distributor.

These hardware requirements are based on the following usage patterns.

The average reporting user is running:

- 2 concurrent real time reports
  - Each report returns less than 50 rows.
  - Equivalent to running or monitoring a script via Script Editor or Internet Script Editor.
- 1 historical report every hour, with each report defined as:
  - Queries working with data set size of 3,000 or less. Data sets size is determined by multiplying # of entities by two times the number of hours chosen by end-user while running the historical report. See table for calculation of data sets.
  - Queries resulting in less than or equal to 800 rows of data on half hour or daily historical reports

Determine the size of the data set by calculating the number of entities times hours multiplied by 2.

**Table 6-39: WebView Reporting Data Set**

Report	Calculation	Data Set Size	½ Report, Rows Returned	Daily Report, Rows Returned
Call Type Report: 10 Call Types for 20 hours	10 X 20 X 2	400	160	10
Agent Skill Group Report: 10 Agents, each in 5 Skill Groups for 8 hours	10 X 5 X 8 x 2	800	800	50

**Note:** Each reporting user is the equivalent of 1 Script Editor monitoring user (using Internet Script Editor or Client AW). See Section 6.7.4, [AW – Real-Time Distributor](#) for sizing of a distributor only running Internet Script Editor Server or serving Client AWs.

Graphics Card and Monitor for Unified ICM AW

Graphics card capable of 1024 x 768 x 64 K color or better

17" or larger display

For Unified Contact Center Hosted

This server can be used in a Unified CC Hosted multi-instance environment. It can be configured with up to 10 instances with 5 users per AW.

### 6.7.3.1 New Deployments and Technology Refresh

#### 6.7.3.1.1 AW – Real-Time Distributor, HDS, Co-resident WebView

For Operating System and Database Requirements, go to Section 7.5.

**Table 6-40: AW, HDS, Co-resident WebView Servers, New Deployments / Tech. Refresh**

Server Class	Capacity	Other requirements
	Reporting Users Per HDS	
MCS-30-004-Class MCS-30-005-Class	5	<b><u>Disk Configuration – 2 Disks</u></b> Disks 1-2: OS, ICM, SQL Server and other third-party software, Database files, ICM Database Transaction Log(s); RAID 1
MCS-40-005-Class MCS-40-011-Class	10	<b><u>Disk Configuration – 4 Disks</u></b> Disks 1-2: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s); RAID 1 Disks 3-4: Database files; RAID 1
MCS-40-009-Class MCS-40-015-Class	20	<b><u>Disk Configuration – 6 Disks</u></b> Disks 1-2: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s); RAID 1 Disks 3-6: Database files; RAID 10
MCS-40-010-Class MCS-40-016-Class	25	<b><u>Disk Configuration – 8 (or more) Disks</u></b> Disks 1-2: OS, ICM, SQL Server and other third-party software; RAID 1 Disks 3-8+: Database files, ICM Database Transaction Log(s); RAID 10.
GEN-50-005-Class	50	Dedicated 2 channel RAID Controller, min 256 MB cache with battery backup. (Alternately, the ICM Database Transaction Log(s) can be moved to a dedicated drive to limit disk contention.)

Note that if you have an AW with HDS and co-resident WebView server, the total number of agents in the contact center deployment must not be greater than 10 times the specified maximum of Reporting Users per HDS.

#### 6.7.3.1.2 AW – Real-Time Distributor, HDS, Separate Dedicated WebView

For Operating System and Database Requirements, go to Section 7.5.

**Table 6-41: AW, HDS, Separate WebView Servers, New Deployments / Tech. Refresh**

Server Class	Capacity		Other requirements
	Reporting Users Per HDS	WebView Servers Per HDS, each supporting 50 users	
GEN-50-005-Class	50	1	<p><b><u>Disk Configuration – 8 (or more) Disks</u></b></p> <p>Disks 1–2: OS, ICM, SQL Server and other third-party software; RAID 1</p> <p>Disks 3–*: Database files, ICM Database Transaction Log(s); RAID 10. Dedicated 2 channel RAID Controller, min 256 MB cache with battery backup. (Alternately, the ICM Database Transaction Log(s) can be moved to a dedicated drive to limit disk contention.)</p>
	100	2	
	200	4	

### 6.7.3.2 Common Ground Upgrade

#### 6.7.3.2.1 AW – Real-Time Distributor, HDS, Co-resident WebView

For Operating System and Database Requirements, go to Section 7.5.

**Note for SQL Server:** High load/performance environments that reach the 2 GB maximum boundary—including carrier class customers deploying quad processor servers—required the deployment of Microsoft Windows Server 2003 Enterprise Edition (with the /3GB switch) and SQL Server 2000 Enterprise Edition, to address additional server memory. Microsoft SQL Server 2005 Standard and Enterprise Editions are not limited by the maximum memory boundary.

**Table 6-42: AW, HDS, co-resident WebView Servers, Common Ground Upgrade**

Server Class	Capacity	Other requirements and remarks
	Reporting Users Per HDS	
MCS-30-002-Class MCS-30-003-Class	5	<b>Disk Configuration – 2 Disks</b> Disks 1-2: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s); RAID 1
MCS-40-002-Class MCS-40-003-Class	10	<b>Disk Configuration – 4 Disks</b> Disks 1-2: OS, ICM, SQL Server and other third-party software, ICM Database Transaction Log(s); RAID 1 Disks 3-4: Database files; RAID 1
GEN-40-002-Class MCS-40-004-Class	25	<b>Disk Configuration – 6 Disks</b> Disks 1-2: OS, ICM, SQL Server and other third-party software; RAID 1 Disks 3-6: Database files, ICM Database Transaction Log(s); RAID 10
GEN-50-003-Class GEN-50-004-Class	25	<b>Disk Configuration – 8 (or more) Disks</b> Disks 1-2: OS, ICM, SQL Server and other third-party software; RAID 1 Disks 3-8+: Database files, ICM Database Transaction Log(s); RAID 10. Dedicated 2 channel RAID Controller, min 256 MB cache with battery backup. (Alternately, the ICM Database Transaction Log(s) can be moved to a dedicated drive to limit disk contention.)
	50	

#### 6.7.3.2.2 AW – Real-Time Distributor, HDS, Separate Dedicated WebView

For Operating System and Database Requirements, go to Section 7.5.

**Note for SQL Server:** High load/performance environments that reach the 2 GB maximum boundary—including carrier class customers deploying quad processor servers—required the deployment of Microsoft Windows Server 2003 Enterprise Edition (with the /3GB switch) and SQL Server 2000 Enterprise Edition, to address additional server memory. Microsoft SQL Server 2005 Standard and Enterprise Editions are not limited by the maximum memory boundary.

**Table 6-43: AW, HDS, Separate WebView Servers, Common Ground Upgrade**

Server Class	Capacity		Other requirements and remarks
	Reporting Users Per HDS	WebView Servers Per HDS, each supporting 50 users	
GEN-50-003-Class GEN-50-004-Class	50	1	<b><u>Disk Configuration – 8 Disks</u></b> Disks 1-2: OS, ICM, SQL Server and other third-party software - RAID 1  Disks 3-*: Database files, ICM Database Transaction Log(s) - RAID 10. Dedicated 2 channel RAID Controller, min 256 MB cache with battery backup. (Alternately, the ICM Database Transaction Log(s) can be moved to a dedicated drive to limit disk contention.)
	100	2	
	200	4	

### 6.7.3.3 Dedicated WebView Server

**Table 6-44: Dedicated WebView Servers**

Server Class	Other requirements and remarks
MCS-40-003-Class MCS-40-005-Class MCS-40-008-Class MCS-40-011-Class	IIS 6.0 (ships with Windows Server 2003). Windows Server 2003 Enterprise Edition is <i>not</i> required for the dedicated WebView Server.

## 6.7.4 AW – Real-Time Distributor

- Internet Script Editor (ISE) Optional
- Without HDS

**Table 6-45: AW – Real-Time Distributor Servers**

Server Class	Capacity (Client AWs and/or ISE users)	Other requirements and remarks
MCS-10-002-Class MCS-10-003-Class MCS-10-004-Class	10	IIS 6.0 (Required for Internet Script Editor)
MCS-20-002-Class MCS-20-003-Class MCS-20-004-Class MCS-20-005-Class MCS-20-006-Class	25	<b>Other hardware requirements</b> Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display
MCS-30-002-Class MCS-30-003-Class MCS-30-004-Class MCS-30-005-Class	50	

**Note:** The Script Editor or ISE user is assumed to be monitoring Unified ICM or Unified CC scripts in real-time. The default settings on the server only allow for 10 users to simultaneously reload configuration at the client.

### 6.7.5 AW – Real-Time Client Only (Client AW)

As an option, you can install the **Cisco Support Tools Server** on the AW – Real time Client machine.

**Table 6-46: AW – Real-Time Client Servers (Client AW)**

Server Class	Hardware, software requirements and remarks
MCS-10-002-Class MCS-10-003-Class MCS-10-004-Class	<p><b><u>Other hardware Requirements</u></b> ATA/IDE acceptable Graphics card capable of 1024 x 768 x 64 K color or better 17" or larger display</p> <p><b><u>Operating system and other software</u></b> Microsoft Windows Server 2003 or R2, SP2 Microsoft Windows XP Professional, SP2</p>

### 6.7.6 WebView Client and Internet Script Editor

The WebView client is a desktop or laptop from which a user can access the WebView Server via the Internet Explorer web browser. A user can optionally purchase Sybase InfoMaker to create custom templates to deploy onto the WebView server. DO NOT install InfoMaker on the WebView server or on a distributor AW. Install InfoMaker on a separate machine that has network connections to the WebView server and to the distributor.

Internet Script Editor (client) is a standalone application that runs on a desktop or laptop system.

**Table 6-47: WebView Client and Internet Script Editor Client Hardware/Software Requirements**

Server Class	Hardware, software requirements and remarks
GEN-10-005-Class	<p><b><u>Other hardware requirements</u></b> Internal CD-ROM or DVD-ROM drive Graphics card capable of 1024 x 768 x 64 K color or better <b>Note:</b> ISE is not supported for use on the secondary monitor of a dual-monitor desktop</p> <p><b><u>Operating system and other software</u></b> Microsoft Windows Server 2003 or R2, SP2 Microsoft Windows XP Professional, SP2</p> <p><b><u>Additional requirements for WebView Clients</u></b> <a href="#">Microsoft Internet Explorer</a> ♦ If creating custom templates is required, install Sybase InfoMaker 10.2, build 7516</p>

### 6.7.7 VRU Peripheral Gateway (PG)

The following VRU PG capacities are based upon 5 VRU transactions per port per call.

**Table 6-48: VRU PG Servers – New Deployments / Tech. Refresh**

Server Class	Capacity (ports)	Max VRU PIMs	Max Call Rate (cps)
MCS-30-004-Class MCS-30-005-Class	1,200	4	10
MCS-40-005-Class MCS-40-011-Class	9,600	10	40

**Table 6-49: VRU PG Servers - Common Ground Upgrade**

Server Class	Capacity (ports)	Max VRU PIMs
MCS-30-002-Class	360	8
MCS-30-003-Class	510	8
MCS-40-002-Class	720	8
MCS-40-003-Class	1,020	8

## 6.7.8 Unified Contact Center Gateway

Unified Contact Center Gateway enables a parent/child deployment model; the parent is Unified ICME and the child can be Unified CCE, Unified System CCE, and Unified CC Express.

**Table 6-50: Unified Contact Center Gateway Servers**

Server Class	Capacity (agents)	Other requirements and remarks
MCS-30-003-Class MCS-30-004-Class	450	
MCS-40-003-Class	2,000	Total number of agents is applicable to one or more Unified System CCEs.

## 6.7.9 TDM ACD Peripheral Gateway (PG)

The following information is applicable to Unified ICM Enterprise and Unified ICM Hosted only.

**Note:** Agent Capacity is decreased by 25% when CTI OS Security is enabled.

**Table 6-51: TDM ACD PG Servers, Unified ICME/H, New Deployments / Tech. Refresh**

Server Class	Capacity (agents)		
	TDM ACD PG with MR PG	TDM ACD PG with CTI OS	TDM ACD PG without options
MCS-30-004-Class MCS-30-005-Class	100	250	1,000
MCS-40-005-Class MCS-40-011-Class	200	2,000	2,000

**Table 6-52: TDM ACD PG Servers, Unified ICME/H, Common Ground Upgrade**

Server Class	Capacity (agents)		
	TDM ACD PG with MR PG	TDM ACD PG with CTI OS	TDM ACD PG without options
MCS-30-002-Class	60	150	600
MCS-30-003-Class	85	200	800
MCS-40-002-Class	120	1,200	1,200
MCS-40-003-Class	170	1,600	1,600

**Table 6-53: Avaya TDM ACD PG Servers, Unified ICME/H, New Deployments / Tech. Refresh, CTI OS**

Server Class	Desktops Connecting to CTI OS	
	Capacity (agents)	Skill Groups Per Agent
MCS-40-005-Class MCS-40-011-Class	3,000	5
MCS-40-005-Class MCS-40-011-Class	2,500	10
MCS-40-005-Class MCS-40-011-Class	2,000	15
MCS-40-005-Class MCS-40-011-Class	1,500	20

**Note:** CTI OS Monitor Mode applications are not supported with Avaya and CTI OS.

**Table 6-54: Avaya TDM ACD PG Servers, Unified ICME/H, Common Ground Upgrade, No CTI OS**

Server Class	Desktops Connecting to CTI Server (without CTI OS)			
	Capacity (agents)	BHCA	All Events Clients	Skill Groups Per Agent
MCS-40-002- Class	1,700	51,000	4	10
MCS-40-003- Class	2,000	60,000	4	10

Other TDM ACD PG Requirements

Refer to the Cisco Unified ICM Software ACD Supplements and Cisco ICM ACD PG Supportability Matrices for more information on TDM ACD PG configuration options and limits, available at:

[http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1001/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1001/prod_technical_reference_list.html)

**Table 6-55: TDM ACD PG Hardware and Software Requirements**

<b>Hardware, software requirements and remarks</b>
<p><b><u>For Redundant PG Installation</u></b></p> <p>+1 x 100/1000 Ethernet port (if Peripheral does not reside on visible LAN)</p> <p><b><u>For Unified ICM Enterprise: Interfacing with TDM ACDs</u></b></p> <p><i>FOR NORTEL DMS-100 V.24/V.35 INTERFACE</i></p> <p>1 x Eiconcard S94 66MHz or Eiconcard S94 V2 (for PCI 2.2) or Eiconcard S94 PCI Express (PCIe) (See Table 5.28 for Eiconcard specifications)</p> <p>2 x VHSI V.35 DCE cable (Eicon #300-076)</p> <p>Eiconcard Connections for Windows Server 2003 and Windows XP software V6R8</p> <p><i>FOR ROCKWELL SPECTRUM SERIAL INTERFACE</i></p>

<b>Hardware, software requirements and remarks</b>
<p>1 x Eiconcard S94 66MHz or Eiconcard S94 V2 (for PCI 2.2) or Eiconcard S94 PCI Express (PCIe) (See Table 5.28 for Eiconcard specifications)</p> <p>1 x 25' DB25 male to DB25 male cable (Alternative Tech EIC007-25)</p> <p>Synchronous null modem adapter (Belkin A4 A602-16298)</p> <p>1 x DB25 male to DB9 female null modem cable (Black Box EVMTBPC-0025)</p> <p>Eiconcard Connections for Windows Server 2003 and Windows XP</p> <p><u>FOR ROCKWELL SPECTRUM TCP/IP INTERFACE</u></p> <p>1 x DB25 male to DB9 female null modem cable (Black Box EVMBPC-0025)</p> <p><u>FOR SIEMENS ROLM 9751 INTERFACE</u></p> <p>1 x Digi AccelePort Xp 2, 4, or 8-port adapter</p> <p>Cables for above terminating in DTE 232 male connector</p> <p><u>FOR NEC NEAX 2400/7400 INTERFACE</u></p> <p>1 x CTI Dongle (NEC part)</p>

Refer to Unified ICM/Contact Center Hardware and Software Requirements for information on PG server selection based on system capacity for different Unified ICM/Contact Center product editions.

### 6.7.10 Unified ICM/Contact Center SS7 Network Interface Option

**Table 6-56: SS7 Gateway Servers (Includes AT&T Network Gateway)**

<b>Server Class</b>	<b>Other requirements and remarks</b>
<p>GEN-20-002-Class</p> <p>GEN-20-003-Class</p> <p>GEN-20-004-Class</p>	<p><b>SS7 Card</b></p> <p>1 x 4 port Cisco PCI SS7 card(s)</p> <p>Many server types require an optional riser card/adaptor to support the 3.3V PCI card.</p> <p><b>Note</b> that the 5V card has reached End of Sale (with a last sale date of June 30, 2006) but is still supported.</p> <p><b>Note also</b> that a maximum of 3 cards can be installed on the server.</p>

### 6.7.11 CTI OS Server

For new installations beginning with release 7.0(0), Cisco specifies that the CTI OS server co-reside within the PG according to the Agent PG Configuration. When upgrading CTI OS from Release 6.0 or earlier, where CTI OS was installed on standalone server(s), the upgrade can be applied to the standalone server. It is strongly encouraged however, that the CTI OS server be migrated to co-reside on the PG as soon as possible to reduce bandwidth requirements on the network. Standalone CTI OS server(s) are supported during the upgrade and migration period.

Also, beginning with Release 7.0(1), the number of configured CTI OS peer servers is limited to one (1). Refer to Unified ICM/Contact Center Hardware and Software Requirements for sizing guidelines.

Standalone CTI OS servers are not supported for Unified CC Hosted deployments.

Starting from ICM 7.5(9), CTI OS .Net CIL is supported in 64 bit OS in the Citrix environment.

See Section 7.1.6, [CTI Supported Platforms](#) for operation system requirements for the CTI OS server.

## 6.7.12 Silent Monitor Service for CTI OS

The silent monitor service is a single executable that can be deployed in two different ways:

1. Standalone server which is called Silent Monitor Server
2. Co-resident with any CTI OS Client Toolkit application which is called Silent Monitor Service for Unified CC Toolkit

### Silent Monitor Server

The silent monitor server is a standalone server that provides silent monitor functionality for a set of mobile agents. When the silent monitor service is deployed as a standalone server, it must not be co-resident with any other CTI OS or Unified ICM components.

### Silent Monitor Service for Unified CC Toolkit

The silent monitor service can also be configured to provide silent monitor functionality for a single Unified CC agent. In this configuration, the silent monitor service runs on the same computer as the agent or supervisor's desktop. In a Citrix environment, the silent monitor service runs on the same computer as the agent or supervisor's Citrix client.

**Table 6-57: Silent Monitor Service Servers**

Server Class	Capacity (sessions)	Server Type	Other requirements and remarks
MCS-40-003-Class	40	Silent Monitor Server	See Section 7.1.6, <a href="#">CTI Supported Platforms</a>
MCS-30-003-Class	20		
MCS-30-004-Class			

## 6.7.13 Citrix MetaFrame Presentation Server

Citrix MetaFrame Presentation server and Microsoft Terminal Services are Server Based Computing (SBC) platforms that enable hosting of Cisco's CTI desktops applications and allow the deployment of thin clients rather than the entire Desktop.

Release 7.5 of the CTI OS Agent and Supervisor Desktops and Cisco Agent Desktop provides native support for the Citrix MetaFrame Presentation Server 4.0 and 4.5, and Microsoft Terminal Services environments.

The agent desktop application capacity of the Citrix MetaFrame Presentation Server and Microsoft Terminal Services depends on the number and type of applications in use. Consult Citrix Professional Services and a Microsoft Certified IT professional for guidance.

Configuration details and usage limitations for Cisco Agent Desktop/Citrix implementations are documented in the manual *Integrating CAD with Citrix Presentation Server or Microsoft Terminal Servers*, located at:

[http://www.cisco.com/en/US/products/sw/custcosw/ps427/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps427/products_implementation_design_guides_list.html)

Configuration details and usage limitations for Cisco CTI Toolkit Desktop/Citrix implementations are documented in the manual *Integrating Cisco CTI OS Into a Citrix MetaFrame Presentation Server/Microsoft Terminal Services Environment, Release 7.5(1)*, located at:

[http://www.cisco.com/en/US/products/sw/custcosw/ps14/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps14/products_installation_and_configuration_guides_list.html)

## 6.7.14 CTI OS Agent and Supervisor Desktops

**Table 6-58: CTI OS Agent and Supervisor Desktop Servers**

Server Class	Type	Other requirements and remarks
GEN-10-005-Class	CTI OS Supervisor Desktop	Windows compatible full-duplex sound card (if using Cisco IP Communicator and/or Silent Monitoring) See Section 7.1.6, <a href="#">CTI Supported Platforms</a>
GEN-10-005-Class	CTI OS Agent Desktop	Windows compatible full-duplex sound card (if using Cisco IP Communicator) See Section 7.1.6, <a href="#">CTI Supported Platforms</a>
GEN-10-005-Class	CTI OS Monitor Mode Application	See Section 7.1.6, <a href="#">CTI Supported Platforms</a>

**Note:** CTI OS supports the G.711 and G.729 codecs for the MTU soft phone.

**Table 6-59: CTI OS Silent Monitoring Hardware Requirements**

Compatible Ethernet NIC	Refer to Cisco.com for more information: <a href="#">Silent Monitoring NIC Compatibility Matrix</a> <a href="#">Qualifying Ethernet Cards for Cisco Agent Desktop Monitoring</a>
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## 6.7.15 Siebel

### 6.7.15.1 CTI Driver for Siebel

For supported Siebel versions, see the CTI Compatibility matrix:

[http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod_technical_reference_list.html)

The CTI Driver for Siebel is installed on the Siebel Communications Manager Server and must operate stand alone from all other Unified ICM/Contact Center systems. Agent capacity and performance for Siebel Call Centers can vary dramatically based on the deployment topology and configuration of the Siebel components and the complexity of the Siebel applications and scripts in use. For more details on performance tuning Siebel deployments, consult Siebel Technical Support or a Siebel Certified Configuration Engineer.

**Table 6-60: CTI Driver for Siebel Servers**

Server Class	Capacity * (agents)	Type	Call Rate (calls / sec.)	Other requirements and remarks
MCS-40-003-Class	700	Siebel Communications Manager Server (SCM)	3.75	The Siebel deployment model tested had each server component (SCM and OM) installed stand-alone on its own server host.  See Section 7.1.6, <a href="#">CTI Supported Platforms</a>
		Siebel Call Center Object Manager (OM)		

\* The capacity was determined on a Siebel environment that met the following configuration conditions:

1) Siebel component groups enabled during the capacity determination:

- System Management
- Siebel Call Center
- Workflow management
- Communication Management

The following components in the group were disabled:

- Communications Configuration Manager
- Communications Inbound Processor
- Communications Inbound Receiver
- Communications Outbound Manager
- Smart Answer Manager

2) No Siebel Scripting involved.

3) No activity records being created.

4) No Siebel Workflows activated.

### **6.7.15.2 Cisco Data Store**

The Cisco Data Store server must be deployed standalone and cannot be installed on any Unified ICM or Siebel Communication Server.

**Table 6-61: Cisco Data Store Servers**

Server Class	Capacity (agents)	Type	Other requirements and remarks
MCS-40-003-Class	20,000	CDS for Siebel	Maximum 50 CTI Drivers for Siebel can connect to the CDS Server See Section 7.1.6, <a href="#">CTI Supported Platforms</a>

### **6.7.16 CRM Connector**

For additional CTI compatibility information, please refer to the CTI Compatibility matrix which can be found at: [http://cco/en/US/products/sw/custcosw/ps14/prod\\_technical\\_reference\\_list.html](http://cco/en/US/products/sw/custcosw/ps14/prod_technical_reference_list.html)

#### **6.7.16.1 CRM Connector for Salesforce.com, PeopleSoft and Microsoft CRM 3.0**

##### **6.7.16.1.1 CRM Connector Server**

The CRM Connector server provides the Unified CC Enterprise solution connectivity for CRM Adapters for the Salesforce.com, PeopleSoft and Microsoft CRM 3.0; it must be deployed on a standalone system. It must not be co-resident with other Unified CC Enterprise solution components.

See Section 6.7.17.3, [CRM Connector Supported Platforms](#) for operating system requirements for the CRM Connector server.

**Table 6-62: CRM Connector Server**

Server Class	*Capacity (agents)	Call Rate (calls / sec.)	Other requirements and remarks
MCS-30-004-Class MCS-30-005-Class	900	7.5	See Section 6.7.17.3, <a href="#">CRM Connector Supported Platforms</a>
MCS-40-005-Class MCS-40-011-Class	1,800	15	See Section 6.7.17.3, <a href="#">CRM Connector Supported Platforms</a>

\* The above dimensioning guidelines and parameters were developed in a lab testing environment that included a test CRM system setup or an equivalent CRM simulator. Actual quality of service (delays, responsiveness, etc.) experienced by the contact center agents might vary from the above dimensioning guidelines/parameters. These variations include structure and size of the CRM database, overall level of the CRM tuning, intensity of the contact processing workflow(s), as well as other CRM configuration and topology variables outside of the scope of the Cisco connector. It is for this reason that Cisco highly recommends an in-house load test early in a connector deployment project to make sure that the total quality of service under load is satisfactory.

### 6.7.16.1.2 CRM Connector Server Administration Tool

The Administration Tool is usually installed on the CRM Connector Server. See CRM Connector Server for system requirements.

### 6.7.16.1.3 CRM Connector Adapter for Salesforce.Com

The Salesforce.com adapter is used in conjunction with the CRM Connector Server, which is a separate component of the Unified CC Enterprise solution. This Adapter is installed on the agent desktop and connects to the CRM Connector Server via .NET remoting.

**Table 6-63: CRM Connector Adapter for Salesforce.com**

Server Class	Type	Hardware, software requirements and remarks
GEN-10-005-Class	CRM Adapter client.	<p><b>Operating system and other software</b></p> <p>See Section 6.7.17.3, <a href="#">CRM Connector Supported Platforms</a></p> <p><b>Other hardware Requirements</b></p> <p>100/1000 Ethernet port</p>

For additional information on the Salesforce.com CRM visit the <http://www.salesforce.com/> web site.

### 6.7.16.1.4 CRM Connector Adapter for PeopleSoft

The PeopleSoft adapter is used in conjunction with the CRM Connector Server, which can be a part of the Unified CC Enterprise solution configuration. This adapter is installed with the PeopleSoft CRM product.

**Table 6-64: CRM Connector Adapter for PeopleSoft**

*Server Class	Type	Hardware, software requirements and remarks
MCS-30-004-Class MCS-30-005-Class MCS-40-005-Class MCS-40-011-Class	CRM Adapter Server	<p><b>Operating system and other software</b></p> <p>See: <a href="#">CRM Connector Supported Platforms</a></p> <p><b>Other hardware Requirements</b></p> <p>100/1000 Ethernet port</p>

\* The selection of MCS system class should be based on the PeopleSoft server requirements for the given customer's required level of performance. For more information on the PeopleSoft CRM, visit the <http://www.oracle.com/applications/peoplesoft-enterprise.html> web site.

### 6.7.16.1.5 CRM Connector Adapter for Microsoft CRM 3.0

Microsoft CRM 3.0 adapter is used in conjunction with the CRM Connector Server, which can be a part of the Unified CC Enterprise solution configuration. This adapter is installed with the Microsoft CRM 3.0 product.

**Table 6-65: CRM Connector Adapter for Microsoft CRM 3.0**

*Server Class	Type	Hardware, software requirements and remarks
MCS-30-004-Class MCS-30-005-Class MCS-40-005-Class MCS-40-011-Class	CRM Adapter Server	<b>Operating system and other software</b> See Section 6.7.17.3, <a href="#">CRM Connector Supported Platforms</a> <b>Other hardware Requirements</b> 100/1000 Ethernet port

\* The selection of the class of MCS system should be based on the Microsoft CRM sever requirements for the given customers required level of performance. For more information on the Microsoft CRM 3.0 product visit the <http://www.microsoft.com/dynamics/crm/default.mspx> web site.

### 6.7.16.2 CRM Connector for SAP

The Cisco Unified CRM Connector for SAP integrates the SAP CRM application with Cisco Unified Contact Center Enterprise/Hosted; it can be deployed either collocated with other Unified Contact Center Enterprise solution components or can be deployed on a dedicated server (standalone).

If collocated with Unified CCE/H there may only be one Unified CCE/H PG and its Unified CRM Connector for SAP CRM connector on a single server.

The maximum supported Unified CRM Connectors for SAP on a dedicated server is 1.  
The maximum supported SAP Servers to one single CRM Connector is 10.

The Cisco Unified CRM Connector DataStore runs as a separate application on a dedicated server used by the Cisco Unified CRM Connector for SAP to temporarily store call data when a call is transferred between two different Unified CCE/H peripherals.

CTI OS Supervisor Desktop should be used for supervisory features. This will require CTI OS Server installed on the PG.

**Table 6-66: CRM Connector for SAP**

Server Class	* Capacity (agents)	Call Rate (calls / sec)	Hardware, software requirements and remarks
MCS-30-004-Class	250	2	Standalone Deployment with IPSec/SSL
MCS-40-005-Class	500	4	Standalone Deployment with IPSec/SSL
MCS-30-004-Class	750	6	Standalone Deployment with no IPSec/SSL
MCS-40-005-Class	1000	8	Standalone Deployment with no IPSec/SSL
MCS-30-004-Class	Not Supported	0	Collocated Deployment with IPSec/SSL

**Cisco Unified ICM/Contact Center Enterprise & Hosted Editions, Release 7.5,  
Hardware and System Software Specification**

MCS-40-005-Class	250	2	Collocated Deployment with IPSec/SSL
MCS-30-004-Class	500	4	Collocated Deployment with no IPSec/SSL
MCS-40-005-Class	750	6	Collocated Deployment with no IPSec/SSL

**For more information on Operating System and other software,** see the section titled, [CRM Connector Supported Platforms](#)

**Cisco Unified CRM Connector DataStore Specifications:**

- Server class: MCS-30-004-Class
- Maximum 10 Cisco Unified CRM Connectors for SAP to 1 Cisco Unified CRM Connector DataStore
- Maximum 30 KB SAP Call Attached Data transferred
- Maximum number of concurrent existing data objects: 10000

\* The above dimensioning guidelines and parameters were developed in a lab testing environment that included a test CRM system setup or an equivalent CRM simulator. Actual quality of service (delays, responsiveness, etc.) experienced by the contact center agents might vary from the above dimensioning guidelines/parameters. These variations include structure and size of the CRM database, overall level of the CRM tuning, intensity of the contact processing workflow(s), as well as other CRM configuration and topology variables outside of the scope of the Cisco connector. It is for this reason that Cisco highly recommends an in-house load test early in a connector deployment project to make sure that the total quality of service under load is satisfactory.

### 6.7.16.3 CRM Connector Supported Platforms

**Table 6-67: CRM Connector Supported Platforms and Requirements**

CRM Connector	Operating System			Additional Software						
	Windows Server 2003 SP2	Windows XP Professional SP2	Windows Vista	Microsoft .NET Framework V2.0	Microsoft Message Queuing (MSMQ)	Microsoft Internet Information Server (IIS)	Microsoft SQL Server	DCOM	ASP.NET 2.0	JRE 1.6.3
Server	✓	N/A	N/A	✓	✓	✓	N/R	✓	✓	N/R
Server Administration Tool	✓	N/A	N/A	✓	N/R	✓	✓*	✓	✓	N/R
Oracle PeopleSoft Adapter <sup>1</sup>	✓	N/A	N/A	✓	N/R	N/R	N/R	N/R	N/R	✓
Microsoft CRM 3.0 Adapter <sup>1</sup>	✓	N/A	N/A	✓	N/R	✓	✓	N/R	✓	N/R
Salesforce.com Adapter <sup>1</sup>	N/A	✓	✓	✓	N/R	N/R	N/R	✓	N/R	N/R
SAP <sup>2</sup>	✓	N/A	N/A	N/R	N/R	N/R	N/R	N/R	N/R	N/R

\* The Admin tool can use Microsoft SQL Server Express which is freely available from Microsoft.

<sup>1</sup> Consult the *Cisco Unified CRM Connector Implementation and Administration Guide for Microsoft CRM, Oracle PeopleSoft and Salesforce.com* guide for detailed implementation and installation information for these CRM Connector products.

<sup>2</sup> Consult the *Installation and Configuration Guide: Cisco Unified CRM Connector for SAP, Release 1.0(1)* for the CRM Connector for SAP.

N/A = Not Available

N/R = Not Required

### 6.7.17 CAD Agent and Supervisor Desktops

CAD agent and supervisor desktops are used in conjunction with the CAD server, which can be a part of the Unified CC Enterprise solution configuration.

**Table 6-68: CAD Agent and Supervisor Desktop Servers**

Server Class	Type	Hardware, software requirements and remarks
GEN-10-005-Class	<b>CAD Supervisor Desktop (CSD)</b> CAD Desktop Administrator (CDA)	<b><u>Operating system and other software</u></b> Windows compatible full-duplex sound card (if using Cisco IP Communicator and/or Silent Monitor) See Section 7.1.6, <a href="#">CTI Supported Platforms</a>
GEN-10-005-Class	<b>CAD Agent Desktop</b>	<b><u>Other hardware Requirements</u></b> 100/1000 Ethernet port <b><u>Operating system and other software</u></b> Windows compatible full-duplex sound card (if using Cisco IP Communicator) See Section 7.1.6, <a href="#">CTI Supported Platforms</a>

### 6.7.18 Remote Monitoring Suite (RMS)

RMS is highly scalable and deployed in a number of configurations. Most typically, the LGMapper and LGArchiver nodes are deployed as co-resident in a single server. The Listener is separately deployed; a fault tolerant duplexed configuration is supported. Multiple Alarm Tracker client nodes can be served from a single LGMapper/LGArchiver pair.

Separate physical disks are required in the Listener server, allowing for segregation of o/s and “phone home” customer database. 2GB memory is required for the small system configuration, and a full 4GB for larger (<25 customer) systems.

Special consideration must be given to migration of Windows 2000 to Windows Server 2003 RMS-monitored customers, and of the Listener node itself. Consult the *Cisco Remote Monitoring Suite Administration Guide, Release 2.1* for more details.

**Note:** RMS is not supported with Unified System CCE deployments.

**Table 6-69: Remote Monitoring Suite Servers**

Server Class	Capacity	Type	Other requirements and remarks
MCS-20-002-Class MCS-20-003-Class MCS-20-004-Class MCS-20-005-Class MCS-20-006-Class	25 customers	RMS Listener	<b>For Modem Bank Use</b> Multi-port serial adapter and modems (Digi AccelePort Xp)  Dedicated customer file database drive required.
MCS-30-002-Class MCS-30-003-Class MCS-30-004-Class MCS-30-005-Class	75 customers		
MCS-40-002-Class MCS-40-003-Class MCS-40-005-Class MCS-40-008-Class MCS-40-011-Class	150 customers		
MCS-30-002-Class MCS-30-003-Class MCS-30-004-Class MCS-30-005-Class	10 AlarmTracker clients	RMS LGMapper RMS LGArchiver	
MCS-40-002-Class MCS-40-003-Class MCS-40-005-Class MCS-40-008-Class MCS-40-011-Class	25 AlarmTracker clients		
GEN-10-005-Class	N/A	RMS AlarmTracker Client	ATA/IDE acceptable Microsoft Windows XP with SP2

### **6.7.19 Cisco Collaboration Server (CCS)**

Cisco Unified ICM/Contact Center Release 7.5 is compatible with Cisco Collaboration Server 5.0(0) and its latest Service Release. Refer to the *Cisco Intelligent Contact Management Release 6.0(0) Bill of Materials* for Cisco Collaboration Server hardware and software requirements at:

[http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products\\_user\\_guide\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products_user_guide_list.html)

Refer to the *Cisco Collaboration Server Installation Guide* for detailed information on Cisco Collaboration Server configuration, capability, and limitations.

### **6.7.20 Cisco Media Blender (CMB) for Web Collaboration Option**

Cisco Unified ICM/Contact Center Release 7.5 is compatible with Cisco Media Blender 7.1 and its latest Maintenance Release. Note that running the Blender on the PG is only possible with 6.0 PGs. If you are deploying a new 7.x system or are upgrading to 7.x, you can co-load the Blender on a Media Routing PG. CMB 7.1(1) supports Windows Server 2003.

Refer to the *Cisco Intelligent Contact Management Release 6.0(0) Bill of Materials* for Cisco Media Blender hardware and software requirements at:

[http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products\\_user\\_guide\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products_user_guide_list.html)

Refer to the *Cisco Media Blender Installation Guide* for detailed information on Cisco Media Blender server configuration, capability, and limitations.

### **6.7.21 Unified Web Interaction Manager (WIM)**

Refer to the *Cisco Interaction Manager System Requirements Guide* and the *Cisco Interaction Manager Planning Guide* at:

[http://www.cisco.com/en/US/partner/products/ps7236/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/ps7236/products_implementation_design_guides_list.html)

for system requirements, server configurations, capabilities, and limitations of the Cisco Unified Web Interaction Manager.

### **6.7.22 Dynamic Content Adapter (DCA) for Web Collaboration Option**

Refer to the *Cisco Intelligent Contact Management Release 6.0(0) Bill of Materials* for Dynamic Content Adapter server hardware and software requirements at:

[http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products\\_user\\_guide\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products_user_guide_list.html)

Refer to the *Cisco Collaboration Server Dynamic Content Adapter Release 2.01 Installation and Integration Guide* for detailed information on DCA Server configuration, capability and limitations.

### **6.7.23 Cisco E-Mail Manager (CEM) Option**

Cisco Unified ICM/Contact Center Release 7.5 is compatible with Cisco E-Mail Manager 5.0(0) and its latest Service Release.

Refer to the *Cisco Intelligent Contact Management Release 6.0(0) Bill of Materials* for Cisco E-Mail Manager server hardware and software requirements at:

[http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products\\_user\\_guide\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products_user_guide_list.html)

## 6.7.24 Unified E-mail Interaction Manager (EIM)

Refer to the *Cisco Interaction Manager System Requirements Guide* and the *Cisco Interaction Manager Planning Guide* at:

[http://www.cisco.com/en/US/partner/products/ps7236/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/ps7236/products_implementation_design_guides_list.html)

for system requirements, server configurations, capabilities, and limitations of the Cisco Unified E-mail Interaction Manager.

## 6.7.25 Cisco Support Tools Server

**Table 6-70: Cisco Support Tools Servers**

Server Class	Other requirements and remarks
MCS-10-002-Class MCS-10-003-Class MCS-10-004-Class	<p><b><u>Supported Applications</u></b> Unified ICM/Contact Center (Unified CM, CCS, CEM, IP- IVR, Unified CC Express, CVP)<sup>10</sup></p> <p><b><u>Other Hardware</u></b> ATA/IDE acceptable. Graphics card capable of 1024 x 768 x 64K color or better (17" or larger display)</p> <p><b><u>Operating System</u></b> Microsoft Windows Server 2003 Standard Edition or R2, SP2 Microsoft Windows 2000 Server with SP4 Microsoft Windows XP Professional with SP2</p> <p>All other required software is installed as part of the Support Tools Server Installation</p>

When selecting a system on which to install the Support Tools Server, consider the following:

- 1) Do you plan on supporting more than 25 Cisco Unified application servers using one Support Tools server?
- 2) Do you plan on saving information in the Support Tools repository on a regular basis?
- 3) Do you plan on running the registry compare tool and/or the log collection merge tool frequently?

If you answered yes to any of these questions, you must install the Support Tools Server on a system **dedicated** for use by the Support Tools Server application. Otherwise, you might choose to deploy the Support Tools Server co-resident with a Real-Time Client Admin Workstation, if one is used.

## 6.7.26 Cisco Support Tools Node Agent

The Support Tools Node Agent can be installed on any node specified in this document<sup>11</sup>. Note that it is not necessary to install this node agent on a Support Tools Server node as it has the node agent functionality built-in.

In addition to the nodes specified in this document, the Support Tools Node Agent can be installed on a Unified CM, CCS, CEM, IP IVR, Unified CC Express and CVP system, when that system is part of the Unified ICM/Contact Center solution and is running on Windows Operating System.

<sup>10</sup> The Support Tools Node Agent should only be installed one of these systems when it is used as part of a solution that contains a Unified ICM or a Unified CC Enterprise/Hosted product.

<sup>11</sup> However, use of the Support Tools node agent on CAD or CTI OS Agent and Supervisor desktops is not supported. Installation of the node agent on these systems is not harmful but the functionality of Support Tools cannot be guaranteed.

As a convenience, and to improve future supportability, the Release 7.5 installer will automatically install the Support Tools Node Agent on all target Unified ICM/Contact Center (to include Express) and Unified Customer Voice Portal servers. If there was an existing node agent installed, an upgrade will be performed. If the Support Tools Node Agent is not present on the target server, the installer will prompt for a valid IPSEC pre-shared key, configure the IPSEC key, and install the Node Agent to be automatically started. If the IPSEC key cannot be configured, the Node Agent will be installed, but the service will be disabled.

### 6.7.27 Unified Expert Advisor

Cisco Unified Expert Advisor is an optional feature for Cisco Unified Contact Center Enterprise. It extends the contact center so that expert advisors can handle certain incoming calls. For example, there might be a call for which the contact center agent and the caller require a discussion with, or advice from, a specialist who is not employed by the contact center—but who agrees to be 'on call' to provide services as a consultant. That person is the expert advisor.

Expert advisors establish their presence and availability to take a call by the state of their instant messaging (IM) client; the expert advisor IM client effectively serves as the "agent desktop". Once an expert's availability and acceptance of the message request are confirmed, the call is routed to the expert. The contact center agents can also conference the expert into a customer call.

The latest version of the content found in this guide is available in the Administration and Configuration Guide for Cisco Unified Expert Advisor at: <http://www.cisco.com/go/ea>.

**Table 6-71: Unified Expert Advisor Servers**

Server Class	Server Type	Capacity	BHCA	Operating Conditions
MCS-30-004-Class	Expert Advisor PG	3,000	6,000	<ul style="list-style-type: none"> <li>• 2 calls per hour per expert</li> <li>• Average of up to 10 assignment queues per expert</li> <li>• Average parallel broadcast size of 10 experts</li> <li>• For co-residency of EA PG and Unified CM PG, each expert equals ½ local Unified CCE agent.</li> </ul>
MCS-40-005-Class	Expert Advisor PG	6,000	12,000	
MCS-30-004-Class	Expert Advisor Runtime Server	650	1,300	<ul style="list-style-type: none"> <li>• 2 calls per hour per expert</li> <li>• Average of up to 10 assignment queues per expert</li> <li>• Average parallel broadcast size of 10 experts</li> </ul>
MCS-40-005-Class	Expert Advisor Runtime Server	3,000	6,000	
MCS-40-005-Class	Expert Advisor Reporting Server	n/a	6,000	<ul style="list-style-type: none"> <li>• 2 calls per hour per expert</li> <li>• Full call load for 24 hours a day (100% duty cycle)</li> <li>• Average of up to 10 assignment queues per expert</li> <li>• Average parallel broadcast size of 10 experts</li> <li>• Nominal 8 days worth of data</li> </ul> <p>Note: Varying call rate, duty cycle or broadcast size will significantly affect data retention period.</p>

## 7 System Software Requirements

### 7.1 Microsoft Windows Server 2003

In most cases, Microsoft Windows Server 2003 Standard Edition is adequate for use with Unified ICM/Contact Center 7.x. In some circumstances, however, high-end system deployments must deploy Microsoft Windows Server 2003 Enterprise Edition on some Unified ICM/Contact Center components, such as the Logger and the HDS. You should be aware of the following distinction between the editions.

Customers should perform a clean Windows install from the Microsoft media.

Microsoft Windows Server 2003 Standard Edition

- Supports up to four processors on one server
- Maximum 4 GB of RAM

Microsoft Windows Server 2003 Enterprise Edition

- Supports up to eight processors on one 32-bit server
- Maximum 32 GB of RAM

**Important:** Unified ICM/Contact Center is qualified to work only on a standard, retail (or OEM) packaged installation of Windows Server 2003 (Standard or Enterprise), with or without Cisco Security hardening. Cisco provides its own security hardening policy to secure the standard Windows image for Unified ICM/Contact Center. Cisco does not support Unified ICM/Contact Center on a customized Windows image (for example, a corporate image) or when custom security hardening has been applied. Using a customized image of the Windows operating system or custom security hardening can cause the Unified ICM/Contact Center application to fail.

Microsoft Windows Server 2003 R2

Microsoft introduced Windows Server 2003 R2, an update to the Windows 2003 operating system that is distributed on a second media disk. Windows Server 2003 R2 provides a number of elective add-on features such as identity and access management, storage management, enhanced Web technologies, and so forth. Windows Server 2003 R2 is applicable to both Standard and Enterprise editions of Windows for Unified ICM/Contact Center customers.

**Note:** *Windows Server 2003 R2 is supported only with the optional features NOT selected.*

Cisco has completed qualification of Unified ICM/Contact Center 8.0(1) on Windows Server 2003 R2. Customers currently deploying Windows Server 2003 can upgrade to R2 on their Unified ICM/Contact Center 7.x servers.

Unified ICM/Contact Center 8.0(1) requires Windows Server 2003 or Windows Server 2003 R2; SP2 must be applied on all Windows Server 2003 systems. Cisco qualifies Unified ICM/Contact Center using Windows Server 2003 SP2 and Windows Server 2003 R2 SP2 (Standard and Enterprise).

#### **OEM Versions of Microsoft Windows Server 2003 R2 Standard Edition**

Unified ICM/Contact Center 8.0(1) supports IBM and HP OEM versions of Microsoft Windows Server 2003 R2 Standard Edition. The following sections describe the MCS servers supported by OEM Windows Server 2003 Standard OS recovery media.

### **IBM OEM Recovery Media**

The following lists the server configuration that the IBM OEM recovery media - *IBM Svrs Disk 1 and 2* labeled “Cisco Unified Contact Center Microsoft(TM) WinSvr 2003 w/SP2” and “Cisco Unified Contact Center Microsoft(TM) WinSvr 2003 w/SP2 Multilang Pack” support:

- MCS-7845-I2-CCE1
- MCS-7845-I2-CCE2
- MCS-7845-I2-CCE3
- MCS-7845-I2-CCE4
- MCS-7835-I2-CCE1
- MCS-7835-I2-CCE2
- MCS-7845-I3-CCE1
- MCS-7845-I3-CCE2
- MCS-7835-I3-CCE1
- MCS-7825-I4-CCE1
- MCS-7825-I3-CCE1
- MCS-7845-I1-CC1
- MCS-7835-I1-CC1
- VMware ESX 3.5 Virtual Machine on MCS-40-010-Class and MCS-40-016-Class of IBM Servers

### **HP OEM Recovery Media**

The following lists the server configuration that the HP OEM recovery media - *HP Svrs Disk 1 and 2* labelled “Cisco Unified Contact Center Microsoft(TM) WinSvr 2003 w/SP2” and “Cisco Unified Contact Center Microsoft(TM) WinSvr 2003 w/SP2 Multilang Pack” support:

- MCS-7845-H2-CCE1
- MCS-7845-H2-CCE2
- MCS-7845-H2-CCE3
- MCS-7845-H2-CCE4
- MCS-7835-H2-CCE1
- MCS-7835-H2-CCE2
- MCS-7825-H4-CCE1
- MCS-7825-H3-CCE1
- MCS-7845-H1-CC1
- MCS-7835-H1-CC1
- VMware ESX 3.5 Virtual Machine on MCS-40-010-Class of HP Servers

### **64-Bit Windows**

Cisco Unified Contact Center and Unified Intelligent Contact Management are not supported on 64-bit editions of Windows Server 2003. Only 32-bit Windows is supported.

## 7.2 Microsoft SQL Server 2005

Microsoft SQL Server 2005 Standard Edition

- CPU: Supports up to four processors on one server
- RAM: No operating system maximum

Microsoft SQL Server 2005 Standard Edition can run on the following operating systems:

- Microsoft Windows Server 2003, Standard Edition
- Microsoft Windows Server 2003, Enterprise Edition

Microsoft SQL Server 2005 Enterprise Edition

- CPU: No operating system maximum
- RAM: No operating system maximum

*Note: SQL Server Enterprise Edition (vs. SQL Server Standard Edition) is only necessary if performance needs demand its use.*

In addition to the above versions of Standard Edition is available.

OEM Version of Microsoft SQL Server 2005 Standard Edition

- CPU: Supports up to four processors on one server
- RAM: No operating system maximum

OEM Version of SQL Server 2005 can run on the following operating systems:

- Microsoft Windows Server 2003, Standard Edition
- Microsoft Windows Server 2003, Enterprise Edition
- HP and IBM OEM versions of Microsoft Windows Server 2003 R2 Standard Edition

Microsoft Service Packs

- SP3 or higher Service Pack is required for Microsoft SQL Server 2005.

Purchasing SQL Server 2005

Follow these steps to acquire SQL Server 2005 media. This assumes that customers license SQL Server under one of the Microsoft Volume Licensing programs.

**Open License:** Call Microsoft Fulfillment at 1-800-248-0655. Request the SQL Server 2005 media and pay a nominal S&H charge.

**Select License:** Contact a Microsoft software reseller and request the SQL Server 2005 media.

**Enterprise Agreement:** Contact the Microsoft Representative for your company.

SQL Server 2005 is also available in OEM and retail channels as well. Note that Microsoft also sells a “per-CPU” version of SQL Server for certain transaction-intensive applications that might benefit from such an option. Contact your Microsoft representative to discuss whether this option is appropriate for your installation.

## 7.3 Licensing Requirements

Unified ICM/Contact Center software runs on the Windows Server operating system and uses the services of SQL Server database management systems. As such, Unified ICM/Contact Center deployments are to meet the licensing requirements for Windows Server and SQL Server.

### **7.3.1 Windows Server 2003 Licensing**

Cisco Unified CC Enterprise and Hosted customers are encouraged to consult Microsoft resources and documentation to determine the licensing that best fits their environment. In many cases, customers might already be licensed for Windows Server 2003 under an existing agreement with Microsoft. In such cases, there is no need to obtain additional licensing for Unified ICM-/Unified Contact Center-based servers.

Customers are responsible for ensuring they are in compliance with Microsoft Licensing terms. Cisco offers OEM Windows Server 2003 for Enterprise or Hosted contact center solutions (Customer Voice Portal is included.) MCS server purchases might include the following OEM offerings:

**CC-WIN2K3-STD-1COA** Windows Server 2003 - Standard Edition (0 CAL for a 1 CPU server)

**CC-WIN2K3-STD-2COA** Windows Server 2003 - Standard Edition (0 CAL for a 2 CPU server)

Licensing Unified ICM and Unified CC servers for Windows Server 2003 depends on the licensing model adopted by the customer and the direction this customer's IT Organization has taken in licensing the servers and workstations in the environment.

Microsoft states that customers can “choose to purchase a Windows Device CAL for every device accessing their servers, or can purchase a Windows User CAL for every named user accessing these servers. By having two types of Windows CALs, [customers] are able to use the model that makes sense for their organization. For example, purchasing a Windows User CAL might make more sense if a company has a need for employees to have roaming access using multiple devices. Windows Device CALs might make more sense if a company has multiple-shift workers who share devices.”

See <http://www.microsoft.com/windowsserver2003/howtobuy/licensing/overview.msp> for more information.

Assuming each of the agent desktops or agents accessing the contact center servers have either User or Device CALs, the servers only need a Windows server license. The OEM Windows Server 2003 packages Cisco re-sells with MCS servers do not include CAL. Customers need to procure the CALs for their use separately.

In many cases, agents (users) or agents' desktop computers (devices) are already licensed thus not requiring the acquisition of additional Windows CALs when Cisco's Customer Contact solutions are implemented.

In addition, the Cisco OEM Windows Server 2003 packages support virtualization. This means the Cisco OEM Windows Server 2003 image can be installed on VMware. The licensing scheme is per Virtual Machine.

More questions can be directed to the ICM/CCE Platform (O/S, DB, Hardware) at <http://wwwwin-forums.cisco.com/forum.jspa?forumID=3593>

### **7.3.2 SQL Server Licensing**

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

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

The following are SQL Server licensing options that apply to Cisco Unified ICM/Contact Center Enterprise and Hosted (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 Unified ICM/Contact Center, users, devices, servers and processors are defined as the following:

- A *user* is a person who interacts with the Unified ICM/Contact Center software. Unified ICM/Contact Center agents, supervisors, and system and contact center administrators are among such users. The number of users, as it pertains to SQL Server licensing, is the cumulative and not the concurrent count.
- A *device* is client device used by a human user to interact with the Unified ICM/Contact Center software. The number of client devices, as it pertains to SQL Server licensing, is the cumulative and not the concurrent count.
- A *server* is a type of computer that runs SQL Server. In Unified ICM/Contact Center deployments, Logger, AW and HDS are examples of components that require SQL Server. For the complete listing of Unified ICM/Contact Center components that require SQL Server, see the section, [Operating System and Database Requirements](#).
- A *processor* is described as a single physical Central Processing Unit (CPU), regardless of the number of cores.

SQL Server licensing is required for any and all Unified ICM/Contact Center 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 might surpass the cost of processor licensing, so the latter might 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.mspx>.

In deployment scenarios where Cisco Unified CC Hosted or Unified ICM Hosted is used by service providers, Microsoft's Service Provider License Agreement (SPLA) would apply in lieu of other licensing models. Under SPLA, SQL Server 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 deployments.

Cisco Unified ICM or Unified CC (Enterprise and Hosted) customers are encouraged to consult Microsoft documentation and other resources to determine the licensing that best fits their specific Unified ICM/Contact Center deployment. In many cases, Unified ICM/Contact Center customers might 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).

The following table provides supplemental information.

**Table 7-1: SQL Server Licensing Guide**

Node	SQL Server Licensing Model	Note
<b>Central Controllers</b>		
LoggerA (or RoggerA) or Central Controller (Unified System CCE)	Processor License	For dual-processor servers, it is more cost-effective to acquire a processor license for each physical processor than it is to purchase individual CALs when the number of users (incl. agents/supervisors) exceeds approximately 25 or fewer users per processor for Standard Edition and 75 or fewer users per processor for Enterprise Edition.
LoggerB (or RoggerB) or Central Controller (Unified System CCE)	Server License only	LoggerB is used for failover purposes and requires a separate SQL license on the server on which LoggerB runs.
Router	None	While the Router node does not host a database it can act as a client to a remote database using the dbworker or appgw processes. Customers should follow vendor guidelines for licensing those remote database servers.
<b>Distributors</b>		
AW Distributor (AWD) (Primary and/or Secondary)	Server License plus one User CAL for each application administrator and one Device CAL for each Client AW	Application administrators can be Script Editor or Configuration Manager users. Each AW Distributor should have a Device CAL allocated for each active Client AW (standby connections do not require a license).
AW Distributor (AWD) + Internet Script Editor Option	Server License plus one User CAL for each Internet Script Editor user	
AW Distributor (AWD) + Agent-Reskilling Option	Server License plus one User CAL for each Supervisor	
AW Distributor (AWD) + CMS	Server License plus one Device CAL for each Multichannel (CCS or CEM) server	
Unified System CCE Administration and Reporting Server	Server License plus one User CAL for each user, agent and supervisor	In Unified System CCE, an Administration and Reporting Server includes the AWD, WebView, HDS, and Unified CC Web Administration Server functions.
Historical Data Server (AWD/HDS)	Same as for AWD plus one User CAL for each WebView user	In a kiosk environment where multiple users are accessing WebView from a single or more workstations, a Device CAL is required for each workstation.

<b>Multichannel</b>		
Email-Manager Option (Database Server)	Processor License or User CAL (per E-Mail Agent)	Choosing one licensing model versus another depends on system size.
Email-Manager Option (CIR DB Server)	Server License plus one User CAL for each WebView user	A WebView user can be an application administrator or supervisor.
Web Collaboration Server Option (Database Server)	Processor License or User CAL	This will depend on the number of Web Collaboration Agents.
<b>Other</b>		
Client AW	None	Client AW does not host a SQL Server database. Use Client AW versus AW Distributors to reduce licensing costs.
WebView (WV) Server (standalone)	None	Standalone WV servers do not host a SQL Server database.
Peripheral Gateway (PG) or Agent/IVR Controller	None	PGs do not host a SQL Server database.
CAD Server	None	CAD uses MSDE which does not require Client Access Licenses.
RMS LGMapper/LGArchiver	Server License plus one Device CAL for each monitored server and AlarmTracker Client	

**Note:** Because the Processor licensing model does not require any device or user client access licenses it might be most appropriate to choose for all database servers (except for redundant servers) to simplify the licensing of SQL Server. Customers will not need to determine how many users the system might have or grow to which will impact the number of licenses to be acquired at any given time.

As a convenience to the Cisco Unified ICM or Unified CC (Enterprise and Hosted) customers, Cisco offers an OEM SQL 2005 for purchase along with the OEM Windows Server 2003 R2 Standard Edition. This SQL 2005 license also entitles the customers to migrate to SQL 2008 at no additional cost if SQL 2008 is to be required in the future for Contact Center applications.

The ordering part number is:

**CC-SQL-2005-STD**                      Cisco OEM SQL 2005 (0 CAL and per SQL instance or per Virtual Machine)

Customers must order Cisco OEM Windows Server 2003 R2 Standard Edition package in order to procure the Cisco OEM SQL 2005 Standard Edition.

The Cisco OEM SQL 2005 does not include CAL. Customers needs to obtain the CAL separately.

### 7.3.3 Licensing Use Cases

The following describes Use cases for OEM Windows Server 2003 and SQL 2005 licensing:

- Non-VM (a single application on the server requires both OS and SQL)
  - Customer orders **One** MCS-7845-I3-CCE1 (1 CPU). Customers would need to purchase **One** CC-WIN2K3-STD-1COA and **One** CC-SQL-2005-STD
  - Customer orders **Two** MCS-7845-I3-CCE1 (1 CPU). Customers would need to purchase **Two** CC-WIN2K3-STD-1COA and **Two** CC-SQL-2005-STD
  - Customer orders **One** MCS-7845-I3-CCE2 (2 CPU). Customers would need to purchase **One** CC-WIN2K3-STD-2COA and **One** CC-SQL-2005-STD
  - Customer orders **Two** MCS-7845-I3-CCE2 (2 CPU). Customers would need to purchase **Two** CC-WIN2K3-STD-2COA and **Two** CC-SQL-2005-STD
- VM (a single application in a Virtual machine on the server requires both OS and SQL)
  - Customer orders **One** MCS-7845-I3-CCE1 (1 cpu) and load **three** VMs but only one VM requires SQL. Customers would need to purchase **Three** CC-WIN2K3-STD-1COA and One CC-SQL-2005-STD
  - Customer orders **Two** MCS-7845-I3-CCE1 (1 cpu) and load **three** VMs on each where only one VM on each requires SQL. Customers would need to purchase **Six** CC-WIN2K3-STD-1COA and Two CC-SQL-2005-STD
  - Customer orders **One** MCS-7845-I3-CCE1 (2 cpu) and load **three** VMs but only one VM requires SQL. Customers would need to purchase **Three** CC-WIN2K3-STD-1COA and One CC-SQL-2005-STD
  - Customer orders **Two** MCS-7845-I3-CCE1 (2 cpu) and load **three** VMs on each where only one VM on each requires SQL. Customers would need to purchase **Six** CC-WIN2K3-STD-1COA and Two CC-SQL-2005-STD



*Important Note: If any licensing cases are not covered by the above sections, then the customer must obtain their own copies via the MS downgrade rights and media kits.*

Please refer to Customer Contact Product Ordering at [http://www.cisco.com/web/partners/sell/technology/ipc/integrated-solutions/customer\\_contact\\_center.html](http://www.cisco.com/web/partners/sell/technology/ipc/integrated-solutions/customer_contact_center.html) for further detail on Windows Server 2003 and SQL 2005 SKUs and ordering instructions.

## 7.4 Microsoft Software Localizations

The following table lists supported localized versions of Microsoft Windows and SQL Server that can be used with Cisco Unified ICM/Unified CC Enterprise and Hosted system components and Unified System CC Enterprise.

For a detailed list of language localizations implemented for different portions of this release, refer to the *Cisco Unified ICM/Unified Contact Center Product and System Localization Matrix* available at:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cust\\_contact/contact\\_center/icm\\_enterprise/localization\\_matrix/guide/G11nMap.xls](http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/icm_enterprise/localization_matrix/guide/G11nMap.xls)

**Table 7-2: Supported Microsoft Software Localizations**

Microsoft Software	Windows (Native or MUI)	SQL Server Collation Setting
Windows and SQL Server	<ul style="list-style-type: none"> <li>• Danish <sup>12</sup></li> <li>• Dutch</li> <li>• English</li> <li>• French</li> <li>• German</li> <li>• Italian</li> <li>• Portuguese (Brazil)</li> <li>• Spanish</li> <li>• Swedish</li> </ul>	Latin1_General
	• Russian	Cyrillic_General
	• Chinese (Simplified)	Chinese_PRC
	• Chinese (Traditional)	Chinese_Taiwan_Stroke
	• Korean	Korean_Wansung
	• Japanese	Japanese

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<sup>12</sup> Note: Danish is not supported in Windows Server 2003 R2

## 7.5 Operating System and Database Requirements

The tables below present operating system requirements specific to Unified ICM/Contact Center server type. The second table covers those Unified ICM/Contact Center servers and client desktop deployments requiring special consideration, while the third table addresses Unified System CCE.

**Table 7-3: Operating System and Database Requirements, Unified ICME/ICMH/CCE/CCH**

Unified ICM/Contact Center Server	Microsoft Windows Server 2003 Standard or R2, SP2	Microsoft SQL Server 2005 Standard Edition, SP3 <sup>13</sup>
ICM Router NAM Router CICM Router	✓	N/A
Progger (Unified CCE)	✓	✓
Rogger (Unified CCE)	✓	✓
NAM Rogger (Unified CC Hosted)	✓	✓
AW – Distributor	✓	✓
WebView Server	✓	N/A
All PGs, includes Agent PG TDM ACD PG VRU PG MR PG	✓	N/A <sup>14</sup>
Unified CC Enterprise Gateway	✓	N/A
SS7 Network Interface Server	✓	N/A
RMS LGMapper RMS LGArchiver	✓	✓
ICM Logger NAM Logger CICM Logger	✓	✓
AW – Distributor, HDS with WebView Server	✓	✓

**Note:** From ICM 7.5(1) and later versions of ICM, SQL 2005 with Service Pack 2 is supported for DBLookup feature.

**Table 7-4: Special Considerations (OS and DB Requirements), Unified ICME/ICMH/CCE/CCH**

Unified ICM/Contact Center Server	Operating System Requirements
CEM, CMB, CCS, DCA	Multichannel application servers require Windows 2000 Server. They do not support Windows Server 2003.

<sup>13</sup> Microsoft SQL Server 2000 Standard, SP4 is supported while in transition for those upgrading from a release prior to 7.5

<sup>14</sup> Unless CAD is installed, in which case SQL Server is required

**Cisco Unified ICM/Contact Center Enterprise & Hosted Editions, Release 7.5,  
Hardware and System Software Specification**

<b>Unified ICM/Contact Center Server</b>	<b>Operating System Requirements</b>
RMS Listener	Microsoft Windows Server 2003 Standard Edition or R2, SP2 For monitoring ICM prior to release 5.0(0), RMS Listener server needs to have Microsoft Windows 2000 Server with SP4 that supports NetBEUI.
RMS AlarmTracker Client	See Section 6.7.19, <a href="#">Remote Monitoring Suite</a>
AW – Real Time Client	See Section 6.7.5, <a href="#">AW – Real-Time Client Only (Client AW)</a>
WebView Client	See Section 6.7.6, <a href="#">WebView Client and Internet Script Editor</a>
Outbound Option Dialer	Go to the following link for Cisco Outbound Option Data Sheet and Cisco Outbound Option Technical Reference. <a href="http://www.cisco.com/en/US/partner/products/sw/custcosw/ps524/products_data_sheets_list.html">http://www.cisco.com/en/US/partner/products/sw/custcosw/ps524/products_data_sheets_list.html</a>
CTI OS Desktops	See Section 7.6, <a href="#">CTI Supported Platforms</a>
CTI OS	See Section 7.6, <a href="#">CTI Supported Platforms</a>
Cisco Support Tools	See Section 6.7.26, <a href="#">Cisco Support Tools Server</a>

**Table 7-5: Operating System and Database Requirements, Unified SCCE**

<b>Unified System CC Enterprise Server</b>	<b>Microsoft Windows Server 2003 Standard or R2, SP2</b>	<b>Microsoft SQL Server 2005 Standard Edition, SP3<sup>15</sup></b>
Central Controller	✓	✓
Agent/IVR Controller	✓	N/A
Central Controller + Agent/IVR Controller	✓	✓
Administration & WebView Reporting	✓	✓

<sup>15</sup> Microsoft SQL Server 2000 Standard, SP4 is supported while in transition for those upgrading from a release prior to 7.5.

## 7.6 CTI Supported Platforms

**Table 7-6: CTI Supported Platforms**

CTI Option	Operating System							
	Server Platform		Client Platform					
	Windows Server 2003 or R2 (32-bit), SP2	Windows 2000 Server SP4 <sup>16</sup>	Windows 2000 Pro SP4	Windows XP Professional SP2	Windows XP Professional SP3	Windows Vista (Business or Enterprise)	Windows 7 (Pro, Enterprise and Ultimate) <sup>17</sup>	Red Hat Enterprise Linux
CTI OS Server	✓	N/A	N/A	N/A	N/A	N/A	—	N/A
Cisco Data Store	✓	N/A	N/A	N/A	N/A	N/A	—	N/A
Silent Monitor Server (Standalone)	✓	N/A	N/A	N/A	N/A	N/A	—	N/A
Silent Monitor Service for Unified CC Toolkit	N/A	N/A	N/A	✓	✓	✓	✓	N/A
CTI Driver for Siebel	✓	✓	N/A	N/A	N/A	N/A	—	N/A
CTI OS - CTI toolkit Unified CC Supervisor Desktop	N/A	N/A	N/A	✓	✓	✓	✓	N/A
CTI OS - CTI toolkit Agent Desktop	N/A	N/A	N/A	✓	✓	✓	✓	N/A
CTI OS - CTI toolkit Combo Desktop .NET	N/A	N/A	N/A	✓	✓	✓	✓	N/A
CTI OS - Custom Apps using C++ or COM CIL	N/A	N/A	N/A	✓	✓	✓	✓	N/A
CTI OS - Custom Apps using Java CIL	N/A	N/A	N/A	✓	✓	✓	✓	✓ v5.0
CTI OS - Custom Apps using .NET CIL	N/A	N/A	N/A	✓	✓	✓	✓	N/A
CTI OS – Monitor Mode Apps using C++, COM, or .NET CIL	N/A	N/A	N/A	✓	✓	✓	✓	N/A

<sup>16</sup> For 7.0(0) upgrade only, followed by a subsequent upgrade to Windows Server 2003 or R2, SP2

<sup>17</sup> Windows 7 is valid only for releases later than CTI OS 7.5(8). Cisco supports Win 7 32 bit only in 7.5(8) and up.

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Hardware and System Software Specification**

CTI OS – Monitor Mode Apps using Java CIL <sup>18</sup>	N/A	N/A	N/A	✓	✓	✓	✓	✓ v5.0
CTI Desktop (GeoDCS) V4.7 only	N/A	N/A	✓	✓	N/A	N/A	✓	N/A
Custom Apps using GeoDCS or CtiClient32, V4.7 only	N/A	N/A	✓	✓	N/A	N/A	—	N/A
CAD <sup>19</sup>	✓	✓ <sup>20</sup>	✓ <sup>21</sup>	✓	✓	✓	✓	✓ v3.0 or 4.0 <sup>22</sup>

## 7.7 Supported Third-Party Software

**Table 7-7: Supported Third-Party Software**

Function	Software
<b>Remote Administration</b>	<ul style="list-style-type: none"> <li>◆ Windows Server 2003 Remote Desktop<sup>23</sup> 6.1</li> <li>◆ Symantec pcANYWHERE 12.x</li> <li>◆ RealVNC 4.1</li> </ul>
<b>Anti-Virus software</b>	<ul style="list-style-type: none"> <li>◆ McAfee VirusScan Enterprise 8.7i</li> <li>◆ Symantec Endpoint Protection 11.0</li> <li>◆ Trend Micro ServerProtect version 5.7</li> </ul>
<b>Internet Browser</b>	<ul style="list-style-type: none"> <li>◆ Internet Explorer 6.0 (SP1 or greater)</li> <li>◆ Internet Explorer 7.0</li> <li>◆ Internet Explorer 8.0 for ICM 7.5(7) or later</li> </ul>
<b>Sybase InfoMaker</b>	See Section 6.7.6, <a href="#">WebView Client and Internet Script Editor</a> .

### Remote Management and Support

Remote management capability allows Cisco TAC support or Cisco partners to provide system maintenance and system troubleshooting from a remote site.

You can provide remote management and remote support capability in one of the following two ways:

- Provide secured VPN to your network where your Unified ICM/Contact Center server resides.
- Provide remote access point through a 56K V.Everything/V.90 external modem.  
The modems are typically installed on the Unified ICM/Contact Center Logger and on the PGs.

<sup>18</sup> Java CIL supports Java JDK/JRE 1.6\_05

<sup>19</sup> CAD supports Internet Explorer 7.0 and 8.0

<sup>20</sup> 30 day upgrade period only

<sup>21</sup> MTS or Citrix deployment only

<sup>22</sup> CAD-BE only using Firefox 1.5 or higher with JRE 5.0 update 14

<sup>23</sup> Remote Desktop is not supported for software installation or upgrade. For Remote Desktop usage information, see section Remote Administration in “Security Best Practices Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted”.

## **7.8 Cisco Security Agent (CSA)**

Cisco strongly encourages the installation of Cisco Security Agent for Cisco Unified ICM/Contact Center Release 7.5 on all Unified ICM/Contact Center server nodes. This application provides added security protection for your operating environment. You can download the CSA standalone agent free of charge by going to:

<http://tools.cisco.com/support/downloads/go/Redirect.x?mdfid=278875240>

- On the page that displays, log in.
- On the page that displays, click: Customer Contact.
- Click: Cisco Unified Contact Center Products.
- Click: Cisco Unified Intelligent Contact Management Enterprise.
- Click: Cisco Security Agent for Contact Center Products.

A newer standalone version of CSA for Cisco Unified ICM/Contact Center Enterprise and Hosted (to include System Contact Center Enterprise) based on CSA engine version 5.2 is available for Unified ICM/Contact Center Enterprise & Hosted Release 7.5. CSA 5.0 or CSA 4.5.1, which were supported on prior releases of Unified ICM/Contact Center Enterprise, are not supported in Release 7.5. Therefore, you must uninstall prior releases of CSA before upgrading to Release 7.5. For more details refer to the *Upgrade Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted Editions* or, for System CCE, *Upgrade Guide for Cisco Unified System Contact Center Enterprise*.

## **7.9 Server Virtualization**

Starting with Unified ICM/Unified Contact Center Enterprise & Hosted 7.5(3), servers can be consolidated by deploying a virtualization solution for Client Administrator Workstations (AWs) and certain Peripheral Gateways (PGs) on the VMware platform. Please see the tables below for the virtualization requirements, mapping to discrete servers, and CPU processor and RAM requirements for each of the supported PG and Client AW virtual machines (VMs). You must read through and follow the guidelines and restrictions described in the *Virtualization Guide for Cisco Unified Intelligent Contact Management and Contact Center Enterprise* document before you incorporate virtual machines in your Contact Center design and deployment.

**Other ICM/CCE components, such as the Router, Logger, AW Distributor, HDS, WebView server, and CAD server, as well as CCMP and CUIS, are not supported in a virtualized environment at this time.**

For information on WIM/EIM virtualization support, see the *Cisco Unified Web and E-Mail Interaction Manager Solution Reference Network Design Guide*:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cust\\_contact/contact\\_center/cisco\\_interaction\\_manager/cim\\_43/design/guide/im431srnd.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/cisco_interaction_manager/cim_43/design/guide/im431srnd.pdf)

Unified ICM and Unified Contact Center 7.5(3) (as well as upcoming 7.5(3) MRs and future major/minor releases) support the following Peripheral Gateway types on the VMware platform provided that these PGs only require TCP/IP connections to peripherals, and that they do not require special I/O for connecting to the peripherals.

- Cisco Unified Communications Manager (Unified CM) PG
- Cisco Unified CCE Generic PG
- Cisco Unified CCE System PG
- Cisco Unified ICM Agent Routing Service (ARS) PG
- Cisco Unified Customer Voice Portal (CVP) PG
- Cisco Voice Response Unit (VRU) PG
- Cisco Media Routing (MR) PG (for multichannel applications)
- Cisco Contact Center Gateway

- Alcatel PG
- Aspect PG
- Avaya PG
- Ericsson PG
- Digital Media System (DMS) 100 PG with only TCP/IP interface
- Symposium PG
- Siemens PG

The following PG types are not supported on the VMware platform due to their special interface requirements:

- NEC PG
- DMS 100 PG with X.25 interface
- Spectrum PG

**Note:** The deployment of Unified System CCE and Unified System CCE Agent/IVR Controllers on virtual machines is not supported.

The following table provides a mapping of supported virtual machines to their corresponding non-virtualized platform. The goal here is to directly equate a virtual machine type with specific CPU affinity and RAM resource allocation to a documented server class. The virtual machine shall inherit the capacity defined by that server class for the specified ICM/CCE component type. Note that the reader may not apply this mapping to unsupported components – virtualization is only supported with the components specified in this table.

**Table 7-8: Virtual Machine Requirements**

VM Component Type	VM Resource Allocation		Matching Discrete Server Class (to determine capacity)	See Table for Capacities	Additional Requirements
	CPUs	RAM			
Unified CCE Agent PG <sup>24</sup>	1	2GB	MCS-30-004-Class MCS-30-005-Class	<a href="#">Table 6-6</a>	Agent PG with No Options 1 PIM, 1 CTI OS
	2	4GB	MCS-40-005-Class MCS-40-011-Class		
MR PG	2	2GB	MCS-30-004-Class MCS-30-005-Class	<a href="#">Table 6-28</a>	
	4	4GB	MCS-40-005-Class MCS-40-011-Class		
VRU PG <sup>25</sup>	1	1GB	MCS-30-004-Class MCS-30-005-Class	<a href="#">Table 6-48</a>	
	2	2GB	MCS-40-005-Class MCS-40-011-Class		
TDM ACD PG <sup>26</sup>	1	2GB	MCS-30-004-Class	<a href="#">Table 6-51</a>	PG with CTI OS

<sup>24</sup> Includes: Unified Communications Manager (Unified CM) PG, Unified CCE Generic PG, Unified CCE System PG and Unified ICM Agent Routing Service (ARS) PG

<sup>25</sup> Includes: Unified Customer Voice Portal (CVP) PG and Cisco Voice Response Unit (VRU) PG

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	2	4GB	MCS-30-005-Class MCS-40-005-Class MCS-40-011-Class		Deploy MR PG in separate virtual machine
Avaya ACD PG	2	4GB	n/a	<a href="#">Table 7-9</a>	
Unified Contact Center Gateway	1	2GB	MCS-30-003-Class MCS-30-005-Class	<a href="#">Table 6-50</a>	
	2	4GB	MCS-40-003-Class MCS-40-011-Class		
Client AW	1	1GB	MCS-10-004-Class	<a href="#">Table 6-46</a>	Up to 20 Client AW virtual machines (VMs) permitted per host (ESX Server); maximum of one Client AW per virtual machine. Connect to the Client AW virtual machine using Windows Remote Desktop Connection.

The above table should be referenced first when determining how one wishes to deploy ICM/CCE components in virtual machines. Each virtual machine has minimum resource requirements – CPU affinity must be set as indicated and the specified amount of RAM must be allocated to each virtual machine. This virtual machine configuration then “maps” to a discrete server class, indicated in the next column. For each server class, the capacity limits have been previously defined in a component table as referenced in the “See Table” column; refer to that table for the capacity limits for the discrete server platform that matches this virtual machine. Any additional requirements specific to a virtual machine environment are noted in the “Additional Requirements” column.

**Avaya TDM ACD PG**

A single Avaya TDM ACD PG virtual machine (with CPU affinity set at two) cannot support as many agents as an Avaya ACD PG on an MCS-40-005-Class server. Therefore, a direct mapping of platforms to the Avaya TDM ACD PG could not be accomplished while providing maximum value for a virtualized environment. In order to provide the greatest capacity without sacrificing flexibility and value, the capacity limits for Avaya TDM ACD PG virtual machines appear in the following table:

**Table 7-9: Virtualized Avaya TDM ACD PG Requirements**

Host Server Class	VM Resource Allocation		Desktops Connecting to CTI OS		Additional Requirements
	CPUs	RAM	Capacity (agents)	Skill Groups Per Agent	
MCS-40-010-Class MCS-40-016-Class	2	4GB	2,000	5	Note: CTI OS Monitor Mode applications are not supported with Avaya and CTI OS
	2	4GB	1,600	10	
	2	4GB	1,300	15	
	2	4GB	1,000	20	

**Hardware Requirements:**

<sup>26</sup> Includes: Alcatel PG, Aspect PG, Ericsson PG, DMS100 PG, Symposium PG and Siemens PG

The Unified ICM/Unified Contact Center virtualization solution requires the virtual machines to be run on the following Cisco MCS-7845 class servers:

- MCS-40-010-Class
- MCS-40-016-Class

The MCS-40-010-Class server comes with 4GB RAM. An additional 16GB RAM (either a 2x8 or two 2x4 kits) must be added for a total of 20GB of RAM.

The MCS-40-016-Class server comes with 8GB RAM. An additional 16GB RAM (either a 2x8 or two 2x4 kits) must be added for a total of 24GB of RAM.

The MCS-40-010-Class and the MCS-40-016-Class servers come with 2 Ethernet ports. Two additional dual port gigabit network adapters must be added for a total of six Ethernet ports. For the PGs, one adapter connects to the ICM public network, another one connects to the ICM private network. For the Client AWs, both of the adapters connect to the ICM public network. An Ethernet port can support up to five Client AW virtual machines.

See section [Servers for Cisco Contact Center Products](#) for the requirements of using exact-match OEM servers from Cisco-selected manufacturers.

### **Software Requirements:**

A virtualization deployment has the following software pre-requisites:

- ESX 3.5 with licenses from VMware
- Latest ESX 3.5 updates from VMware

The following software is optional:

- VirtualCenter 2.5 software

If you desire 24/7 VMware support, subscribe to VMware Platinum Support & Subscription Service from VMware. For more information on VMware support, refer to the link:

[www.vmware.com](http://www.vmware.com/support/services/Platinum.html) (<http://www.vmware.com/support/services/Platinum.html>)

### **Notes:**

Cisco provides support on running specific Unified ICM/CC components on virtual machines. However, Cisco does not provide support on VMware products. Please contact VMware or VMware partners for product support and training for all VMware products.

VMware infrastructure training is required and the necessary knowledge and experience regarding deployment and management of virtual machines must be acquired before attempting to deploy Unified ICM/CC components on VMware virtual machines.

VMware ESX 3.5 is the supported virtualization software. Cisco has neither evaluated nor tested ESX3i and therefore cannot support that version of VMware software.

## **7.10 Unified Contact Center Management Portal Software Requirements**

**Note:** For a Single Server system, the software prerequisites and Portal components for both Web Application Server and Database Server must be installed on the single server. A Single Server system is not supported for any but the smallest deployments.

**Table 7-10: Unified Contact Center Management Portal Software Requirements**

Type of Software	Server	Software
<b>Operating System</b>	All	<ul style="list-style-type: none"> <li>• Microsoft Windows Server 2003, SP2</li> </ul>
<b>Prerequisite Software</b>	All	<ul style="list-style-type: none"> <li>• Windows Installer 3.1</li> <li>• Microsoft .NET Framework 2.0</li> <li>• Microsoft Windows Server 2003 SP2 Application Server and ASP .NET components</li> </ul>
	Web Application Server	<ul style="list-style-type: none"> <li>• Microsoft SQL 2005 SP3 Reporting Services Standard or Enterprise Edition</li> <li>• Microsoft WSE 2.0 SP3</li> <li>• ASP .NET State Service 2.0 enabled</li> <li>• Microsoft ASP .NET 2.0 AJAX Extensions 1.0</li> <li>• Adobe Reader 7.0</li> </ul>
	Database Server	<ul style="list-style-type: none"> <li>• JSE Runtime Environment 5.0 (Update 14 or newer)</li> <li>• Microsoft SQL Server 2005 SP3 Standard or Enterprise Edition</li> </ul>
<b>Cisco Unified Contact Center Management Portal Software Components</b>	Web Application Server	<ul style="list-style-type: none"> <li>• Application Component</li> <li>• Web Component</li> </ul>
	Database Server	<ul style="list-style-type: none"> <li>• Database Component</li> <li>• Data Import Component</li> </ul>

## Appendix A – Server Classes

The server classes defined in this section are used in various Cisco contact center application deployment options. Note that the conventions and notes listed at the end of the section. Note too that shading designates End of Sale (EOS) status for selected 7800 Series Media Convergence Server (MCS) models, as indicated on the applicable server status page of Cisco.com: [http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_eol\\_notices\\_list.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_eol_notices_list.html).

### Processor Types

P4	Intel® Pentium® 4
PD	Intel® Pentium® D
C2D	Intel® Core™2 Duo
Xeon	Intel® Xeon®
E5504	Intel® Xeon® E5504
E5540	Intel® Xeon® E5540

**Table A.0-1: Series ‘40’ of MCS Server Classes (Dual Processor)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPU s	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ether net Ports	See <a href="#">Notes</a>
MCS-40-002-Class	MCS-7845H-3.0-CC1	Xeon	3.06	2	1	4	4 x 72	SCSI	2	1,4,5,7
MCS-40-003-Class	MCS-7845-I1-CC1 MCS-7845-H1-CC1	Xeon	3.4	2	1	4	4 x 72	SCSI	2	1,4,5,7
MCS-40-004-Class	MCS-7845-I1-CC1 MCS-7845-H1-CC1	Xeon	3.4	2	1	4	6 x 72	SCSI	2	1,3,4,5,7
MCS-40-005-Class	MCS-7845-H2-CCE1 MCS-7845-I2-CCE1	Xeon	2.33	2	2	4	4 x 72	SAS	2	1,4,10
	MCS-7845-H2-CCE2 MCS-7845-I2-CCE2	Xeon	2.33	2	2	4	4 x 146	SAS	2	1,4,10
MCS-40-006-Class	MCS-7845-H2-CCE1 MCS-7845-I2-CCE1	Xeon	2.33	2	2	4	6 x 72	SAS	2	1,3,10
MCS-40-007-Class	MCS-7845-H2-CCE1 MCS-7845-I2-CCE1	Xeon	2.33	2	2	4	8 x 72	SAS	2	1,3,10
MCS-40-008-Class	MCS-7845-H2-CCE3 MCS-7845-I2-CCE3	Xeon	2.33	2	4	4	4 x 146	SAS	2	1,4,10
MCS-40-009-Class	MCS-7845-H2-CCE3 MCS-7845-I2-CCE3	Xeon	2.33	2	4	4	6 x 146	SAS	2	1,3,10
MCS-40-010-Class	MCS-7845-H2-CCE4 MCS-7845-I2-CCE4	Xeon	2.33	2	4	4	8 x 146	SAS	2	1,3,9,10
MCS-40-011-Class	MCS-7845-I3-CCE1	E5540	2.53	1	4	6	4 x 146	SAS	2	1,3
MCS-40-012-Class	MCS-7845-I3-CCE1	E5540	2.53	1	4	6	6 x 146	SAS	2	1,3
MCS-40-013-Class	MCS-7845-I3-CCE1	E5540	2.53	1	4	6	8 x 146	SAS	2	1,3
MCS-40-014-Class	MCS-7845-I3-CCE2	E5540	2.53	2	4	8	4 x 300	SAS	2	1,3
MCS-40-015-Class	MCS-7845-I3-CCE2	E5540	2.53	2	4	8	6x 300	SAS	2	1,3
MCS-40-016-Class	MCS-7845-I3-CCE2	E5540	2.53	2	4	8	8 x 300	SAS	2	1,3,9

**Table A.0-2: Series ‘30’ of MCS Server Classes (Single Processor)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPU s	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See Notes
MCS-30-002-Class	MCS-7835H-3.0-CC1 MCS-7835I-3.0-CC1	Xeon	3.06	1	1	2	2 x 72	SCSI	2	1,4,7
MCS-30-003-Class	MCS-7835-H1-CC1 MCS-7835-I1-CC1	Xeon	3.4	1	1	2	2 x 72	SCSI	2	1,4,7
MCS-30-004-Class	MCS-7835-H2-CCE1 MCS-7835-I2-CCE1	Xeon	2.33	1	2	2	2 x 72	SAS	2	1,4
	MCS-7835-H2-CCE2 MCS-7835-I2-CCE2	Xeon	2.33	1	2	2	2 x 146	SAS	2	1,4,10
MCS-30-005-Class	MCS-7835-I3-CCE1	E5504	2.0	1	4	4	2 x 146	SAS	2	1,4

**Table A.0-3: Series ‘20’ of MCS Server Classes (Single Processor)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPUs	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See Notes
MCS-20-002-Class	MCS-7825H-3.0-CC1 MCS-7825I-3.0-CC1	P4	3.06	1	1	1	1 x 40	ATA	2	1,7
MCS-20-003-Class	MCS-7825-I1-CC1 MCS-7825-H1-CC1	P4	3.4	1	1	2	2 x 80	ATA	2	1,7
MCS-20-004-Class	MCS-7825-I2-CCE1 MCS-7825-H2-CCE1	PD	2.8	1	2	2	2 x 80	SATA	2	6
MCS-20-005-Class	MCS-7825-I3-CCE1 MCS-7825-H3-CCE1	Xeon	2.13	1	2	2	2x 160	SATA	2	6
MCS-20-006-Class	MCS-7825-I4-CCE1 MCS-7825-H4-CCE1	C2D	3.0	1	2	2	2x 250	SATA	2	6, 10

**Table A.0-4: Series ‘10’ of MCS Server Classes (Single Processor Desktops)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPUs	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See Notes
MCS-10-002-Class	MCS-7815I-3.0-CC1	P4	3.06	1	1	1	1 x 80	SATA	1	1,7
MCS-10-003-Class	MCS-7815-I1-CC2	P4	3.06	1	1	2	1 x 80	SATA	1	1,7
MCS-10-004-Class	MCS-7816-I3-CCE1	PD	2.8	1	2	2	1 x 80	SATA	1	6

**Table A.0-5: Series ‘50’ of Generic Server Classes (Quad Processor)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPUs	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See Notes
GEN-50-003-Class	(Generic)	Xeon	2.0	1	4	4	8 x 72	SCSI	2	1,4,5,7
GEN-50-004-Class	(Generic)	Xeon	2.6 or better	2	4	4	8 x 72	SCSI	2	1,4,5,6,8
GEN-50-005-Class	(Generic)	Xeon	2.6 or better	4	4	4	8 x 72 8 x 146	SAS	2	1,4,5,6

**Table A.0-6: Series ‘40’ of Generic Server Classes (Dual Processor)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPUs	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See <a href="#">Notes</a>
GEN-40-002-Class	(Generic)	Xeon	1.8	2	1	2	6 x 72	SCSI	2	1,4,5,7
GEN-40-003-Class	(Generic)	Xeon	1.8	2	1	4	8 x 72	SCSI	2	1,4,5,7

**Table A.0-7: Series ‘30’ of Generic Server Classes (Single Processor)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPUs	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See <a href="#">Notes</a>
GEN-30-002-Class	(Generic)	Xeon	3.06	1	1	2	2 x 72	SCSI	2	1,4,7

**Table A.0-8: Series ‘20’ of Generic Server Classes (Single Processor)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPUs	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See <a href="#">Notes</a>
GEN-20-002-Class	(Generic)	P4	3.06	1	1	1	1 x 40	ATA	2	2,7
GEN-20-003-Class	(Generic)	P4	3.4	1	1	2	2 x 80	ATA	2	2,7
GEN-20-004-Class	(Generic)	PD, C2D	2.0 or better	1	2 / 4	2	2 x 80	SATA	2	2,6

**Table A.0-9: Generic Server Classes for Client Software (Desktops)**

Server Class	Model	Proc. Type	CPU Speed (GHz)	CPUs	CPU Cores	RAM (GB)	Disk (GB)	Disk Controller	Ethernet Ports	See <a href="#">Notes</a>
GEN-10-005-Class (Minimum requirements)	(Generic)	P4, PD, C2D	2.0	1	1/2/4	1	10	SATA	1/2	2,6

**Notes**

1. Enable processor Hyper-Threading (if possible). (Enable Hyper-Threading only on Windows Server 2003 or Windows XP/Vista.)
2. The disk should have this amount of available disk space for the applications.
3. The MCS base model comes with 4 hard drives. Additional drives must be separately purchased for this server class of hardware.
4. You might need more Ethernet ports for servers that have the Router software component installed. See Section 6.7.1, [Unified ICM/CC Router](#) for details.
5. Two disks are sufficient for ‘40’ and ‘50’ class machines used for Routers, PGs, and other database-less processes.
6. Cisco has qualified and now supports multi-core Intel processors on its full range of products. Each individual core in a multi-core processor does not count as a processor towards server requirements given in this appendix. A processor is considered a single physical CPU, regardless of the number of cores.
7. No longer available for purchase (grayed).
8. The GEN-50-004-Class server has been replaced by the GEN-50-005-Class server.
9. As a VMware ESX host machine, an additional 16 GB of RAM (with either a 2x8 or two 2x4 kits, for a total of 20 GB for the MCS-40-010-Class and a total of 24 GB for the MCS-40-016-Class) is required and two additional dual port gigabit server adapters (for a total of 6 Ethernet ports).

10. End-of-Sale has been announced for these servers. Affected H2 and H4 servers are still orderable until December 31<sup>st</sup> 2009, with I2 servers available until April 26<sup>th</sup> 2010.

#### Other Server requirements

- All servers must support 100 or 1000 Mbps Ethernet ports
- All servers should have a DVD drive

#### Class Name Convention

The class name contains self-described meaningful information about the server class. This allows you to refer to the class of server without looking up the class table through out this document and other documents.

The class name has the following format: AAA-BB-CCC-Class, where:

- AAA: a sequence of alphabetic letters that describes the class, such as MCS for Cisco Media Convergence Server, or GEN for Generic.
- BB: digits that associate the performance class, such as 10, 20, 30, 40, and 50. “00” means no performance association.
- CCC: version number for this class, starts with 001, then 002, 003 ...
- Class: indicates that this is a server class, not a server model number, nor a part number.

## Appendix B – RAID Configuration Requirements

**Table B.0-1: RAID Configuration Requirements**

Unified ICM/Contact Center Server	RAID Configuration Requirements
Unified CC Enterprise Progger	RAID 1, RAID 10
Unified CC Enterprise Rogger	RAID 1, RAID 10
Unified System CC Enterprise Central Controller	RAID 1, RAID 10
Unified System CC Enterprise Agent/IVR Controller	RAID 1
Unified System CC Enterprise Central Controller + Agent/IVR Controller	RAID 1, RAID 10
Unified System CC Enterprise Administration and Reporting Server	RAID 10
Unified ICM Router	RAID 1
Unified ICM Logger	See Section 6.7.2, <a href="#">ICM Logger</a>
AW – Distributor, HDS, and WebView Server	See Section 6.7.3, <a href="#">AW – Distributor, HDS, and WebView Server</a>
Dedicated WebView Server	RAID 1
AW – Real-Time Distributor	RAID 1
AW – Real-Time Client only (Client AW)	N/A
WebView Client	N/A
Peripheral Gateway – Including Agent PG, TDM ACD PG, VRU PG, MR PG	RAID 1
Unified CC Gateway	RAID 1
Unified ICM/Contact Center SS7 Network Interface Option	N/A
Unified ICM Outbound Option	RAID 1
CTI OS Server	RAID 1
CTI OS Agent and Supervisor Desktops	N/A
CAD Server	RAID 1
CAD Agent and Supervisor Desktops	N/A
RMS Listener, LGMapper, LGArchiver	RAID 1
RMS AlarmTracker Client	N/A
Cisco Support Tools Server	N/A
Unified Expert Advisor	RAID 1

## Appendix C – Acronyms and Terms

**Table C.0-1: Acronyms and Terms**

Acronyms or Terms	Description
ACD	Automatic Call Distributor
AD	Active Directory
ATA	Advanced Technology Attachment - internal storage interconnect interface
AW	Administration Workstations
BOM	The Unified ICM/Contact Center Bill of Materials document that has been renamed to <i>Hardware and System Software Specification (Bill of Materials)</i> .
CAD	Cisco Agent Desktop
CCBU	(Cisco) Customer Contact Business Unit
CCE	Contact Center Enterprise
CCS	Cisco Collaboration Server
CDA	CAD Desktop Administrator
CEM	Cisco E-Mail Manager
Central Controller	A Unified ICM/Contact Center server configuration that contains the Unified ICM Router and Unified ICM Logger.
CG	CTI Gateway, also known as CTI Server
CICM	Customer ICM, a software server used in Unified ICM/Contact Center Hosted
CIL	Client Interface Library
CIM	Cisco Interaction Manager (replacement for CEM, CCS)
CMB	Cisco Media Blender
Common Ground Upgrade	Upgrade software in-place on pre-existing hardware, migrating data in-place.
eps	Calls per second
CSA	Cisco Security Agent
CSD	CAD Supervisor Desktop
CTI	Computer Telephony Interface
CTI OS	(Cisco) CTI Object Server
CVP	(Cisco Unified) Customer Voice Portal
DCA	Dynamic Content Adapter
ECC variables	Expanded Call Context (ECC) variables
EDMT	Enhanced Database Migration Tool
EIM	E-mail Interaction Manager (replacement for CEM)
HDS	Historical Database Server
ICM	(Cisco Unified) Intelligent Contact Management
ICME	(Cisco Unified) Intelligent Contact Management Enterprise
ICMH	(Cisco Unified) Intelligent Contact Management Hosted
IPCC	IP Contact Center (renamed to Unified Contact Center)

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<b>Acronyms or Terms</b>	<b>Description</b>
ISE	Internet Script Editor
IVR	Interactive Voice Response
MCS	Cisco Media Convergence Server
MR PG	Media Routing PG
MR-PIM	Media Routing PIM
NAM	Cisco Network Applications Manager – Unified ICM/Contact Center Hosted
NAS	Network Attached Storage
PG	Peripheral Gateway
PIM	Peripheral Interface Manager – a software component in the PG
RMS	Remote Monitoring Suite
SAN	Storage Area Network
SATA	Serial ATA
SP	Service Pack
SRND	<i>Solution Reference Network Design Guide</i>
SS7	Signaling System 7 – a telecommunication protocol
Unified System CCE (SCCE)	A CCE deployment model featuring simplified installation and integrated web-based configuration
TAC	(Cisco) Technical Assistance Center
Technology Refresh	An installation or upgrade procedure whereby software is installed and configured on newly acquired hardware, migrating historical and configuration data from the prior hardware environment
TDM	Time Division Multiplexing
UCCE	(Cisco) Unified Contact Center Enterprise
UCCH	(Cisco) Unified Contact Center Hosted
UCM	(Cisco) Unified Communications Manager
VPN	Virtual Private Network
VRU	Voice Response Unit
WIM	Web Interaction Manager (replacement for CCS)