



Hardware and System Software Specification (Bill of Materials)

Cisco Unified ICM/Unified CC Enterprise & Hosted Editions, Releases 7.0(0) SR1 – SR4, and 7.1(x)

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Hardware and Software Specification (Bill of Materials) for Cisco ICM/IPCC Enterprise & Hosted Editions, Releases 7.0(0) and 7.1(x)

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Hardware and System Software Specification Overview

1 Overview

This Hardware and System Software Specification was formerly known as the ICM/IPCC Bill of Materials (BOM). It has been renamed to better reflect its content and purpose. That purpose is to specify the hardware and system software compatible with, and required for, the Cisco Unified Intelligent Contact Management (ICM) and Cisco Unified Contact Center (IPCC) product¹ for major Release 7.0(0) and the minor and maintenance releases that can be applied to Release 7.0(0).

This document is applicable to both the Enterprise and Hosted Editions 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 ICM/IPCC 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 support qualified for the release. Note that while newly available hardware may 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 7.0(0) specification update.

Release Terminology: Major, Minor, and Maintenance Releases

Release 7.0(0) is a *major* software release for the Enterprise and Hosted Editions of Unified ICM and Unified CC. Its predecessor was major Release 6.0.

A *minor* release includes incremental new functionality in addition to software defect fixes, delivered in an automated patch installer that includes full rollback capability. Release 7.1(1) was the first minor release update to major Release 7.0.

Defect repair updates subsequent to 7.0 SR4 are delivered as *maintenance* releases (designated by the rightmost digit of the version number, starting with two (2)). Maintenance Releases replace Service Releases (SRs), the name change made to establish consistency across Cisco's Voice product line. Release 7.1(2) is the first *maintenance* release for minor Release 7.1(1) and can be installed over base Release 7.0(0), SRs 1—4 or Release 7.1(1). Release 7.1(2) replaces the ongoing 7.0 SR stream. Releases 7.1(2), 7.1(3), and 7.1(4) are the second, third, and fourth maintenance releases, respectively, for minor Release 7.1(1)

Note that minor Release 7.1(1) and subsequent maintenance Releases 7.1(2) - 7.1(4) are referenced generically in this document as Release 7.1(x)—*except where a distinction is necessary*, such as in the explanation of the upgrade path or in tables where agent-capacity differs among them.

Although 7.0(0) SR4 was the last Service Release, both the 'Service Release' and 'Maintenance Release' terminology appear throughout the document.

Because ICM/IPCC 7.0(0) installation is a prerequisite to 7.1(x) and later minor and maintenance releases to 7.0, statements in this document referring to ICM/IPCC 7.0(0) system requirements apply equally to follow-on 7.0 update releases, unless otherwise noted.

Hardware, System Software², and Capacity Sizing

To simplify mapping of the hardware server configurations across various deployments, a new approach of "server class" is introduced 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 ICM/IPCC 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

¹ See the Note on Cisco Product Names on page 3.

² System software consists of the operating system, database server, and other 3rd party applications.

Hardware and System Software Specification 0BOverview

thresholds (such as the maximum number of supported agents) are indicated. Special consideration is provided for installations being upgraded to Release 7.0(0) on existing hardware. A summary of system configuration boundaries is also provided, followed by specific ICM/IPCC 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 applicable server node.

In addition to server class categorization and information on system capacities, other notable changes for Release 7.0(0) and subsequent 7.0 minor and maintenance releases are:

- ◆ the introduction of [support for the Microsoft Windows Server 2003 operating system](#) (required for all new deployments – see page 9),
- ◆ [updated models of newly available MCS hardware](#), and
- ◆ numerous updates to [third party software](#) (such as anti-virus applications) that are qualified with, and in some cases required for, ICM/IPCC deployment.

Detail is also provided for System IPCC, a newly introduced IPCC Enterprise Edition deployment model featuring simplified installation and integrated web-based configuration.

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 ICM and IPCC 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 ICM Enterprise and Hosted customer. Cisco often defaults to a conservative stance in sizing limitations to arrive at recommendations that have the broadest level of applicability. For this reason, 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 may 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 Updates Made for Republications since February 2008

This document updates the previous versions with the following changes:

| | Section Title | Page # | Notes |
|--------|---|--------|---|
| 7.7.6 | CTI Supported Platforms | 60 | CAD support for Windows XP Professional SP3 |
| 7.7.8 | Cisco Security Agent | 62 | Updated URL. |
| 7.7.1 | Microsoft Windows Server 2003 | 52 | Additional qualification on SP2. |
| 7.6.11 | ICM Outbound Option Required Dialogic Software | 41 | Revised |
| 7.6.18 | CRM Connector | 45 | New and revised |

Hardware and System Software Specification

1BReferences

2 References

ICM/IP Contact Center Enterprise and Hosted Editions information can be found on www.cisco.com.

Product documentation, including planning, upgrade, install, configuration, reporting, reference, and developer documentation, is available at <http://www.cisco.com/public/support/tac/documentation.html>.

Other useful documents include:

- ◆ *Cisco ICM Software ACD Supplements*
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/application/pdf/en/us/guest/products/ps1001/c1225/ccmigration_09186a008041ef29.pdf
- ◆ *Cisco IPCC Enterprise Edition Compatibility Guide for IPCC Release 7.0(0)*
http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html
- ◆ Cisco End of Life and End of Sales Notices
http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod_eol_notices_list.html
- ◆ Contact Center Enterprise Solution Reference Network Design (SRND) Page
http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html

Note: The documents listed above are not necessarily updated on the same schedule as the *Hardware and System Software Specification (Bill of Materials)*. For that reason, specification data may differ between this document and the references cited.

2.1 Note on Cisco Product Names

Cisco ICM Enterprise Edition is renamed Cisco Unified Intelligent Contact Management Enterprise (abbreviated as Unified ICME).

Cisco ICM Hosted Edition is renamed Cisco Unified Intelligent Contact Management Hosted (abbreviated as Unified ICMH).

Cisco 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.

The new product names are being introduced in phases.

Hardware and System Software Specification 2BServers for Cisco Contact Center Applications

3 Servers for Cisco Contact Center Applications

The ICM/IPCC 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 ICM/IPCC 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 ICM/IPCC 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 ICM/IPCC server node type and capacity in Section 7 [ICM/IPCC Hardware and Software Requirements](#). Where specific ICM/IPCC component server requirements dictate certain hardware capabilities (e.g. SCSI disk drives for high transaction SQL Server or Oracle deployment, or dual processor configurations to achieve specific system performance metrics), the 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 Call Manager (CCM) and associated products, MCS servers ordered for ICM/IPCC deployments do not include a customized distribution of the operating system. Users ordering MCS for ICM/IPCC must also order the appropriate editions of Windows Server 2003 and, for database, SQL Server 2000. ICM/IPCC MCS customers assume primary maintenance responsibility for their Windows environment. Cisco does, however, provide as a service ongoing Microsoft security patch certification for ICM/IPCC; see the *Security Best Practices for Intelligent Contact Management Software* guide, available at:

http://www.cisco.com/en/US/customer/products/sw/custcosw/ps1001/prod_technical_reference_list.html

Cisco strongly recommends the use of MCS servers for all applicable ICM Enterprise and Hosted Edition solution applications. For the 7.0(0) release, the MCS server solution is *required for all IPCC Enterprise (including System IPCC) deployments*. This requirement applies to new IPCC Enterprise and System IPCC deployments and expansions. MCS hardware may be substituted for IPCC deployments with an exact-match OEM equivalent from selected manufacturers; consult Cisco for additional detail.

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

If you have non-MCS hardware, you may upgrade to the 7.0(0) 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 7. For ICM Enterprise and ICM Hosted Edition customers, non-MCS (“generic”) servers that essentially match MCS specifications for a given server class may 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.

**Hardware and System Software Specification
3BServer Hardware Configuration Guidelines**

4 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 ICM and IPCC applications require special consideration to meet the high performance demands of the system. Whether acquiring Cisco MCS Servers or 3rd 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 IPCC/ICM 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 ICM/IPCC operation (including fault tolerant recover). 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

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

Cisco has qualified and now supports dual-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 [Appendix A - Server Classes](#). A processor is considered a single physical CPU, regardless of the number of cores.

Storage Hardware

Cisco ICM and IPCC 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 drive use is acceptable are explicitly identified in the applicable node’s hardware recommendations (see Section 7 [ICM/IPCC Hardware and Software Requirements](#)).

Required controllers:

- | | |
|---|---|
| <ul style="list-style-type: none"> ◆ SCSI <ul style="list-style-type: none"> ○ Ultra160/3 (minimum) ○ Ultra320 (recommended) ○ SAS 3.0Gb/s (recommended)³ | <ul style="list-style-type: none"> ◆ ATA <ul style="list-style-type: none"> ○ Serial (recommended) ○ Parallel |
|---|---|

Disk Speed:

- ◆ SCSI
 - 15,000 RPM (recommended) for Cisco ICM and IPCC Loggers, Historical Data Servers and other database servers

³ Serial Attached SCSI. This is a new SCSI interface and is applicable to all SCSI requirements found in this document.

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- 10,000 RPM (minimum) for all other nodes
- ◆ ATA
 - 7,200 RPM

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 multi-channel controllers 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 are highly recommended.
- ◆ 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 recommended RAID level for all critical 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 ICM/IPCC 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. RAID 5 is thus not supported for new deployments. Please contact Cisco regarding use of RAID 5 in upgrades from previous releases.

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.

Unqualified storage and backup options:

- ◆ NAS (Network Attached Storage) or SAN (Storage Area Network) products have not been qualified by Cisco for use with the ICM and IPCC applications. These applications are qualified and tuned for optimal operation on a dedicated storage solution. NAS or SAN solutions are typically deployed in a shared environment where non-ICM/IPCC enterprise applications are contending for storage access, and it becomes extremely difficult to appropriately size the system or

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3BServer Hardware Configuration Guidelines**

troubleshoot the application in the event faults result from disk I/O and other resource contention. If the NAS or SAN storage deployment is suspected of affecting the functions of the contact center solution, the customer will be required to deploy an approved storage solution. Alternatively, Cisco can defer the problem to the system integrator or storage product vendor.

- ◆ Backup device option decisions are left to the end customer; no backup products are explicitly qualified by Cisco.

Caution

For performance reasons, it is recommended that backups 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 may have restrictions on what platforms they are compatible with. Consult your hardware vendor to determine options for internal or external storage.

4.1 Unified Contact Center Management Portal Data Storage and Backup

Storage Hardware

- SCSI (recommended)
- Serial ATA (small systems only)
 - NCQ controllers
 - 7200rpm

Configuration Guidelines

- Single Server System
 - 4x72GB HDD as 2x72GB RAID1 arrays
- Secure System
 - 2x72GB RAID1 array (Web Application Server)
 - 8x72GB HDD as 2x72GB and 1x144GB RAID1 arrays (DB Server: midrange)
 - 8x72GB HDD as 2x72GB and 1x144GB RAID1 arrays (DB Server: high end)

Backup Options

The database backup strategy may be set by the customer according to their own in-house strategies.

The suggested policy for backup of the Portal is:

- Nightly incremental backup
- Weekly full backup

4.1.1 Database Sizing

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

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

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:

$4 * 1\text{GB} * 52/8 = 26\text{GB}.$

5 Software Upgrade Considerations

Upgrading an ICM / IPCC installation from Release 5.0 or 6.0 requires that you first upgrade the entire system to 7.0(0). You can then install 7.1(x) on your upgraded 7.0(0) system. See also the Overview on page 1.

This section describes the considerations for this process.

5.1 Upgrading to ICM/IPCC Release 7.0(0)

Upgrading to ICM / IPCC Release 7.0(0) is explained in the *Upgrade Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*. This section highlights some of the considerations to be aware of.

There are two distinct approaches for upgrading an existing ICM/IPCC installation to the 7.0(0) release of the software:

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

In both the above cases, the ICM/IPCC database is migrated using a newly introduced migration utility known as the Enhanced Database Migration Tool (EDMT). EDTM 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 EDTM and detailed procedures for the overall upgrade and migration can be found in the *Upgrade Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*.

Deciding on the appropriate upgrade path depends in part on whether a customer’s existing hardware is suitable for the Release 7.0(0) deployment. Cisco recognizes the importance of protecting a customer’s investment in recent generation hardware, and for that reason ongoing qualification of the ICM/IPCC product is extended to address older hardware. At the same time, given significant strides in processor speeds and an 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 7 [ICM/IPCC Hardware and Software Requirements](#) reflect that difference between capacities shown for new deployments (and technology refresh) versus common ground upgrades. The current generation (new deployment) hardware specified is strongly recommended for all upgrades, to fully exploit the call processing capacity designed into the ICM/IPCC product.

ICM/IPCC Release 7.0(0) 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.x (ICM and IPCC) 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)⁴.

Recognizing the significant impact of an operating system deployment in the upgrade scenario, Cisco continues to provide for updates to the current maintenance version of the product (7.1(x)) on the Windows 2000 Server platform, provided customers subsequently migrate to Windows Server 2003 *within 30 days of the upgrade*. This policy will NOT continue with any subsequent version updates beyond 7.1(x), either major (e.g. 8.0(x)) or minor (7.2(x)) versions — which will require Windows Server 2003 as prerequisite to their installation.

⁴ 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.

Hardware and System Software Specification 4BSoftware Upgrade Considerations

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 all components are at the same version prior to performing the upgrade.

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 SQL Server 2000). Note that the ICM/IPCC solution requirements outlined in this document match and in some cases exceed like requirements from Microsoft. For example, while Microsoft SQL Server 2000 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 ICM/IPCC 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 7.7.2](#). 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 Service Release is tested against all relevant security updates.

Additional important upgrade information follows:

- ◆ An ICM/IPCC system is always upgraded from a prior release starting with the central controller (CallRouter and Logger) servers.
- ◆ Upgrades of duplexed systems are typically done one “side” at a time.
- ◆ As with any major release upgrade, release 7.0(0) requires that the HDS systems be themselves upgraded to coincide with the Logger to which they communicate.
- ◆ Peripheral Gateway (PG) nodes are typically the last servers to be upgraded; the 7.0(0) upgrade will support 4.6.2 PGs through the upgrade transition, but all PGs must be running a minimum of release 5.0(0) for a fully supported system configuration. (Release 7.0(0) PGs are strongly recommended to take advantage of several key PG enhancements made in the area of supportability, scalability, and feature support.)
- ◆ ICM Hosted Edition and IPCC Hosted Edition customers may, 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 (Hosted Edition) release. For ICM/IPCC Hosted Edition 7.0(0), this means the interface opposite that being upgraded must itself be at release 5.0(0) (or later).
- ◆ The documented procedures for upgrading to ICM/IPCC Release 7.0(0) require a starting baseline of ICM/IPCC 5.0(0) or 6.0(0), running on the Microsoft Windows 2000 Server operating system (SP4) with Microsoft SQL Server 2000 (SP3a or SP4). Upgrade customers currently deploying releases earlier than release 5.0(0) will need to provide a transitional upgrade to 5.0(0) or 6.0(0) as a staging release. This step will require database migration from the earlier release to 5.0(0)/6.0(0), and 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.
- ◆ Microsoft’s Windows 2000 Update Rollup 1 for Service Pack 4 is supported by the various components of Cisco ICM/IPCC 7.0(0) SR1 or later during the upgrade period. Update Rollup 1 is an elective add-on to SP4 that is supported where Windows 2000 itself is supported.

Caution: If the computer has certain earlier non-Plug and Play ISA, EISA, or MCA SCSI controllers installed, when you restart a computer after you install Update Rollup 1 for Microsoft Windows 2000 Service Pack 4 (SP4), you may receive something similar to the following Stop error message:

```
***Stop 0x000001e {0xc0000005,0x804a1a51,0x00000000,0x000000b0} KMODE_EXCEPTION_NOT_HANDLED
This problem results from a problem in the Scsiport.sys driver that is included in Update Rollup 1 for Windows 2000 SP4.
```

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5BICM/IPCC Configuration Limits and Scalability Constraints

For details on this problem, and to obtain a Microsoft hotfix that deals with the problem, see the Microsoft Knowledge Base on "Update Rollup 1 for Windows 2000 SP4 and known issues" (Article ID 891861).

5.2 Installing ICM/IPCC Maintenance Release 7.1(x)

For all ICM Releases 7.1(2) and later, service releases (SR) are being renamed as maintenance releases (MR). Cisco ICM/IPCC Enterprise & Hosted Editions.

Maintenance Releases are cumulative updates to previous releases. As a result, applying Release 7.1(4) installs all the functionality contained in ICM 7.0(0) SR1 through SR4, 7.1(1), 7.1(2), 7.1(3) as well as the new 7.1(4) content. Due to this, ensure you read the relevant Release Notes prior to installing Release 7.1(4).

Maintenance Release 7.1(4) can be installed over ICM/IPCC 7.0(0) FCS, 7.0(0) SR1 through SR4, 7.1(1), 7.1(2), or 7.1(3). Refer to the *Installation Guide for Cisco ICM/IPCC Enterprise & Hosted Editions, Release 7.1(1)* for detailed installation instructions.

6 ICM/IPCC Configuration Limits and Scalability Constraints

The following table specifies the configuration limits and scalability constraints for the ICM /IPCC product editions. These configuration limits are part of the ICM/IPCC product design constraints and were utilized 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. Please see applicable specific comments in the table below for additional detail. Consult Cisco if you have special configuration requirements that may exceed specific parameter(s).

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

Table 6.1: ICM/IPCC Configuration Limits and Scalability Constraints

| Limit | Value | System IPCC | IPCC EE | ICM EE | IPCC HE | ICM HE | Comments |
|---|-------|-------------|---------|--------|---------|--------|---|
| Maximum ECC (Extended Context Call) Variables Size (bytes) ⁵ | 2,000 | ✓ | ✓ | ✓ | ✓ | ✓ | CVP, CEM, and Outbound rely on a subset of this max limit for integration with ICM. |
| Number of Peripheral Variables (Call Variables) | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | Also known as User Variables in System IPCC Enterprise. |
| Maximum Peripheral Variable Length (characters) | 40 | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Maximum VRU PIMs per VRU PG | 10 | N/A | ✓ | ✓ | ✓ | ✓ | |
| Maximum VRU PIMs per Generic PG | 8 | N/A | ✓ | N/A | ✓ | N/A | |
| Maximum VRU PIMs per System PG | 5 | ✓ | ✓ | N/A | N/A | N/A | |

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

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5BICM/IPCC Configuration Limits and Scalability Constraints

| Limit | Value | System IPCC | IPCC EE | ICM EE | IPCC HE | ICM HE | Comments |
|---|-------|-------------|---------|--------|---------|--------|--|
| Maximum 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. |
| Maximum MR PIMs per PG | 10 | N/A | ✓ | ✓ | ✓ | ✓ | |
| Maximum MR PIMs per PG in System IPCC | 1 | ✓ | N/A | c | N/A | N/A | |
| Number of PGs per server | 2 | N/A | ✓ | N/A | N/A | ✓ | This is not applicable to multi-instance CTI OS in a Hosted IPCC environment. |
| Number of PGs per CICM instance | 80 | N/A | N/A | N/A | ✓ | N/A | This is only applicable to Hosted IPCC with multi-instance CTI OS deployment. |
| Number of PGs per server for System IPCC | 1 | ✓ | N/A | N/A | N/A | N/A | |
| Number of duplex PGs per ICM instance | 80 | N/A | ✓ | ✓ | ✓ | ✓ | |
| Maximum VRU operations per second per VRU PG | 100 | N/A | ✓ | ✓ | ✓ | ✓ | Using Service Control Interface and 4 IVR operations per call. |
| Maximum HDS Servers per Logger side | 2 | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Maximum 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. |
| Maximum CICMs per NAM platform | 75 | N/A | N/A | N/A | ✓ | ✓ | The maximum CICM physical servers per NAM is six. Consult your Cisco representative if you need more than six. |
| Maximum CTI OS per PG | 1 | ✓ | ✓ | ✓ | N/A | ✓ | |
| Maximum instances per PG/CG/CTI OS server | 10 | N/A | N/A | N/A | ✓ | N/A | |
| Maximum HDS instances per Hosted Distributor server | 10 | N/A | N/A | N/A | ✓ | ✓ | |
| Number of dialers per PG | 2 | N/A | ✓ | ✓ | ✓ | ✓ | |
| Number of dialers per PG for System IPCC | 1 | ✓ | N/A | N/A | N/A | N/A | |

Hardware and System Software Specification
5BICM/IPCC Configuration Limits and Scalability Constraints

| Limit | Value | System IPCC | IPCC EE | ICM EE | IPCC HE | ICM HE | Comments |
|--------------------------------|-------|-------------|---------|--------|---------|--------|----------|
| All-event clients (CTI Server) | 7 | ✓ | ✓ | ✓ | ✓ | ✓ | |

Note: For IPCC Hosted Edition, there is only one instance of dialer per C1CM with a maximum of 2 Dialers per machine.

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6BICM/IPCC Hardware and Software Requirements**

7 ICM/IPCC Hardware and Software Requirements

ICM/IPCC Operating Conditions

Except when explicitly specified, the ICM/IPCC hardware selection described in this section is based on the following operating conditions. In determining how to size an ICM or IPCC (Enterprise or Hosted) 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 recommendations herein are based.

Table 7.1: ICM/IPCC Operating Conditions

| Operating Condition | Value | IPCC EE | ICM EE | IPCC HE | ICM HE | 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 Usage (bytes) | 200 | ✓ | ✓ | ✓ | ✓ | |
| Call Flow Traffic on straight Calls | 85% | ✓ | ✓ | ✓ | ✓ | |
| Call Flow Traffic on transfer Calls | 10% | | | | | |
| Call Flow Traffic on conference Calls | 5% | | | | | |

**Hardware and System Software Specification
6BICM/IPCC Hardware and Software Requirements**

7.1 IPCC Enterprise Edition Hardware Requirements

This section assists you in selecting the hardware servers for your IPCC solution, including both the IPCC Enterprise and System IPCC Enterprise 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 IPCC Enterprise and System IPCC Enterprise. Additional VRU PGs can be deployed to accommodate a greater number of VRU ports. VRU PG can be found in section 7.6.7 [VRU Peripheral Gateway \(PG\)](#). (Additional VRU PGs are not applicable to System IPCC Enterprise).

Agent PG Configuration Options

The following table illustrates various configuration options for the Agent PG. Agent PG capacity varies based on specific component configuration.

Table 7.2: Agent PG Configuration Options with CTI OS - IPCC Enterprise Hardware

| All-in-one | With Generic PG or IPCC System PG | With CCM PG | With Outbound |
|------------------|-----------------------------------|------------------|----------------------------------|
| CCM PG (CCM PIM) | Generic PG (CCM PIM and VRU PIM) | CCM PG (CCM PIM) | Generic PG (CCM PIM and VRU PIM) |
| VRU PG | | | |
| CTI Server | CTI Server | CTI Server | CTI Server |
| CTI OS | CTI OS | CTI OS | CTI OS |
| | | | MR PG |
| | | | Dialer |

Table 7.3: Agent PG Configuration Options with Cisco Agent Desktop - IPCC Enterprise Hardware,

| All-in-one | With Generic PG or IPCC System PG | With CCM PG | With Outbound |
|------------------|-----------------------------------|------------------|----------------------------------|
| CCM PG (CCM PIM) | Generic PG (CCM PIM and VRU PIM) | CCM PG (CCM PIM) | Generic PG (CCM PIM and VRU PIM) |
| VRU PG | | | |
| 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 |

7.1.1 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.

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Consider the following factors when sizing call center resources:

CTI OS

For 7.0(0) and 7.1(x), Agent Capacity is further decreased by 25% when CTI OS Security is enabled.

Mobile Agents

The Mobile Agent feature is introduced for IPCC in 7.1(x). Agent capacity is decreased for mobile agents.

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

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 Up 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 please refer to Cisco Unified Contact center Enterprise 7.x Solution Reference Network Design at <http://www.cisco.com/go/srnd>

New Server Classes

In tables showing capacity for New Deployments and Technology Refresh, for the new server classes MCS-40-006 and MCS-30-004, capacity is the same as that of the preceding class (for example, capacity for the MCS-40-006 is identical to capacity for the MCS-40-005).

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7.1.2 New Deployments and Technology Refresh

Option 1 - Supports up to **450** Agents

The Progger configuration consists of ICM Router, ICM Logger, Agent PG (CCM PIM, VRU PIM, CG, and CTI OS) on the same server.

Table 7.4: Progger Servers - IPCC Enterprise Hardware, New Deployment/Tech Refresh

| Capacity (agents) 7.0(0) | Capacity (agents) 7.1(1) | Capacity (agents) 7.1(2) and later | Progger with no options | Progger with CAD Services | Progger with MR PG, Dialer | Progger with CAD Services, MR PG, Dialer |
|--------------------------|--------------------------|------------------------------------|-------------------------|---------------------------|----------------------------|--|
| 35 | 35 | 35 | MCS-30-003-Class | MCS-40-003-Class | MCS-40-003-Class | MCS-40-003-Class |
| 50 | 50 | 50 | | | N/A | N/A |
| 100 | 100 | 100 | | | | |
| 210 | 210 | 297 | MCS-40-003-Class | | | |
| 300 | 375 | 450 | | N/A | | |

Option 2 - Supports from **500** to **6000** Agents

Server configuration options:

- Option 2.1 (see below): Rogger configuration – this server has the ICM Router and ICM Logger collocated. Consider this option if the expected growth of your contact center will not exceed 1,500 agents.
- Option 2.2 (see below): Standalone Router and standalone Logger. Consider this option if the expected growth of your contact center will exceed 1,500 agents.

Table 7.5: Central Controller Servers - IPCC Enterprise Hardware, New Deployment/Tech Refresh

| Capacity (agents) 7.0(0) , and 7.1(x) | Option 2.1 | Option 2.2 | |
|---------------------------------------|------------------|------------------|------------------|
| | Rogger | Router | Logger |
| 500 | MCS-30-003-Class | MCS-40-003-Class | MCS-40-004-Class |
| 2000 | MCS-40-003-Class | | |
| 5000 | N/A | | |
| 6000 | N/A | | GEN-50-003-Class |

**Hardware and System Software Specification
6BICM/IPCC Hardware and Software Requirements**

Table 7.6 : Agent PG Servers - IPCC Enterprise Hardware, New Deployment/Tech Refresh

| Capacity (agents) 7.0(0) | Capacity (agents) 7.1(x) | Agent PG with no options | Agent PG with CAD Services |
|-----------------------------|-----------------------------|-----------------------------|-------------------------------|
| 210 | 297 | MCS-30-003-Class | MCS-30-003-Class |
| 300 | 450 | | MCS-40-003-Class |
| 700 | 1000 | MCS-40-003-Class | |
| 1000 | 2000 | | N/A |

NOTES:

- 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 please refer to Cisco Unified Contact center Enterprise 7.x Solution Reference Network Design at <http://www.cisco.com/go/srmd>.

- If you add MR-PG and Dialer to the one of the configurations in the table above, use the following formula:
(Inbound agents) + (8 * Outbound dialer ports) < Number of agents listed in the capacity column.
- The maximum number of Outbound-only (non-blended) agents is two times the number of dialer ports.

Table 7.7: CAD Servers - IPCC Enterprise Hardware, New Deployment/Tech Refresh

| Capacity (agents) 7.0(0) and 7.1(x) | CAD Server |
|--|------------------|
| 250 | MCS-30-003-Class |
| 1000 | MCS-40-003-Class |

Note: See section 7.6.18 [CAD Agent and Supervisor Desktops](#) for hardware and system software requirements.

Table 7.8: Outbound Servers - IPCC Enterprise Hardware, New Deployment/Tech Refresh

| Capacity (agents) 7.0(0) and 7.1(x) | Dialer Only |
|--|------------------|
| 100 | MCS-30-003-Class |
| 200 | MCS-40-003-Class |

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

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7.1.3 Common Ground Upgrade

Option 1 - Support up to **360** Agents

The Progger configuration consists of ICM Router, ICM Logger, Agent PG (CCM PIM, VRU PIM, CG, and CTI OS) on the same server.

Table 7.9: Progger Servers - IPCC Enterprise Hardware, Common Ground Upgrade

| Capacity (agents) 7.0(0) | Capacity (agents) 7.1(x)** | Progger with no options | Progger with CAD Services** | Progger with MR PG, Dialer | Progger with CAD Services** , MR PG, Dialer |
|--------------------------|----------------------------|-------------------------|-----------------------------|----------------------------|---|
| 20 | 20 | MCS-30-001-Class | MCS-40-001-Class | MCS-40-001-Class | MCS-40-001-Class |
| 30 | 30 | | | | |
| 60 | 60 | | | N/A | |
| 126 | 178 | MCS-40-001-Class | N/A | N/A | |
| 180 | 180 | | | | |
| 180 | 270 | | | N/A | |
| 30 | 30 | MCS-30-002-Class | MCS-40-002-Class | MCS-40-002-Class | MCS-40-002-Class |
| 40 | 40 | | | | |
| 85 | 85 | | | N/A | |
| 178 | 252 | MCS-40-002-Class | N/A | N/A | |
| 255 | 255 | | | | |
| 255 | 360 | | | N/A | |

** In all cases where CAD Services are co-resident, 7.1(x) capacity remains the same as 7.0(0) capacity. For example, on a Progger with CAD Services, MCS-40-001 Class, with 7.1(2), agent capacity is 60.

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Option 2 - Supports from 300 to 5100 Agents

Server configuration options:

- Option 2.1 (see below): Rogger configuration – this server has the ICM Router and ICM Logger collocated
- Option 2.2 (see below): Standalone Router and standalone Logger

Table 7.10: Central Controller Servers - IPCC Enterprise Hardware, Common Ground Upgrade

| | Option 2.1 | Option 2.2 | |
|--|------------------|------------------|------------------|
| Capacity (agents) 7.0(0) and 7.1(x) | Rogger | Router | Logger |
| 300 | MCS-30-001-Class | MCS-40-001-Class | MCS-40-001-Class |
| 900 | MCS-40-001-Class | | |
| 3000 | N/A | | |
| 3600 | N/A | | GEN-50-001-Class |
| 425 | MCS-30-002-Class | MCS-40-002-Class | MCS-40-002-Class |
| 1275 | MCS-40-002-Class | | |
| 4250 | N/A | | |
| 5100 | N/A | | GEN-50-002-Class |

Table 7.11: Agent PG Servers - IPCC Enterprise Hardware, Common Ground Upgrade

| Capacity (agents) 7.0(0) | Capacity (agents) 7.1(x) ** | Agent PG with no options | Agent PG with CAD Services ** |
|-----------------------------|--------------------------------|-----------------------------|----------------------------------|
| 126 | 178 | MCS-30-001-Class | MCS-30-001-Class |
| 180 | 270 | | MCS-40-001-Class |
| 420 | 600 | MCS-40-001-Class | N/A |
| 600 | 1200 | | |
| 178 | 252 | MCS-30-002-Class | MCS-30-002-Class |
| 255 | 382 | | MCS-40-002-Class |
| 595 | 850 | MCS-40-002-Class | N/A |
| 850 | 1700 | | |

** In all cases where CAD Services are co-resident, 7.1(x) capacity remains the same as 7.0(0) capacity. For example, on an Agent PG with CAD Services, MCS-40-001-Class, with 7.1(2), agent capacity is 150.

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NOTES:

- **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 please refer to Cisco Unified Contact center Enterprise 7.x Solution Reference Network Design at <http://www.cisco.com/go/srmd>.
- If you add MR-PG and Dialer to the one of the configurations in the table above, use the following formula:
(Inbound agents) + (8 * Outbound dialer ports) < Number of agents listed in the capacity column.
- The maximum number of Outbound-only (non-blended) agents is two times the number of dialer ports.

Table 7.12: CAD Servers - IPCC Enterprise Hardware, Common Ground Upgrade

| Capacity (agents) 7.0(0) and 7.1(x) | CAD Server |
|--|------------------|
| 150 | MCS-30-001-Class |
| 600 | MCS-40-001-Class |
| | |
| 210 | MCS-30-002-Class |
| 850 | MCS-40-002-Class |

Table 7.13: IPCC Outbound Servers - IPCC Enterprise Hardware, Common Ground Upgrade

| Capacity (agents) 7.0(0) and 7.1(x) | Dialer Only |
|--|------------------|
| 60 | MCS-30-001-Class |
| 120 | MCS-40-001-Class |
| | |
| 85 | MCS-30-002-Class |
| 170 | MCS-40-002-Class |

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

7.1.4 Unified Contact Center Management Portal

Although Unified Contact Center Management Portal is included as a part of IPCC Hosted Edition, it can also be purchased as an option for IPCC Enterprise Edition. The hardware requirements are the same in both cases. Please see the details supplied in [Section 7.4.1](#).

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7.2 System IPCC Enterprise Hardware Requirements

NOTE: Agent capacity is further decreased for mobile agents. For more details about sizing mobile agents please refer to Cisco Unified Contact center Enterprise 7.x Solution Reference Network Design at <http://www.cisco.com/go/srmd>.

Option 1 - Supports up to 300 agents

This solution requires the following servers:

- Central Controller + Agent/IVR Controller – Router, Logger, IPCC System PG, CTI OS
- Administration and Reporting – Administrative Workstation, WebView, HDS, IPCC Web Administration Server

Table 7.14: System IPCC Enterprise, up to 300 Agents

| Capacity (agents) | | Central Controller + Agent/IVR Controller (Without CAD Services) | Central Controller + Agent/IVR Controller (With CAD Services) |
|-------------------|--------|--|---|
| 7.0(0) | 7.1(x) | | |
| 100 | 100 | MCS-30-003-Class | MCS-40-003-Class |
| 300 | 450 | MCS-40-003-Class | N/A |

Option 2 - Supports up to 2000 agents

This solution requires the following servers:

- Central Controller – Contains the Router, Logger, Outbound Campaign Manager
- Agent/IVR Controller – IPCC System PG, CTI OS, with CAD Services co-locate option
- Administration and Reporting – Administrative Workstation, WebView, HDS, IPCC Web Administration Server

Table 7.15: System IPCC Enterprise, up to 2000 Agents

| Capacity (agents) 7.0(0) | Capacity (agents) 7.1(2x) | Central Controller |
|--------------------------|---------------------------|--------------------|
| 1000 agents | 2000 agents | MCS-40-003-Class |

To select hardware for the Agent/IVR Controller, please see section [7.6.2.1 New Deployments and Technology Refresh](#). Refer to the Agent PG Server table columns “Agent PG with no options” and “Agent PG with CAD Services”.

Administration and Reporting Server

You need an Administration and Reporting server whether you choose Option 1 or Option 2.

System IPCC Enterprise supports the AW – Real-Time Distributor, HDS and with co-resident WebView configuration.

Please see Section [7.6.3 AW – Distributor, HDS, and WebView Server](#) and [7.5.3.1.1 AW – Real-Time Distributor, HDS and with co-resident WebView](#) for details.

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7.3 ICM Enterprise Edition Hardware Requirements

This section assists you in selecting the hardware servers for your ICM Enterprise Edition, including new deployments and technology refresh and common ground upgrade.

7.3.1 Note on Agent Capacity

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).

7.3.2 New Deployments and Technology Refresh

Table 7.16: Rogger Server - ICM Enterprise, New Deployments/Tech. Refresh

| Capacity (agents) 7.0(0) and 7.1(x) | Rogger |
|--|------------------|
| 2000 | MCS-40-003-Class |

Table 7.17 : Rogger and Logger Servers - ICM Enterprise, New Deployments/Tech. Refresh

| Capacity 7.0(0) and 7.1x | | | |
|-----------------------------|--------|------------------|------------------|
| BHCA | Agents | Router | Logger |
| 30,000 | 1000 | MCS-30-003-Class | MCS-40-003-Class |
| 18,000 | 1800 | | |
| 12,000 | 2400 | | |
| 150,000 | 5000 | MCS-40-003-Class | MCS-40-004-Class |
| 360,000 | 12000 | MCS-40-003-Class | GEN-50-003-Class |
| 216,000 | 21600 | | |
| 144,000 | 28800 | | |

Please see 7.6.9 [TDM ACD Peripheral Gateway \(PG\)](#) for TDM ACD PG server requirements.

Table 7.18: MR PG Servers - ICM Enterprise, New Deployments/Tech. Refresh

| Capacity (agents) 7.0(0) and 7.1(x) | MR PG (Standalone) | Other requirements and remarks |
|--|-----------------------|---------------------------------|
| 1000 | MCS-30-003-Class | Maximum of 5 MR-PIMs per MR PG |
| 2000 | MCS-40-003-Class | Maximum of 10 MR-PIMs per MR PG |

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7.3.3 Common Ground Upgrade

Table 7.19: Rogger Servers - ICM Enterprise, Common Ground Upgrade

| Capacity (agents) 7.0(0) and 7.1(x) | Rogger |
|--|------------------|
| 1200 | MCS-40-001-Class |
| 1700 | MCS-40-002-Class |

Table 7.20: Central Controller Servers - ICM Enterprise, Common Ground Upgrade

| Capacity (agents) 7.0(0) and 7.1(x) | | Router | Logger |
|--|--------|------------------|--|
| BHCA | Agents | | |
| 18,000 | 600 | MCS-30-001-Class | MCS-40-001-Class |
| 10,800 | 1080 | | |
| 7,200 | 1440 | | |
| 25,500 | 850 | MCS-30-002-Class | MCS-40-002-Class |
| 15,300 | 1530 | | |
| 10,200 | 2040 | | |
| 90,000 | 3000 | MCS-40-001-Class | MCS-40-001-Class Requires 6 disks. See section 7.6.2 ICM Logger for 6 disk configuration. |
| 127,500 | 4250 | MCS-40-002-Class | MCS-40-002-Class Requires 6 disks. See section 7.6.2 ICM Logger for 6 disk configuration. |
| 216,000 | 7200 | MCS-40-001-Class | GEN-50-001-Class |
| 129,600 | 12960 | | |
| 86,400 | 17280 | | |
| 306,000 | 10200 | MCS-40-002-Class | GEN-50-002-Class |
| 183,600 | 18360 | | |
| 122,400 | 24480 | | |

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Table 7.21: Logger with Other Generic Hardware - ICM Enterprise, Common Ground Upgrade

| Capacity (agents) 7.0(0) and 7.1(x) | | Logger |
|--|--------|--|
| BHCA | Agents | |
| 1,500 | 50 | GEN-30-001-Class (< 10GB of data) |
| 7,500 | 250 | GEN-40-001-Class |
| 30,000 | 1000 | GEN-40-002-Class |

Please see section 7.6.9 [TDM ACD Peripheral Gateway \(PG\)](#) for TDM ACD PG server requirements.

Table 7.22: ICM Enterprise Common Ground, MR PG Servers

| Capacity (agents) 7.0(0) and 7.1(x) | MR PG (Standalone) | Other requirements and remarks |
|--|-----------------------|---------------------------------|
| 600 | MCS-30-001-Class | Maximum of 5 MR-PIMs per MR PG |
| 1200 | MCS-40-001-Class | Maximum of 10 MR-PIMs per MR PG |
| | | |
| 850 | MCS-30-002-Class | Maximum of 5 MR-PIMs per MR PG |
| 1700 | MCS-40-002-Class | Maximum of 10 MR-PIMs per MR PG |

Table 7.23: CTI OS Servers - ICM Enterprise, Common Ground Upgrade

| Capacity (agents) 7.0(0) | Capacity (agents) 7.1(x) | CTI OS |
|--------------------------------|--------------------------------|------------------|
| 60 | 60 | MCS-30-001-Class |
| 600 | 1200 | MCS-40-001-Class |
| | | |
| 85 | 85 | MCS-30-002-Class |
| 850 | 1600 | MCS-40-002-Class |

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7.4 IPCC Hosted Edition Hardware Requirements

This section assists you in selecting the hardware servers for IPCC Hosted Edition, including new deployments / technology refresh and common ground upgrade.

Table 7.24: NAM Rogger Servers - IPCC Hosted

| Capacity (cps) | NAM Rogger |
|----------------|------------------|
| 32 | GEN-50-001-Class |
| 38 | GEN-50-003-Class |

Table 7.25: CICM Router and CICM Logger Servers - IPCC Hosted

| Capacity (agents) 7.0(0) and 7.1(x) | | CICM Router | CICM Logger |
|--|-----------|------------------|------------------|
| Agents | Instances | | |
| 2250 | 3 | MCS-40-001-Class | MCS-40-001-Class |
| 3190 | 3 | MCS-40-002-Class | MCS-40-002-Class |
| 3750 | 3 | MCS-40-003-Class | MCS-40-004-Class |
| 3750 | 10 | MCS-40-003-Class | GEN-50-001-Class |
| 3825 | 25 | GEN-50-002-Class | GEN-50-002-Class |
| 4500 | 25 | GEN-50-003-Class | GEN-50-003-Class |

Table 7.26: Multi-Instance Agent PG with CTI OS Servers - IPCC Hosted

| Capacity (agents) 7.0(0) | Capacity (agents) 7.1(x) | Agent PG with CTI OS | Operating Conditions |
|--------------------------|--------------------------|----------------------|--------------------------|
| 880 | 1600 | MCS-40-003-Class | CTI OS Security Disabled |
| 500 | 1200 | MCS-40-003-Class | CTI OS Security Enabled |

Notes:

For more details about sizing mobile agents please refer to Cisco Unified Contact center Enterprise 7.x Solution Reference Network Design at <http://www.cisco.com/go/srnd>.

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7.4.1 Unified Contact Center Management Portal Hardware Requirements

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.

Table 7.27: Unified Contact Center Management Portal Hardware Capacity

| Capacity | | | | | Role | Server Class |
|----------|--------------|-----------|---------|--------------|--------------------------------------|------------------|
| Agents | Portal Users | Ops/ Hour | Folders | Folder Depth | | |
| 1500 | 150 | 100 | 200 | 5 | Single Server System | GEN-40-001-Class |
| 6000 | 600 | 600 | N/A | N/A | Secure System Web Application Server | GEN-40-001-Class |
| 3000 | 300 | 400 | 300 | 6 | Secure System DB Server | GEN-40-003-Class |
| 6000 | 600 | 600 | 600 | 6 | Secure System DB Server | GEN-50-004-Class |

Note: The high-end Database Server may support more agents/users than this, but doing so is not recommended.

Note: 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).

7.4.1.1 Two Physical Drive Layout

Table 7.28: Unified Contact Center Management Portal Physical Drive Layout

| Drive | Min. Size | Function |
|-------|-----------|---|
| C: | 72GB+ | Windows operating system, program executables and Windows page file |
| D: | 72GB+ | Database data files and transaction log |
| Z: | N/A | CD/DVD-ROM |

7.4.1.2 Network

Shared network connections such as WANs must be carefully checked and the Unified Contact Center Management Portal data throttled to avoid large bow-waves saturating the link to the detriment of other applications.

Network Recommendations

- Windows Load Balancing Service (optional)
- 100 Base-T/1000 Base-T NIC connected to a suitable layer-3 switch (recommended)
or
- Multiple network cards within a Unified Contact Center Management Portal server

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7.5 ICM Hosted Edition Hardware Requirements

This section assists you in selecting the hardware servers for ICM Hosted Edition,⁶ covering new deployments and technology refresh as well as common ground upgrade.

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 7.29: Router and NAM Logger Servers - ICM Hosted

| Capacity (cps) | NAM Router | NAM Logger | Other Requirements |
|----------------|------------------|------------------|---|
| 180 | MCS-40-001-Class | GEN-50-001-Class | NAM Routers requires the addition of a 3 rd Network Interface Card for connecting to a Signaling Access Network. Refer to the “ <i>Setup and Configuration Guide for Cisco ICM Hosted Edition</i> ”. |
| 255 | MCS-40-002-Class | GEN-50-002-Class | |
| 300 | MCS-40-003-Class | GEN-50-003-Class | |

Table 7.30: CICM Router and CICM Logger Servers - ICM Hosted

| Capacity (agents) 7.0(0) and 7.1(x) | | CICM Router | CICM Logger |
|--|--------|------------------|------------------|
| BHCA | Agents | | |
| 216,000 | 7200 | MCS-40-001-Class | GEN-50-001-Class |
| 129,600 | 12960 | | |
| 86,400 | 17280 | | |
| 306,000 | 10200 | MCS-40-002-Class | GEN-50-002-Class |
| 183,600 | 18360 | | |
| 122,400 | 24480 | | |
| 360,000 | 12000 | MCS-40-003-Class | GEN-50-003-Class |
| 216,000 | 21600 | | |
| 144,000 | 28800 | | |

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

⁶ 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.

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7.6 ICM/IPCC Common Component Server Requirements

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

7.6.1 ICM Router

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

Table 7.31: 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 | 3 (5 if simplex) x Eiconcard S94 66MHz Dual port X.25 adapter (Eicon #310-828) 5 (10 if simplex) x VHSI V.35 DCE cable (Eicon #300-076) Eiconcard Connections for Windows Server 2003 and Windows XP |

Please see [ICM/IPCC Hardware and Software Requirements](#) for information on ICM Router server selection based on system capacity requirements.

7.6.2 ICM Logger

Please see [ICM/IPCC Hardware and Software Requirements](#) for information on ICM 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.

Operating System and Database Requirements

- Microsoft Windows Server 2003 Standard Edition, Service Pack 1 and/or R2
- Microsoft SQL Server 2000 Standard Edition, Service Pack 4

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.

For Remote Management/Support

You need a 56K V.90 external modem for remote management and support. See section 7.7.7 [Supported Third Party Software](#).

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7.6.2.1 New Deployment and Technology Refresh Upgrade

Table 7.32: ICM Logger Servers - New Deployment/Tech. Refresh

| Hardware | Other requirements and remarks |
|--------------------------------------|---|
| MCS-40-003-Class | <p><u>Disk Configuration - 4 disks</u></p> <p>Disks 1 - 2: OS, ICM, SQL Server and other 3rd party software, ICM Database Transaction Log(s) RAID 1 Disks 3 - 4, Database files RAID 1 (alternately RAID 10 can be used to gain better write performance by adding 2 additional disks).</p> |
| MCS-40-004-Class | <p><u>Disk Configuration - 6 disks</u></p> <p>Disks 1 - 2: OS, ICM, SQL Server and other 3rd party software, RAID 1 Disks 3 - 6, Database files, ICM Database Transaction Log(s), RAID 10</p> |
| GEN-50-003-Class GEN-50-004-Class | <p><u>Disk Configuration – 8 or more disks</u></p> <p>Disks 1 - 2: OS, ICM, SQL Server and other 3rd party software, RAID 1. Disks 3 - *, Database files, ICM Database Transaction Log(s) RAID 10. Dedicated 2 channel external RAID Controller, min 256 MB cache with battery backup.</p> |

7.6.2.2 Common Ground Upgrade

Table 7.33: ICM Logger Server - Common Ground Upgrade

| Hardware | Other requirements and remarks |
|--|---|
| GEN-30-001-Class | <p><u>Disk Configuration - 2 disks</u></p> <p>Disk 1-2, 2 x 72 GB Drives, RAID 1</p> |
| MCS-40-001-Class MCS-40-002-Class GEN-40-001-Class | <p><u>Disk Configuration - 4 disks</u></p> <p>Disks 1 -2, 2 x 36 GB Drives: OS, ICM, SQL Server and other 3rd party software, ICM Database Transaction Log(s) RAID 1 Disks 3 - 4, 2 x 72 GB Drives: Database files RAID 1</p> |
| GEN-40-002-Class | <p><u>Disk Configuration - 6 disks</u></p> <p>Disks 1 - 2, 2 x 36 Drives: OS, ICM, SQL Server and other 3rd party software, RAID 1 Disks 3 - 6, 4 x 72 Drives: Database files, ICM Database Transaction Log(s), RAID 10</p> |
| GEN-50-001-Class GEN-50-002-Class GEN-50-003-Class GEN-50-004-Class | <p><u>Disk Configuration – 8 or more disks</u></p> <p>Disks 1 - 2, 2 x 36 Drives: OS, ICM, SQL Server and other 3rd 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</p> |

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7.6.3 AW – Distributor, HDS, and WebView Server

For IPCC Enterprise and IPCC 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 a security recommendation.

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

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

For System IPCC 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 4,000 or less. Data sets size is determined by multiplying # of entities by two times the # of hours chosen by end-user while running the historical report. See table for calculation of data sets.
 - Queries resulting in less then 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 x 2.

Table 7.34: 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 [AW – Real-Time Distributor](#) section 7.6.4 for sizing of a distributor only running Internet Script Editor Server or serving Client AWs.

Graphics and Monitor For ICM AW

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

17" or larger display

For IPCC Hosted Edition

This server can be used in IPCC Hosted multi-instance environment. It can be configured with up to 10 instances with 5 users.

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7.6.3.1 New Deployment and Technology Refresh Upgrade

7.6.3.1.1 AW – Real-Time Distributor, HDS and with co-resident WebView

Operating System and Database Requirements

- Microsoft Windows Server 2003 Standard Edition, Service Pack 1 and/or R2
- Microsoft SQL Server 2000 Standard Edition, Service Pack 4

Table 7.35: AW, HDS, co-resident WebView Server Requirements - New Deployment/Tech. Refresh

| Capacity | | Hardware | Other requirements |
|-------------------------|---------------------|------------------|--|
| Reporting Users Per HDS | ECC bytes persisted | | |
| 20 | 200 | MCS-40-003-Class | <p><u>Disk Configuration – 4 Disks</u></p> <p>Disks 1 -2: OS, ICM, SQL Server and other 3rd party software, ICM Database Transaction Log(s) RAID 1</p> <p>Option 1, 20GB DB: Disks 3-4: Database files, RAID 1.</p> <p>Option 2, 40GB DB: Disks 3-6 RAID 10.</p> |
| 10 | 200-1000 | | |
| 25 | 250-1000 | GEN-50-004-Class | <p><u>Disk Configuration – 8 Disks</u></p> <p>Disks 1 -2: OS, ICM, SQL Server and other 3rd party software, RAID 1.</p> <p>100GB DB: 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> |
| 50 | 250 | | |

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

Operating System and Database Requirements

- Microsoft Windows 2003 Standard Edition, Service Pack 1
- Microsoft SQL Server 2000 Standard Edition, Service Pack 4

Note: High load/performance constrained by the SQL Server 2 GB memory boundary 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.

Table 7.36: AW, HDS, separate WebView Server Requirements - New Deployment/Tech. Refresh

| Capacity | | | Hardware | Other requirements |
|-------------------------|---|---------------------|------------------|--|
| Reporting Users Per HDS | WebView Servers Per HDS, each supporting 50 users | ECC Bytes Persisted | | |
| 50 | 1 | 1000 - 2000 | GEN-50-004-Class | <p><u>Disk Configuration – 8 Disks</u></p> <p>Disks 1 – 2: OS, ICM, SQL Server and other 3rd party software, RAID 1.</p> <p>100 GB DB: 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- 1000 | | |
| 200 | 4 | 200 | | |

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7.6.3.2 Common Ground Upgrade

7.6.3.2.1 AW – Real-Time Distributor, HDS and with co-resident WebView

Operating System and Database Requirements

- Microsoft Windows 2000 Server, Service Pack 4
- Microsoft SQL Server 2000 Standard Edition, Service Pack 4

Table 7.37: AW, HDS, co-resident WebView Server Requirements - Common Ground Upgrade

| Capacity | | Hardware | Other requirements and remarks |
|-------------------------|---------------------|--|--|
| Reporting Users Per HDS | ECC bytes persisted | | |
| 5 | 200 | MCS-30-001-Class MCS-30-002-Class GEN-30-001-Class | <u>Disk Configuration – 2 Disks</u> 10GB DB: Disks 1 - 2, 2 x 72 GB Drives, RAID 1 |
| 10 | 200 | GEN-40-001-Class MCS-40-001-Class MCS-40-002-Class with 4 disks | <u>Disk Configuration – 4 Disks</u> Disks 1 - 2, 2 x 36 GB Drives: OS, ICM, SQL Server and other 3 rd party software, ICM Database Transaction Log(s) RAID 1 20GB DB: Disks 3-4, 2 x 72 GB Drives: Database files, RAID 1 |
| 25 | 200 | GEN-40-002-Class MCS-40-001-Class MCS-40-002-Class with 6 disks | <u>Disk Configuration – 6 Disks</u> Disks 1 - 2, 2 x 36 GB Drives: OS, ICM, SQL Server and other 3 rd party software, RAID 1. 60GB DB: Disks 3-6, 2 x 72 GB. Database files, ICM Database Transaction Log(s), RAID 10. |
| 25 | 201 -1000 | GEN-50-002-Class | <u>Disk Configuration – 8 Disks</u> Disks 1 -2, 2 x 36 GB Drives: OS, ICM, SQL Server and other 3 rd party software, RAID 1. |
| 50 | 200 | | 100GB DB: 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). |

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

Operating System and Database Requirements

- Microsoft Windows 2000 Server, Service Pack 4
- Microsoft SQL Server 2000 Standard Edition, Service Pack 4

Note: High load/performance constrained by the SQL Server 2 GB memory boundary require the deployment of Microsoft Windows 2000 Advanced Server (with the /3GB switch) and SQL Server 2000 Enterprise Edition, to address additional server memory.

Table 7.38: AW, HDS, separate WebView Server Requirements - Common Ground Upgrade

| Capacity | | | Server | Other requirements and remarks |
|-------------------------|---|---------------------|------------------|--|
| Reporting Users Per HDS | WebView Servers Per HDS, each supporting 50 users | ECC Bytes Persisted | | |
| 50 | 1 | 1001-2000 | GEN-50-002-Class | <u>Disk Configuration – 8 Disks</u> Disks 1 - 2, 2 x 36 GB Drives: OS, ICM, SQL Server and other 3 rd party software, RAID 1. 100GB DB: 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 | 201-1000 | | |
| 200 | 4 | 200 | | |

7.6.3.3 Dedicated WebView Server

Table 7.39: Dedicated WebView Servers

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

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7.6.4 AW – Real-Time Distributor

- Internet Script Editor (ISE) Optional
- Without HDS

Table 7.40: AW – Real-Time Distributor Servers

| Capacity (Client AWs and/or ISE users) | Hardware | Other requirements and remarks |
|---|--|--|
| 10 | MCS-10-004-Class MCS-10-001-Class MCS-10-002-Class MCS-10-003-Class | IIS 6.0 (Required for Internet Script Editor) <u>Other hardware requirements</u> |
| 25 | MCS-20-001-Class MCS-20-002-Class MCS-20-003-Class MCS-20-004-Class | Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display |
| 50 | MCS-30-001-Class MCS-30-002-Class MCS-30-003-Class | |

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

7.6.5 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 7.41: AW – Real-Time Client Servers (Client AW)

| Hardware | Hardware, software requirements and remarks |
|--|---|
| MCS-10-004-Class MCS-10-003-Class MCS-10-002-Class MCS-10-001-Class | <u>Other hardware Requirements</u> ATA/IDE acceptable RAID 1 recommended for Cisco Support Tools Server Graphics card capable of 1024 x 768 x 64K color or better 17" or larger display recommended. <u>Operating system and other software</u> Microsoft Windows Server 2003, Service Pack 1 and/or R2 Microsoft Windows 2000 Professional, Service Pack 4 Microsoft Windows XP, Service Pack 2 |

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7.6.6 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. InfoMaker must NOT be installed 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 is a standalone application that runs on a desktop or laptop system.

Table 7.42: WebView Client and Internet Script Editor Servers

| Hardware | Hardware, software requirements and remarks |
|------------------|---|
| GEN-10-001-Class | <p><u>Other hardware Requirements</u></p> <p>256+ MB RAM 250+ MB available disk space (ATA/IDE acceptable) Internal CD-ROM or DVD-ROM drive 1 x 100/1000 Ethernet port Graphics card capable of 1024 x 768 x 64K color or better</p> <p><u>Operating system and other software</u></p> <p>Microsoft 2003, Service Pack 1 and/or R2 Microsoft Windows 2000 Professional, Service Pack 4 Microsoft Windows XP Professional, Service Pack 2</p> <p><u>Additional requirements for Webview Clients</u></p> <p>Microsoft Internet Explorer</p> <ul style="list-style-type: none"> ◆ If creating custom templates is required: Install Sybase InfoMaker 10.2, build 7516. (Qualified with ICM 7.0 and 7.1, all SRs) |

7.6.7 VRU Peripheral Gateway (PG)

Assume maximum number of VRU PIMs; based upon 5 VRU transactions per port per call.

Table 7.43: VRU PG Servers

| Capacity (ports) | VRU PG Server |
|------------------|------------------|
| 360 | MCS-30-001-Class |
| 510 | MCS-30-002-Class |
| 600 | MCS-30-003-Class |
| 720 | MCS-40-001-Class |
| 1020 | MCS-40-002-Class |
| 1200 | MCS-40-003-Class |

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7.6.8 IPCC Gateway

IPCC Gateway enables a parent child deployment model, The parent is ICM EE, and the child can be IPCC EE, System IPCC, and IPCC Express.

Table 7.44: IPCC Gateway Servers

| Capacity (agents) | IPCC Enterprise Gateway | Other requirements and remarks |
|-------------------|-------------------------|---|
| 450 | MCS-30-003-Class | |
| 2000 | MCS-40-003-Class | Total number of agents is applicable to one or more System IPCCs. |

7.6.9 TDM ACD Peripheral Gateway (PG)

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

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

Table 7.45: ICM Enterprise TDM ACD PG Servers - New Deployments/Tech. Refresh

| Capacity (agents) | TDM ACD PG with MR PG, Dialer (with outbound option agents only) | TDM ACD PG with CTI OS | TDM ACD PG without other options |
|-------------------|--|------------------------|----------------------------------|
| 100 | MCS-30-003-Class | MCS-30-003-Class | MCS-30-003-Class |
| 200 | MCS-40-003-Class | | |
| 250 | N/A | | |
| 1000 | N/A | MCS-40-003-Class | |
| 1000+ | N/A | N/A | MCS-40-003-Class |

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Table 7.46: ICM Enterprise TDM ACD PG Servers - Common Ground Upgrade

| Capacity (agents) | TDM ACD PG with MR PG, Dialer (For outbound option agents only) | TDM ACD PG with CTI OS | TDM ACD PG without other options |
|-------------------|---|------------------------|----------------------------------|
| 60 | MCS-30-001-Class | MCS-30-001-Class | MCS-30-001-Class |
| 120 | MCS-40-001-Class | | |
| 150 | N/A | | |
| 600 | N/A | MCS-40-001-Class | |
| 600+ | N/A | N/A | MCS-40-001-Class |
| | | | |
| 85 | MCS-30-002-Class | MCS-30-002-Class | MCS-30-002-Class |
| 170 | MCS-40-002-Class | | |
| 213 | N/A | | |
| 850 | N/A | MCS-40-002-Class | |
| 850+ | N/A | N/A | MCS-40-002-Class |

Table 7.47: Avaya PG Servers for Large Enterprise Deployments

| Capacity (agents) | BHCA | All Events Clients | Skill Groups Per Agent | Avaya PG with PG and CTI Server without CTI OS |
|-------------------|--------|--------------------|------------------------|--|
| 2,000 | 60,000 | 4 | 10 | MCS-40-003-Class |
| 1,700 | 51,000 | 4 | 10 | MCS-40-002-Class |
| 1,200 | 36,000 | 4 | 10 | MCS-40-001-Class |

Other TDM ACD PG Requirements

Please see the Cisco 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

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Table 7.48: TDM ACD PG

| Hardware, software requirements and remarks |
|---|
| <p><u>For Redundant PG Installation</u></p> <p>+1 x 100/1000 Ethernet port (if Peripheral does not reside on visible LAN)</p> <p><u>For ICM Enterprise: Interfacing with TDM ACDs</u></p> <p><u>FOR NORTEL DMS-100 V.24/V.35 INTERFACE</u></p> <p>1 x Eiconcard S94 66MHz Dual port X.25 adapter (Eicon #310-828) 2 x VHSI V.35 DCE cable (Eicon #300-076) Eiconcard Connections for Windows Server 2003 and Windows XP</p> <p><u>FOR ROCKWELL SPECTRUM SERIAL INTERFACE</u></p> <p>1 x Eiconcard S94 66MHz Dual port X.25 adapter (Eicon #310-828) 1 x 25' DB25 male to DB25 male cable (Alternative Tech EIC007-25) Synchronous null modem adapter (Belkin A4 A602-16298) 1 x DB25 male to DB9 female null modem cable (Black Box EVMBPC-0025) Eiconcard Connections for Windows 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 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 [ICM/IPCC Hardware and Software Requirements](#) for information on PG server selection based on system capacity for different IPC/IPCC product editions.

7.6.10 ICM/IPCC SS7 Network Interface Option

Table 7.49: SS7 Gateway Servers (Includes AT&T Network Gateway)

| Hardware | Other requirements and remarks |
|--|---|
| GEN-20-004-Class GEN-20-003-Class GEN-20-002-Class GEN-20-001-Class | <p><u>SS7 Card</u></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>Note that the 5V card has reached EOL (with a last sale date of June 30, 2006).</p> <p>Note also that a maximum of 3 cards can be installed on the server.</p> |

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7.6.11 ICM Outbound Option

This section is applicable to ICM Enterprise Edition and ICM Hosted Edition only.

Note that there can be only one instance of Outbound Option per CICM for ICM Hosted.

Table 7.50: ICM Outbound Option

| Capacity (Outbound agents) | Server | Hardware | Other requirements and remarks |
|----------------------------|---|------------------|---|
| 180 | Standalone Outbound Agent Dialer | MCS-30-001-Class | <p><u>For Avaya Based Deployments</u></p> <p>– Standalone Dialer Required –</p> <p>1 (or more) x Intel Dialogic board (D/120JCT-L-S, D/240SC, D/160SC, D/480JCT, D/240PCI-T1, D/240JCT-T1, D/300PCI-E1, D/300JCT-E1)</p> <p>Dialogic System Release 6.0(0) and GlobalCall protocol package 4.2.</p> <p>See sections below for additional dialer information.</p> |
| 255 | | MCS-30-002-Class | |
| 300 | | MCS-30-003-Class | |
| 360 | | MCS-40-001-Class | |
| 510 | | MCS-40-002-Class | |
| 600 | | MCS-40-003-Class | |
| 120 | Outbound Agent Dialer Co-Resident with TDM ACD PG (Applicable to ICM Enterprise only) | MCS-30-001-Class | |
| 170 | | MCS-30-002-Class | |
| 200 | | MCS-30-003-Class | |
| 240 | | MCS-40-001-Class | |
| 340 | | MCS-40-002-Class | |
| 400 | | MCS-40-003-Class | |

Required Dialogic Software

The following Dialogic software must be installed in order to use the Outbound Option Dialer component:

- Intel Dialogic System Release 6.0
- Intel Dialogic GlobalCall Protocol Package 4.2

Dialogic Card Requirements

Dialogic telephony cards are an integral part of Outbound Option. These cards reserve agents and place customer calls as well as detect voice, signal tones, and answering machines. Dialogic offers many different types of cards with varying numbers of ports, bus types, and connection methods. Refer to the Dialogic documentation for information about compatibility between Dialogic hardware/software and Microsoft Windows operating systems.

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Operating System Requirement

The Outbound Option server is supported on the Microsoft Windows Server 2003 operating system. See page 9 for the [operating system migration support policy](#).

ACD Requirements

Outbound Option currently supports integration to the following ACDs, which must be configured on ICM software:

- Avaya DEFINITY (refer to the *Cisco ICM Software ACD Supplement for DEFINITY*)

7.6.12 CTI OS Server

For new installations beginning with release 7.0(0), Cisco recommends 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 may be applied to the standalone server. It is recommended 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 [ICM/IPCC Hardware and Software Requirements](#) for sizing guidelines.

Standalone CTI OS servers are not supported for IPCC Hosted Edition deployments.

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

7.6.13 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 IPCC 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 ICM components.

Silent Monitor Service for IPCC Toolkit

The silent monitor service can also be configured to provide silent monitor functionality for a single IPCC 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 7.51: Silent Monitor Service Servers

| Capacity (sessions) | Server | Hardware | Other requirements and remarks |
|---------------------|-----------------------|------------------|---|
| 40 | Silent Monitor Server | MCS-40-003-Class | See CTI Supported Platforms |
| 20 | | MCS-30-003-Class | |

7.6.14 Citrix MetaFrame Presentation Server 4.0

Citrix MetaFrame Presentation server 4.0 and Microsoft Terminal Services are a 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.

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Release 7.0(0) of the CTI OS Agent and Supervisor Desktops and Cisco Agent Desktop supports the Citrix MetaFrame Presentation Server 4.0 and Microsoft Terminal Services environments (with some known caveats and limitations). Release 7.1(x) further delivers native support for the Citrix and Microsoft Terminal Services environments, eliminating many of the caveats of Release 7.0(0). **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 6.0 Into a Citrix Thin Client Environment*, located at:

http://www.cisco.com/application/pdf/en/us/partner/products/ps427/c1244/cdcont_0900aecd800e9db4.pdf

Configuration details and usage limitations for Cisco CTI Toolkit Desktop/Citrix implementations are documented in the manual *Integrating CTI OS Into a Citrix Thin Client Environment*, located at:

<http://www.cisco.com/univercd/cc/td/doc/product/icm/icmentpr/icm70doc/ctidoc7/ctios7d/cticitrx.pdf>

7.6.15 CTI OS Agent and Supervisor Desktops

Table 7.52: CTI OS Agent and Supervisor Desktop Servers

| Server | Hardware | Other requirements and remarks |
|---------------------------------|------------------|--|
| CTI OS Supervisor Desktop | GEN-10-002-Class | Windows compatible full-duplex sound card (if using Cisco IP Communicator and/or Silent Monitoring) See CTI Supported Platforms |
| CTI OS Agent Desktop | GEN-10-003-Class | Windows compatible full-duplex sound card (if using Cisco IP Communicator) See CTI Supported Platforms |
| CTI OS Monitor Mode Application | GEN-10-002-Class | See CTI Supported Platforms |

Table 7.53 : CTI OS Silent Monitoring Hardware Requirements

| | |
|-------------------------|---|
| Compatible Ethernet NIC | Refer to Cisco.com for more information Silent Monitoring NIC Compatibility Matrix Qualifying Ethernet Cards for Cisco Agent Desktop Monitoring |
|-------------------------|---|

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7.6.16 CTI Driver for Siebel

For supported Siebel versions, see the CTI Compatibility matrix: <http://www.cisco.com/univercd/cc/td/doc/product/icm/index.htm>

The CTI Driver for Siebel is Installed on the Siebel Communications Manager Server and must operate stand alone from all other ICM/IPCC 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 7.54: CTI Driver for Siebel Servers

| Capacity * (agents) | Server | Call Rate (calls per sec.) | Hardware | Other requirements and remarks |
|--|--|----------------------------------|------------------|--|
| 7.0(1) & 7.1(x) 500 | Siebel Communications Manager / Call Center Object Manager (SCM + OM) | 1 | MCS-40-003-Class | The Siebel deployment model tested had the SCM and OM collocated on the same server host . See CTI Supported Platforms |
| 7.1(2), 7.1(3), 7.1(4), 7.1(5) 700 | Siebel Communications Manager Server (SCM) Siebel Call Center Object Manager (OM) | 3.75 | MCS-40-003-Class | The Siebel deployment model tested had each server component (SCM and OM) installed stand-alone on its own server host. See CTI Supported Platforms |

* The capacity was determined on an 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.

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7.6.17 Cisco Data Store

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

Table 7.55: Cisco Data Store Servers

| Capacity (agents) | Server | Hardware | Other requirements and remarks |
|-------------------|----------------|------------------|--|
| 20,000 | CDS for Siebel | MCS-40-003-Class | Maximum 50 CTI Drivers for Siebel can connect to the CDS Server See CTI Supported Platforms |

7.6.18 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

7.6.18.1 CRM Connector for Salesforce.com, PeopleSoft and Microsoft CRM 3.0

7.6.18.1.1 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 [CRM Connector Supported Platforms](#) for operating system requirements for the CRM Connector server.

Table 7-56: CRM Connector Server

| Server Class | *Capacity (agents) | Call Rate (calls / sec.) | Other requirements and remarks |
|------------------|--------------------|--------------------------|--|
| MCS-30-004-Class | 900 | 7.5 | See: CRM Connector Supported Platforms |
| MCS-40-005-Class | 1800 | 15 | See: CRM Connector Supported Platforms |

* 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 may 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.

7.6.18.1.2 CRM Connector Server Administration Tool

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

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7.6.18.1.3 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 7-57: CRM Connector Adapter for Salesforce.com

| Server Class | Type | Hardware, software requirements and remarks |
|------------------|---------------------|---|
| GEN-10-005-Class | CRM Adapter client. | <p><u>Operating system and other software</u> See: CRM Connector Supported Platforms</p> <p><u>Other hardware Requirements</u> 100/1000 Ethernet port</p> |

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

7.6.18.1.4 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 7-58: CRM Connector Adapter for PeopleSoft

| *Server Class | Type | Hardware, software requirements and remarks |
|--------------------------------------|--------------------|---|
| MCS-30-004-Class MCS-40-005-Class | CRM Adapter Server | <p><u>Operating system and other software</u> See: CRM Connector Supported Platforms</p> <p><u>Other hardware Requirements</u> 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.

7.6.18.1.5 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 7-59: CRM Connector Adapter for Microsoft CRM 3.0

| *Server Class | Type | Hardware, software requirements and remarks |
|--------------------------------------|--------------------|--|
| MCS-30-004-Class MCS-40-005-Class | CRM Adapter Server | <p><u>Operating system and other software</u> See: CRM Connector Supported Platforms</p> <p><u>Other hardware Requirements</u></p> |

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| | | |
|--|--|------------------------|
| | | 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.

7.6.18.2 CRM Connector for SAP

The Cisco Unified CRM Connector for SAP integrates the SAP CRM application with Cisco Unified Contact Center Enterprise; it can be deployed either co-resident with other Unified CC Enterprise solution components or can be deployed on a standalone system.

The maximum supported Unified CRM Connectors for SAP collocated per PG is 1.

The maximum supported Unified CRM Connectors for SAP on a dedicated server connected to the same PG is 1.

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

Table 7-60: CRM Connector for SAP

| Server Class | * Capacity (agents) | Call Rate (calls / sec) | Hardware, software requirements and remarks |
|------------------|---------------------|-------------------------|--|
| MCS-30-004-Class | 250 | 3 | <u>Operating system and other software</u> See: CRM Connector Supported Platforms |

* 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 may 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.

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7.6.18.3 CRM Connector Supported Platforms

Table 7-61: CRM Connector Supported Platforms and Requirements

| CRM Connector | Operating System | | | Additional Software | | | | | | |
|--|--------------------------------|-----------------------------|---------------|-------------------------------|----------------------------------|---|----------------------|------------------|--------------------|--------------|
| | Windows Server 2003 SP1 or SP2 | Windows XP Professional SP2 | Windows Vista | Microsoft .NET Framework V2.0 | Microsoft Message Queuing (MSMQ) | Microsoft Internet Information Server (IIS) | Microsoft SQL Server | D C O M | 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 ¹ | ✓ | N/A | N/A | ✓ | N/R | N/R | N/R | N/R | N/R | ✓ |
| Microsoft CRM 3.0 Adapter ¹ | ✓ | N/A | N/A | ✓ | N/R | ✓ | ✓ | N/R | ✓ | N/R |
| Salesforce.com Adapter ¹ | N/A | ✓ | ✓ | ✓ | N/R | N/R | N/R | ✓ | N/R | N/R |
| SAP ² | ✓ | N/A | N/A | N/R | N/R | N/R | N/R | N/R | N/R | N/R |

se Microsoft SQL Server Express which is freely available from Microsoft.

¹ 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.

² 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

7.6.19 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 IPCC Enterprise solution configuration.

Table 7.62: CAD Agent and Supervisor Desktop Servers

| Server | Hardware | Hardware, software requirements and remarks |
|--|---|--|
| CAD Supervisor Desktop (CSD) CAD Desktop Administrator (CDA) | Minimum Platform: GEN-10-004-Class Recommended: GEN-10-005-Class | <u>Operating system and other software</u> Windows compatible full-duplex sound card (if using Cisco IP Communicator and/or Silent Monitor) See CTI Supported Platforms |

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| | | |
|--------------------------|---|--|
| CAD Agent Desktop | Minimum Platform: GEN-10-004-Class Recommended: GEN-10-005-Class | <p><u>Other hardware Requirements</u></p> 100/1000 Ethernet port |
| | | <p><u>Operating system and other software</u></p> Windows compatible full-duplex sound card (if using Cisco IP Communicator) See CTI Supported Platforms |

7.6.20 RMS – Remote Monitoring Suite

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 may 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 full detail.

Note: RMS is not supported with System IPCC deployment.

Table 7.63: RMS Servers

| Capacity | Server | Hardware | Other requirements and remarks |
|-------------------------|--------------------------------|--|---|
| 25 customers | RMS Listener | MCS-20-004-Class MCS-20-003-Class MCS-20-002-Class MCS-20-001-Class | <p><u>For Modem Bank Use</u> Multi-port serial adapter and modems (Digi AccelePort Xp)</p> <p>Dedicated customer file database drive required.</p> |
| 75 customers | | MCS-30-003-Class MCS-30-002-Class MCS-30-001-Class | |
| 150 customers | | MCS-40-003-Class MCS-40-002-Class MCS-40-001-Class | |
| 10 AlarmTracker clients | RMS LGMapper RMS LGArchiver | MCS-30-003-Class MCS-30-002-Class MCS-30-001-Class | |
| 25 AlarmTracker clients | | MCS-40-003-Class MCS-40-002-Class MCS-40-001-Class | |
| N/A | RMS AlarmTracker Client | MCS-10-004-Class MCS-10-003-Class MCS-10-002-Class MCS-10-001-Class | ATA/IDE acceptable Microsoft Windows XP with Service Pack 2 |

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7.6.21 Cisco Collaboration Server

ICM/IPCC Release 7.0(0) and 7.1(x) are compatible with Cisco Collaboration Server 5.0(0) and its latest Service Release.

Please see ICM 6.0(0) BOM for Cisco Collaboraton Server requirements at :

<http://www.cisco.com/univercd/cc/td/doc/product/icm/ccubom/index.htm>

Please see the “Cisco Collaboration Server Installation Guide” for detailed information on Collaboration Server configuration, capability, and limitations.

7.6.22 Cisco Media Blender (CMB) for Web Collaboration Option

ICM/IPCC Release 7.0(0) and 7.1(x) are compatible with Cisco Media Blender 5.0(0) and its latest Service Release.

Note that running the Blender on the PG is only possible with 6.0 PGs. If you are deploying a new 7.0(0) system or are upgrading to 7.0(0), you cannot co-load the Blender on a PG due to operating system incompatibility—the Media Blender requires Windows 2000, and the PG requires Windows 2003.

Please see ICM 6.0(0) BOM for Cisco Media Blender Server requirements at :

<http://www.cisco.com/univercd/cc/td/doc/product/icm/ccubom/index.htm>

Please see the “Cisco Media Blender Installation Guide” for detailed information on Media Blender Server configuration, capability, and limitations.

7.6.23 Cisco Unified Web Interaction Manager

Please see the Cisco Interaction Manager System Requirements Guide and the Cisco Interaction Manager Planning Guide at:

<http://www.cisco.com/univercd/cc/td/doc/product/icm/intermgr/webint/wrel411/index.htm> for system requirements, server configurations, capabilities, and limitations of the Cisco Unified Web Interaction Manager.

7.6.24 Dynamic Content Adapter (DCA) for Web Collaboration Option

Please see ICM 6.0(0) BOM Dynamic Content Adapter Server requirements at :

<http://www.cisco.com/univercd/cc/td/doc/product/icm/ccubom/index.htm>

Please see document “Cisco Collaboration Server Dynamic Content Adapter release 2.01 Installation and Integration Guide” for detailed information on DCA Server configuration, capability and limitations.

7.6.25 Cisco E-Mail Manager Option

ICM/IPCC Release 7.0(0) and 7.1(x) are compatible with Cisco E-Mail Manager 5.0(0) and its latest Service Release.

Please see the ICM 6.0(0) BOM for Cisco E-Mail Manager Server requirements at :

<http://www.cisco.com/univercd/cc/td/doc/product/icm/ccubom/index.htm>

7.6.26 Cisco Unified E-mail Interaction Manager

Please see the Cisco Interaction Manager System Requirements Guide and the Cisco Interaction Manager Planning Guide at:

<http://www.cisco.com/univercd/cc/td/doc/product/icm/intermgr/emailint/ere411/index.htm> for system requirements, server configurations, capabilities, and limitations of the Cisco Unified E-mail Interaction Manager.

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7.6.27 Cisco Support Tools Server

Table 7.64: Cisco Support Tools Server

| Hardware | Other requirements and remarks |
|--|---|
| MCS-10-004-Class MCS-10-003-Class MCS-10-002-Class MCS-10-001-Class | <p><u>Supported Applications</u> ICM/IPCC (CCM, CCS, CEM, IP IVR, IPCC Express, CVP)⁷</p> <p><u>Other Hardware</u> ATA/IDE acceptable. Graphics card capable of 1024 x 768 x 64K color or better (17" or larger display recommended)</p> <p><u>Operating System</u> Microsoft Windows Server 2003 Standard Edition with Service Pack 1 and/or R2 Microsoft Windows 2000 Server with Service Pack 4 Microsoft Windows XP Professional with Service Pack 2</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 systems using one support tools server?
- 2) Do you plan on saving information in the support tool's 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 may choose to deploy the Support Tools Server co-resident with an Administrative Workstation or a Client AW, if one is used.

7.6.28 Cisco Support Tools Node Agent

The Support Tools Node Agent may be installed on any node specified in this document **except** for the Agent desktop products⁸. 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 may be installed on a CCM, CCS, CEM, IP IVR, IPCC Express and CVP system, when, that system is part of the ICM/IPCC solution.

As a convenience, and to improve future supportability, the Release 7.1(x) installer will automatically install the Support Tools Node Agent version 2.0(1) on all ICM/IPCC systems that it's installed on. If there was an existing node agent installed, an upgrade will be performed. If there was no previous version of the node agent installed, the node agent service will be disabled.

⁷ The Support Tools Node Agent should only be installed one of these systems when it is used as part of a solution that contains an ICM or an IPCC Enterprise/Hosted product.

⁸ Specifically, do not install the node agent on the CAD Agent and Supervisor desktops and the CTI Agent desktops. They are not supported.

7.7 ICM/IPCC System Software Requirements

7.7.1 Microsoft Windows Server 2003

In most cases, Microsoft Windows Server 2003 Standard Edition is adequate for use with ICM/IPCC 7.0(0). In some circumstances, however, high end system deployments must deploy Microsoft Windows Server 2003 Enterprise Edition on some ICM/IPCC components, such as the logger and the HDS. You should be aware of the following distinction between the editions.

NOTE that severe installation and runtime problems can result from installing and deploying ICM/IPCC using a non-standard windows image (e.g., a corporate image) for the ICM/IPCC servers.

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

Microsoft Windows Server 2003 R2

ICM/IPCC 7.0(x)/7.1(x) requires Windows Server 2003 Service Pack 1 (SP1) or Service Pack 2 (SP2) be applied on Windows Server 2003 systems.

Microsoft has recently introduced Windows Server 2003 R2, an update to the Windows 2003 operating system that logically installs atop SP1, and is distributed as a second CD. Server 2003 R2 provides a number of elective add-on features such as identity and access management, storage management, enhanced Web technologies, and the like. Windows Server 2003 R2 is applicable to both Standard and Enterprise editions of Windows for ICM/IPCC customers.

ICM/IPCC 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 ICM/IPCC. Cisco does not support ICM/IPCC on a customized Windows image (e.g. a corporate image) or when custom security hardening has been applied. Using a customized image of the Windows operating system or customer security hardening can cause the ICM/IPCC application to fail.

NOTE that Windows Server 2003 R2 is supported only with the optional features NOT selected.

Cisco has completed qualification of ICM/IPCC 7.0(0) on Server 2003 R2. Customers currently deploying Windows Server 2003 SP1 may upgrade to R2 on their ICM/IPCC 7.0 servers. This can be accomplished as follows:

- 1) Insert the Windows Server 2003 R2 disk 2 media CD.
- 2) When prompted for the Product Key, enter your R2 key value. The setup procedure will guide you through completion of the full R2 installation process.

7.7.2 Microsoft SQL Server 2000

Microsoft SQL Server 2000 Standard Edition

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- Supports up to four processors on one server
- Supports up to 2 GB of RAM

Microsoft SQL Server 2000 Standard Edition can run on the following operating systems:

- Microsoft Windows Server 2003, Standard Edition
- Microsoft Windows 2000 Server
- Microsoft Windows Server 2003, Enterprise Edition
- Microsoft Windows 2000 Advanced Server

Microsoft SQL Server 2000 Enterprise Edition

- Supports more than 4 CPUs
- Supports more than 2 GB of RAM

Microsoft SQL Server 2000 Enterprise Edition can run on the following operating systems:

- Microsoft Windows Server 2003, Enterprise Edition
- Microsoft Windows 2000 Advanced Server

Microsoft Service Packs

- ICM/IPCC 7.0(0) and 7.1(x) require SQL Server 2000 Service Pack 4 to be applied on SQL Server 2000.

Purchasing SQL Server 2000

Customers can still acquire SQL Server 2000 licenses by taking advantage of the SQL Server 2005 "downgrade rights." The downgrade rights enable you to purchase server plus device CALs, server plus user CALs, or processor licenses for SQL Server 2005 and install and use the previous version. Please refer to <http://www.microsoft.com/sql/howtobuy/default.msp#EXE> for more information.

The following are steps we recommend to follow in order to acquire SQL Server 2000 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 2000 media and pay a nominal S&H charge.

Select License: Contact a Microsoft software reseller and request the SQL Server 2000 media.

Enterprise Agreement: Contact the Microsoft Representative for your company.

7.7.3 Licensing Requirements

ICM/IPCC software runs on Windows Server 2003 operating system and uses the services of SQL Server 2000 database management system. As such, ICM/IPCC deployments are to meet the licensing requirements for Windows Server 2003 and SQL Server 2000.

7.7.3.1 Windows Server 2003 Licensing

Cisco Customer Contact 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 may 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 ICM-based servers.

Customers are responsible for ensuring they are in compliance with Microsoft Licensing terms. Cisco does not currently OEM Windows Server 2003 for Enterprise or Hosted Contact Center Solutions. MCS server purchases may include the following retail offerings:

WIN2003-STD-ENG
WIN2003-ENT-ENG

Windows Server 2003 - Standard Edition (10 CALs)
Windows Server 2003 - Enterprise Edition (25 CALs)

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Licensing ICM and IPCC 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 may make more sense if a company has multiple-shift workers who share devices."

See <http://www.microsoft.com/windowsserver2003/howtobuy/licensing/overview.mspx> 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 Windows Server 2003 packages Cisco re-sells with MCS servers include 10 CALs/Standard or 25 CALs/Enterprise which can be allocated to either devices (i.e. PCs) or users (i.e. Agents). For example, if a contact center has 270 agents manning 90 PCs over three different shifts it would make sense to assign those 90 PCs to Device CALs.

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.

More questions may be directed to ask-icm-platform@cisco.com

7.7.3.2 SQL Server 2000 Licensing

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The table below provides supplemental information.

Table 7.65: SQL Server Licensing Guide

| Node | SQL Server Licensing Model | Note |
|--|---|--|
| Central Controllers | | |
| LoggerA (or RoggerA) or Central Controller (System IPCC) | 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 (System IPCC) | Server License only | LoggerB is used for failover purposes and therefore does not require a license as long as it has the same or fewer processors than LoggerA (when per processor licensing is used). Where Outbound Option is deployed, the same recommendations apply. |
| Router | None | While the Router node does not host a database it may 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. |
| Distributors | | |
| 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 | |

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| Node | SQL Server Licensing Model | Note |
|---|--|--|
| 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 Multi-channel (CCS or CEM) server | |
| System IPCC Administration and Reporting Server | Server License plus one User CAL for each user, agent and supervisor | In System IPCC, an Administration and Reporting Server includes the AWD, WebView, HDS, and IPCC 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. |
| Multi-Channel | | |
| 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. |
| Other | | |
| 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 may 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 may have or grow to which will impact the number of licenses to be acquired at any given time.

7.7.4 Microsoft Software Localizations

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

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For a detailed list of language localizations implemented for different portions of this release, refer to the Cisco Unified ICM/Contact Center Product and System Localization Matrix available at: http://www.cisco.com/application/vnd.ms-excel/en/us/guest/products/ps1846/c1225/ccmigration_09186a008068770f.xls.

Table 7.66: Microsoft Software Localizations for ICM/IPCC/System IPCC

| Microsoft Software * | Supported Microsoft Software Localization | SQL Server Collation |
|------------------------------|---|----------------------|
| Windows and SQL Server | <ul style="list-style-type: none"> • Danish (MUI only) • Dutch • English • French • German • Italian • Portuguese (Brazil) • Spanish • Swedish | Latin1 |
| | <ul style="list-style-type: none"> • Chinese (Simplified) | Chinese_PRC |
| | <ul style="list-style-type: none"> • Korean | Korean_Wansung |
| | <ul style="list-style-type: none"> • Japanese | Japanese |

* Microsoft Windows and SQL Server must be of the same language version on a given computer.

Important: In all cases, the Internet Explorer locale at the WebView Client must use the same date format as the locale at the WebView Server. For example, if the WebView Server has the US English locale (with the format MM/DD/YYYY), then the WebView Client must also use a browser locale with the MM/DD/YYYY format.

In addition, a WebView Client can employ Microsoft Windows and Internet Explorer localized in a language that meets one of these two criteria:

1. The WebView Server that it connects to uses English Microsoft Windows (without MUI language selection). For example, a Russian WebView Client may connect to an English Windows Webview Server.
2. The WebView Server that it connects to uses a language for Microsoft Windows that is included in the same native character set as the WebView Client's Microsoft Windows language. (Character set corresponds to SQL Server Collation indicator above.) For example, an Italian WebView Client may connect to a German Windows WebView Server because both Italian and German are included in the Latin1 character set.

7.7.5 Operating System and Database Requirements

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

**Hardware and System Software Specification
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Table 7.67: Operating System and Database Requirements

| ICM/IPCC Server | Microsoft Windows Server 2003 Standard, Service Pack 1/R2 | Microsoft SQL Server 2000 Standard Service Pack 4 |
|--|---|---|
| ICM Router NAM Router CICM Router | ✓ | N/A |
| Progger (IPCC EE) | ✓ | ✓ |
| Rogger (IPCC EE) | ✓ | ✓ |
| NAM Rogger (IPCC Hosted) | ✓ | ✓ |
| AW – Distributor | ✓ | ✓ |
| WebView Server | ✓ | N/A |
| All PGs, includes Agent PG TDM ACD PG VRU PG MR PG | ✓ | N/A ⁹ |
| IPCC Enterprise Gateway | ✓ | N/A |
| SS7 Network Interface Server | ✓ | N/A |
| RMS LGMapper RMS LGArchiver | ✓ | ✓ |

⁹ Unless CAD is installed, in which case SQL Server is required.

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Table 7.68: Operating System and Database Requirements (Special Consideration)

| ICM/IPCC Server | Operating System Requirements |
|---|--|
| CEM, CMB, CCS, DCA | Multi-channel application servers require Windows 2000. They do not support Windows 2003. |
| RMS Listener | Microsoft Windows Server 2003 Standard Edition with Service Pack 1 and/or R2 For monitoring ICMs prior to release 5.0(0), RMS Listener server needs to have Microsoft Windows 2000 Server with Service Pack 4 that supports NetBEUI. |
| RMS AlarmTracker Client | See section 7.6.20 RMS – Remote Monitoring Suite |
| ICM Logger NAM Logger CICM Logger | See section 7.6.2 ICM Logger |
| AW – Distributor, HDS with Webview Server | See AW – Distributor, HDS, and WebView Server |
| AW – Real Time Client | See section 7.6.5 AW – Real-Time Client only (Client AW) |
| Webview Client | See WebView Client and Internet Script Editor |
| Outbound Option Dialer | See ICM Outbound Option Go to the following link for Cisco Outbound Option Data Sheet and Cisco Outbound Option Technical Reference. http://www.cisco.com/en/US/partner/products/sw/custcosw/ps524/products_data_sheets_list.html |
| CTI OS Desktops | See CTI Supported Platforms |
| CTI OS | See CTI Supported Platforms |
| Cisco Support Tools | See Cisco Support Tools Server |

Table 7.69: System IPCC Enterprise Operating System and Database Requirements

| System IPCC Enterprise Server | Microsoft Windows Server 2003 Standard, Service Pack 1/R2 | Microsoft SQL Server 2000 Standard Service Pack 4 |
|---|---|---|
| Central Controller + Agent/IVR Controller | ✓ | ✓ |
| Central Controller | ✓ | ✓ |
| Agent IVR Controller | ✓ | N/A |

System IPCC Enterprise supports the AW – Real-Time Distributor, HDS and with co-resident WebView configuration. For operating system and database requirements of this server, please see [AW – Distributor, HDS, and WebView Server](#) and [AW – Real-Time Distributor, HDS and with co-resident WebView](#) for details.

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7.7.6 CTI Supported Platforms

Table 7.70: CTI Supported Platforms

| | Operating System | | | | | | |
|--|----------------------------|-------------------------|----------------------|------------------------------|-----------------------------|-----------------------------|-------------------------------|
| | Server Platform | | Client Platform | | | | |
| | Windows Server 2003 SP1/R2 | Windows 2000 Server SP4 | Windows 2000 Pro SP4 | Windows XP Professional SP1a | Windows XP Professional SP2 | Windows XP Professional SP3 | Red Hat Enterprise Linux V4.0 |
| CTI OS 7.0(0) and 7.1(x) 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 IPCC 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 IPCC 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 | ✓ |
| 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 |
| CTI OS – Monitor Mode Apps using Java CIL | N/A | N/A | ✓ | ✓ | ✓ | N/A | ✓ |
| CTI Desktop (GeoDCS) V4.7 only | 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 |
| CAD | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ [as of CAD 7.1(2)] | N/A |

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7.7.7 Supported Third Party Software

Table 7.71: Supported Third Party Software

| | Software |
|------------------------------|--|
| Remote Administration | <ul style="list-style-type: none"> ◆ Windows 2000 Windows Terminal Services¹⁰ (Remote Administration Mode) ◆ Windows Server 2003 Remote Desktop ◆ Symantec pcANYWHERE 12.0 Qualified for ICM/IPCC 7.1 and above Symantec pcANYWHERE 11.0.1 Qualified for ICM/IPCC 7.0 SR1 – SR4 ◆ RealVNC 4.1 Qualified with ICM/IPCC 7.1 and above RealVNC 4.0 Qualified with ICM/IPCC 7.0 SR1 – SR4 |
| Anti-Virus software | <ul style="list-style-type: none"> ◆ McAfee VirusScan Enterprise 7.1 Qualified for ICM/IPCC 7.0 ◆ McAfee VirusScan Enterprise 8.5i Qualified for ICM/IPCC 7.0 and 7.1, all SRs ◆ Symantec AntiVirus Corporate Edition 10.1 Qualified for ICM/IPCC 7.0 and 7.1, all SRs ◆ Trend Micro ServerProtect version 5.58+ Qualified for ICM/IPCC 7.0 and 7.1, all SRs |
| Internet Browser | <ul style="list-style-type: none"> ◆ Internet Explorer 6.0 (Service Pack 1 or greater) Qualified for ICM/IPCC 7.0 and 7.1, all SRs ◆ Internet Explorer 7.0 has now been qualified for ICM/IPCC 7.0 and 7.1. Testing concentrated on 7.0 SR4 and on 7.1(3), and corresponding earlier releases (such as 7.0 SR3 and 7.1(2) are expected to be compatible. Note that any problems encountered on earlier releases will receive remediation by an upgrade to the minimally qualified later release. |
| Zip Utility | <ul style="list-style-type: none"> ◆ WinZIP 9.x Qualified for ICM/IPCC 7.0 and 7.1, all SRs |
| Acrobat Reader | <ul style="list-style-type: none"> ◆ Adobe Acrobat Reader 7.0 Qualified for ICM/IPCC 7.0 and 7.1, all SRs |
| Sybase InfoMaker | See WebView Client and Internet Script Editor . |

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 two ways:

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

¹⁰ Terminal Services may only be used for Windows administration functions only. Applications such as Script Editor, Configuration Manager and associated AW tools, etc. may not be used in a Terminal session.

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7.7.8 Cisco Security Agent

Cisco strongly recommends the installation of Cisco Security Agent for Cisco Intelligent Contact Management Software Release 7.0(0) on all ICM/IPCC server nodes. This provides added security protection for your operating environment. You can download the CSA standalone agent free of charge from the following location:

<http://tools.cisco.com/support/downloads/go/PlatformList.x?sftType=Cisco%20Security%20Agent%20for%20Contact%20Center%20Products&mdfid=268439622&treeName=Customer%20Contact&mdfLevel=SERIES&url=null&modelName=Cisco%20Unified%20Contact%20Center%20Enterprise&isPlatform=N&treeMdfid=268439682>

7.7.9 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 recommended for any but the smallest deployments.

| Type of Software | Server | Software |
|---|------------------------|--|
| Operating System | All | Microsoft Windows Server 2003 SP1 and/or R2 |
| Prerequisite Software | All | Microsoft .NET framework Windows Installer 3.1 Microsoft .NET Framework 2.0 Microsoft Windows Server 2003 Application Server and ASP .NET components Microsoft Message Queuing |
| | Web Application Server | Microsoft SQL 2000 Reporting Services Microsoft .NET Framework 1.1 Microsoft WSE 2.0 SP3 Microsoft Internet Explorer 6.0+ Microsoft Script Host Adobe Reader 7.0 |
| | Database Server | JSE Runtime Environment 5.0 SOAP Toolkit 2.0 SOAP Toolkit 3.0 Microsoft SQL Server 2000 Enterprise Edition SP4 Microsoft XML 4.0 SP2 Parser |
| Cisco Unified Contact Center Management Portal Software Components | Web Application Server | Audit Reporting Application Web |
| | Database Server | Database Data Import Provisioning |

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7Appendix A – Server Classes

Appendix A – Server Classes

The server classes defined in this section are used in various Cisco contact center application deployment options. Please note the conventions and notes listed at the end of 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

Processor Types

P3 = Intel Pentium-3

P4 = Intel Pentium-4

PD = Intel Pentium-D

Xeon = Intel Xeon

Table A.0.1: Series ‘40’ of MCS Server Classes (Dual Processor)

| Server Class | Model | Proc. Type | CPU (GHz) | CPUs | RAM (GB) | Disk (GB) | Disk Controller | Ethernet Port | See Notes |
|------------------|--|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| MCS-40-001-Class | MCS-7845H-2.4-CC1 | Xeon | 2.4 | 2 | 4 | 4 x 72 | SCSI | 2 | 1,4,5 |
| MCS-40-002-Class | MCS-7845H-3.0-CC1 | Xeon | 3.06 | 2 | 4 | 4 x 72 | SCSI | 2 | 1,4,5 |
| MCS-40-003-Class | MCS-7845-I1-CC1 MCS-7845-H1-CC1 | Xeon | 3.4 | 2 | 4 | 4 x 72 | SCSI | 2 | 1,4,5 |
| MCS-40-004-Class | MCS-7845-I1-CC1 MCS-7845-H1-CC1 | Xeon | 3.4 | 2 | 4 | 6 x 72 | SCSI | 2 | 1,3,4,5 |
| MCS-40-005-Class | MCS-7845-H2-CCX1 MCS-7845-H2-CCE1 MCS-7845-I2-CCX1 MCS-7845-I2-CCE1 | Xeon | 2.33 | 2 | 4 | 4 x 72 | SAS | 2 | 1,4,6 |
| MCS-40-006-Class | MCS-7845-H2-CCE1 MCS-7845-I2-CCE1 | Xeon | 2.33 | 2 | 4 | 6 x 72 | SAS | 2 | 1,3,4,6 |

Table A.0.2: Series ‘30’ of MCS Server Classes (Single Processor)

| Server Class | Model | Proc. Type | CPU (GHz) | CPUs | RAM (GB) | Disk (GB) | Disk Controller | Ethernet Port | See Notes |
|------------------|--|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| MCS-30-001-Class | MCS-7835H-2.4-CC1 MCS-7835I-2.4-CC1 | P4 | 2.4 | 1 | 1 | 2 x 36 | SCSI | 2 | 1,4 |
| MCS-30-002-Class | MCS-7835H-3.0-CC1 MCS-7835I-3.0-CC1 | Xeon | 3.06 | 1 | 2 | 2 x 72 | SCSI | 2 | 1,4 |
| MCS-30-003-Class | MCS-7835-H1-CC1 MCS-7835-I1-CC1 | Xeon | 3.4 | 1 | 2 | 2 x 72 | SCSI | 2 | 1,4 |
| MCS-30-004-Class | MCS-7835-H2-CCX1 MCS-7835-H2-CCE1 MCS-7835-I2-CCX1 MCS-7835-I2-CCE1 | Xeon | 2.33 | 1 | 2 | 2 x 72 | SAS | 2 | 1, 4, 6 |

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7B Appendix A – Server Classes

Table A.0.3: Series ‘20’ of MCS Server Classes (Single Processor)

| Server Class | Model | Proc. Type | CPU (GHz) | CPUs | RAM (GB) | Disk (GB) | Disk Controller | Ethernet Port | See Notes |
|------------------|--|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| MCS-20-001-Class | MCS-7825H-2.2-CC1 | P4 | 2.26 | 1 | 1 | 1 x 40 | ATA | 2 | 1 |
| MCS-20-002-Class | MCS-7825H-3.0-CC1 MCS-7825I-3.0-CC1 | P4 | 3.06 | 1 | 1 | 1 x 40 | ATA | 2 | 1 |
| MCS-20-003-Class | MCS-7825-I1-CC1 MCS-7825-H1-CC1 | P4 | 3.4 | 1 | 2 | 2 x 80 | ATA | 2 | 1 |
| MCS-20-004-Class | MCS-7825-I2-CCE1 MCS-7825-H2-CCE1 | PD | 2.8 | 1 | 2 | 2 x 80 | SATA | 2 | 6 |

Table A. 0.4: Series ‘10’ of MCS Server Classes (Single Processor Desktops)

| Server Class | Model | Proc. Type | CPU (GHz) | CPUs | RAM (GB) | Disk (GB) | Disk Controller | Ethernet Port | See Notes |
|------------------|-------------------|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| MCS-10-001-Class | MCS-7815I-2.0-CC1 | P4 | 2.0 | 1 | 1 | 1 x 40 | ATA | 1 | 1 |
| MCS-10-002-Class | MCS-7815I-3.0-CC1 | P4 | 3.06 | 1 | 1 | 1 x 80 | SATA | 1 | 1 |
| MCS-10-003-Class | MCS-7815-I1-CC2 | P4 | 3.06 | 1 | 2 | 1 x 80 | SATA | 1 | 1 |
| MCS-10-004-Class | MCS-7815-I2-CCE1 | PD | 2.8 | 1 | 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 (GHz) | CPUs | RAM (GB) | Disk (GB) | Disk Controller | Ethernet Port | See Notes |
|------------------|-----------|------------|---------------|------|----------|-----------|-----------------|---------------|---------------------------|
| GEN-50-001-Class | (Generic) | Xeon | 0.7 | 4 | 4 | 8 x 36 | SCSI | 2 | 1,4,5 |
| GEN-50-002-Class | (Generic) | Xeon | 1.8 | 4 | 4 | 8 x 72 | SCSI | 2 | 1,4,5 |
| GEN-50-003-Class | (Generic) | Xeon | 2.0 | 4 | 4 | 8 x 72 | SCSI | 2 | 1,4,5 |
| GEN-50-004-Class | (Generic) | Xeon | 2.6 or better | 4 | 4 | 8 x 72 | SCSI | 2 | 1,4,5,7 |

Table A. 0.6: Series ‘40’ of Generic Server Classes (Dual Processor)

| Server Class | Model | Proc. Type | CPU (GHz) | CPUs | RAM (GB) | Disk (GB) | Disk Controller | Ethernet Port | See Notes |
|------------------|-----------|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| GEN-40-001-Class | (Generic) | Xeon | 1.8 | 2 | 2 | 4 x 72 | SCSI | 2 | 1,4,5 |
| GEN-40-002-Class | (Generic) | Xeon | 1.8 | 2 | 2 | 6 x 72 | SCSI | 2 | 1,4,5 |
| GEN-40-003-Class | (Generic) | Xeon | 1.8 | 2 | 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 (GHz) | CPUs | RAM (GB) | Disk (GB) | Disk Controller | Ethernet Port | See Notes |
|------------------|-----------|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| GEN-30-001-Class | (Generic) | Xeon | 1.8 | 1 | 1 | 2 x 72 | SCSI | 2 | 1,4 |

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7B Appendix A – Server Classes

Table A.0.8: Series ‘20’ of Generic Server Classes (Single Processor)

| Server Class | Model | Proc. Type | CPU (GHz) | CPUs | RAM (MB) | Disk (MB) | Disk Controller | Ethernet Port | See Notes |
|------------------|-----------|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| GEN-20-001-Class | (Generic) | P4 | 2.26 | 1 | 1 | 1 x 40 | ATA | 2 | 2 |
| GEN-20-002-Class | (Generic) | P4 | 3.06 | 1 | 1 | 1 x 40 | ATA | 2 | 2 |
| GEN-20-003-Class | (Generic) | P4 | 3.4 | 1 | 2 | 2 x 80 | ATA | 2 | 2 |
| GEN-20-004-Class | (Generic) | PD | 2.8 | 1 | 2 | 2 x 80 | SATA | 2 | 2, 6,7 |

Table A.0.9: Generic Server Classes for Client Software

| Server Class | Model | Proc. Type | CPU (GHz) | CPUs | RAM (MB) | Disk (MB) | Disk Controller | Ethernet Port | See Notes |
|------------------|-----------|------------|-----------|------|----------|-----------|-----------------|---------------|---------------------------|
| GEN-10-001-Class | (Generic) | P3,P4 | 0.8 | 1 | 256+ | 250+ | ATA | 1 | 2 |
| GEN-10-002-Class | (Generic) | P3,P4 | 2 | 1 | 1GB | 100+ | ATA | 1 | 2 |
| GEN-10-003-Class | (Generic) | P3,P4 | 1 | 1 | 512+ | 100+ | ATA | 1 | 2 |
| GEN-10-004-Class | (Generic) | P3,P4 | 0.5 | 1 | 128+ | 100+ | ATA | 1 | 2 |
| GEN-10-005-Class | (Generic) | P3,P4 | 1 | 1 | 256+ | 200+ | ATA | 1 | 2,7 |

Notes

- 1. Enable processor Hyper-Threading only if Windows Server 2003 is installed. ICM/IPCC 7.0 on Windows 2000 is qualified by Cisco only with Hyper-Threading disabled.**
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 may need more Ethernet ports for servers that have the Router software component. See section 7.6.1 [ICM Router](#) for details.
5. Two disks are sufficient for ‘40’ and ‘50’ class machines used for Routers, PGs, and other database-less processes.
6. These servers are dual core.
7. Cisco has qualified and now supports dual-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 [Appendix A - Server Classes](#). A processor is considered a single physical CPU, regardless of the number of cores.

Other Server requirements

- All servers should support 100/1000 Ethernet ports.
- All servers should have a CD/DVD drive and a 3.5 floppy 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: AAAA-BB-CCC-Class, where:

- AAAA - is a sequence of alphabetic letters that describes the class, such as MCS, or GEN for generic.
- BB – Optional digits that associate with 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 – It indicates that this is a server class, not a server model number, nor a part number.

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8BAppendix B – RAID Configuration Requirements

Appendix B – RAID Configuration Requirements

Table B.0.1: RAID Configuration Requirements

| ICM/IPCC Server | RAID Configuration Requirements |
|--|---|
| IPCC Enterprise Progger | RAID 1 |
| IPCC Enterprise Rogger | RAID 1 |
| System IPCC Enterprise Central Controller | RAID 1 |
| System IPCC Enterprise Agent/IVR Controller | RAID 1 |
| System IPCC Enterprise Central Controller + Agent/IVR Controller | RAID 1 |
| ICM Router | RAID 1 |
| ICM Logger | See section 7.6.2 ICM Logger |
| AW – Distributor, HDS, and WebView Server | See section AW – Distributor, HDS, and WebView Server |
| 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 |
| IPCC Gateway | RAID 1 |
| ICM/IPCC SS7 Network Interface Option | N/A |
| 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 |

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9B Appendix C – Acronyms and Terms

Appendix C – Acronyms and Terms

Table C.0.1: Acronyms and Terms

| Acronyms or Terms | Description |
|-----------------------|--|
| ACD | Automatic Call Distributor |
| AD | Active Directory |
| ATA | Internal storage interconnect interface |
| AW | Administration Workstations |
| BOM | The ICM/IPCC 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 |
| CCM | Cisco CallManager |
| CCS | Cisco Collaboration Server |
| CDA | CAD Desktop Administrator |
| CEM | Cisco E-Mail Manager |
| Central Controller | An ICM/IPCC server configuration that contains the ICM Router and ICM Logger. |
| CG | CTI Gateway, also known as CTI Server |
| CICM | Customer ICM, a software sever used in ICM/IPCC Hosted Editions |
| CIL | Client Interface Library |
| CMB | Cisco Media Blender |
| Common Ground Upgrade | Upgrade software in-place on pre-existing hardware, migrating data in-place. |
| cps | Calls per second |
| CSA | Cisco Security Agent |
| CSD | CAD Supervisor Desktop |
| CTI | Computer Telephony Interface |
| CTI OS | Cisco CTI Object Server |
| CVP | Cisco Customer Voice Portal |
| DCA | Dynamic Content Adapter |
| ECC variables | Expanded Call Context (ECC) variables |
| EDMT | Enhanced Database Migration Tool |
| EE | Enterprise Edition |
| EH | Hosted Edition |

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9BAppendix C – Acronyms and Terms

| Acronyms or Terms | Description |
|------------------------|--|
| HDS | Historical Database Server |
| ICM | Cisco Intelligent Contact Management Software |
| IPCC | IP Contact Center |
| 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 – ICM/IPCC Hosted Editions |
| 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>IPCC Solution Reference Network Design Guide</i> |
| SS7 | Signaling System 7 – a telecommunication protocol |
| System IPCC Enterprise | IPCC Enterprise Edition deployment model featuring simplified installation and integrated web-based configuration |
| TAC | Cisco Technical Assistance Center |
| Technology Refresh | Install and configure the system and product software on newly acquired hardware, migrating historical and configuration data from the prior hardware environment. |
| TDM | Time Division Multiplexing |
| VPN | Virtual Private Network |
| VRU | Voice Response Unit |