



# CHAPTER 1

## System Recommendations

This chapter describes the system recommendations and requirements for Cisco IP Solution Center (ISC). ISC is a web-based application you install on a Sun Solaris server, along with a web server and other supporting packages. You access ISC using a web browser.

The recommendation is to thoroughly review this list before even planning your installation, to be sure you have all the hardware and software you must successfully install.

The recommendations are explained in the following topics:

- [ISC Server Hardware, page 1-1](#)
- [ISC Server Solaris Configuration, page 1-2](#)
- [ISC Client, page 1-3](#)
- [IOS XR Device Setup, page 1-4](#)
- [Supported Cisco Network Devices and Software Versions, page 1-4](#)

## ISC Server Hardware

You must have a CD-ROM drive to install the ISC 5.1 product.

For the Sun™ Solaris server, the minimum recommendations are as shown in [Table 1-1](#).

**Table 1-1** Minimum Sun Solaris Server Recommendations for ISC Applications

| Class | Applications                                                                                                                                      | Minimum Sun Solaris Server              | RAM  | Swap Space | Disk Space       |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------|------------|------------------|
| Entry | Cisco MPLS Diagnostics Expert<br>or<br>L2VPN and L3 MPLS with a total of up to 1500 attachment circuits<br><br>Note: Not recommended for API use. | Sun™ SPARC T1000 or T2000, 1 CPU, 1 GHz | 2 GB | 4 GB       | 73 GB hard drive |

**Table 1-1 Minimum Sun Solaris Server Recommendations for ISC Applications (continued)**

|           |                                                                                                                                                   |                                          |       |       |                   |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------|-------|-------------------|
| Mid-range | Traffic Engineering Management (TEM) of up to 5000 TE tunnels<br>or<br>L2VPN and L3 MPLS with a total of up to 10,000 attachment circuits         | Sun™ SPARC T5220, Quad-core CPU, 1.2 GHz | 4 GB  | 8 GB  | 73 GB hard drive  |
| High End  | Traffic Engineering Management (TEM) of more than 5000 TE tunnels<br>or<br>L2VPN and L3 MPLS with a total of more than 10,000 attachment circuits | Sun™ SPARC M4000, 2 CPUs, 2.15 GHz       | 16 GB | 32 GB | 146 GB hard drive |

**Notes:**

The recommended servers in this table are examples for typical installations. Relative performance can be impacted by many factors. Please contact your Cisco account representative if you need assistance in selecting the correct server.

The default Oracle and Sybase database layouts are sufficient for ISC. Further optimization is your preference.

## ISC Server Solaris Configuration

Solaris 10 is supported in this release. Solaris 10 with recommended patches of at least 118822-30 for the kernel level of the patch cluster and JDK 1.6.0\_07 patches are found at: <http://sunsolve.sun.com>. As a minimum, you must get your system up to the 118822-30 Kernel patch level. For installation instructions, see the README file which is at the same location as the patch bundle.

Before installing ISC, configure the server to be able to perform hostname to IP address translations. Ensure that Domain Naming System (DNS) or an alternative is configured.

Table 1-2, “Solaris Software Requirements,” explains the Solaris requirements.

**Table 1-2 Solaris Software Requirements**

| Requirements | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solaris 10   | <p>Install Solaris 10 on the Sun Sparc server following these guidelines:</p> <p>Full Distribution—Install the full distribution, which includes the following required packages. If you did not install the full distribution, you can install these packages at any time.</p> <p>—<b>SUNWldap</b>—LDAP libraries</p> <p>—<b>SUNWbzip</b>—The <b>bzip</b> compression utility</p> <p>To check if your installation includes these packages, enter:</p> <p><b>pkginfo package</b></p> <p>where: <i>package</i> is one of the packages listed above.</p> |



**Note**

When you install Solaris 10, be sure to choose either the Developer System Support or the Entire Distribution software groups. Do *not* choose the End User System software group. The Developer System Support and Entire Distribution software groups contain the software required for a correct operating system installation (such as the **SUNWbtool** and **SUNWsprot** packages).



**Caution**

Make sure that the file descriptor limit is *not* set in the ISC workstation login shell file (which can be the **.login** file, the **.cshrc** file, the **.profile** file, or the **.kshrc** file). If the login shell file contains a line with the **ulimit -n** command (for example, “**ulimit -n <number>**”), comment out this command line in the file. Log out and then log back in to ensure that the **ulimit** is no longer set.

ISC cannot override the file descriptor limitation setting in the login shell file. If the value is set incorrectly, ISC might experience operational problems.

## ISC Client

The following is needed for the ISC client:

- A web browser is needed for the client machine on which to run ISC. Microsoft Internet Explorer 7.0 for Windows, Mozilla Firefox 2.0 for Windows, and Mozilla Suite 1.7 for Solaris are supported.



**Note**

In Internet Explorer, we recommend disabling the script debugging feature. To do this, navigate to **Tools > Internet Options** and click the **Advanced** tab. Select the check box **Disable script debugging** and click **OK**.

**Note**

When using Mozilla Firefox and launching ISC in a second window, you *might* lose the information in the first ISC window. To avoid this, stay in ISC and launch a new ISC from a tab or a hyperlink within ISC.

If launching a new Firefox window is necessary, do so with a different Firefox profile.

- Java Runtime Environment (JRE) and Java Web Start must be installed on the client machine to run Inventory Manager. Java 6.0 Update 7 is supported.

**Note**

When using more than one ISC login, ensure each login is using a different HTTP session. To do so, run each session in a separate browser launched from the command line or by clicking on the browser icon on the desktop or **Start** menu. Do not run parallel ISC logins in tabs within the same browser window or in browser windows launched from existing browser windows.

## IOS XR Device Setup

The following are the minimum patches for IOS XR, PIEs:

- **mini.pie** - Always required
- **mpls.pie** - Always required for ISC
- **mcast.pie** - Required for ISC layer 3 multicast functionality
- **mgbl.pie** - Required for ISC layer 2 and layer 3 deployment to work (because they use the XML agent); not required for TEM
- **k9sec.pie** - Required only if using Secure Shell (SSH)

## Supported Cisco Network Devices and Software Versions

The following hardware and software are recommended and required as specified:

- ISC 5.1 testing on an Oracle database has been on Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - 64 bit Production. If you would like to use another version of Oracle, see Oracle's compatibility information.
- CEs are supported with Cisco IOS 12.1 or later if the CE is a router, and if connecting using Ethernet then it must have a VLAN ethernet interface. The Management Customer Edge router (MCE) can be any CE.
- The MPE can be any of the PE devices in the following tables.

The devices and related software supported are listed in the following tables:

- [Table 1-3, "MPLS/L3VPN Devices for N-PE Role and Related Software Supported with ISC 5.1"](#)
- [Table 1-4, "L2VPN/Ethernet Over MPLS \(Including VPLS\) N-PE Devices and Related Software Supported with ISC 5.1"](#)
- [Table 1-5, "Ethernet U-PE and PE-AGG Devices for Access Into L2VPN and MPLS/L3VPN and Related Software Supported with ISC 5.1"](#)
- [Table 1-6, "MVRFCPE Devices for MPLS/L3VPN and Related Software Supported with ISC 5.1"](#)

- [Table 1-7, “MPLS Diagnostics Expert \(MDE\) 2.1.3 Devices and Related Software Supported with ISC 5.1”](#)
- [Table 1-8, “Traffic Engineering Management \(TEM\) Devices and Related Software Supported with ISC 5.1”](#)

[Table 1-3](#) specifies the version of software supported on alphabetically listed MPLS/L3VPN devices for N-PE role.

**Table 1-3 MPLS/L3VPN Devices for N-PE Role and Related Software Supported with ISC 5.1**

| <b>MPLS/L3VPN Devices for N-PE Role</b>                    | <b>Specified Software Supported</b>                                                                                                                                                                         |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cisco ASR 1000 Series Routers                              | Cisco IOS XE 2.1.0 (discovered as a Cisco 7200 in ISC)                                                                                                                                                      |
| Cisco 2800 Integrated Service Routers (ISR) Series Routers | Cisco IOS 12.3(14) T                                                                                                                                                                                        |
| Cisco Catalyst 3550 Series Switches                        | Cisco IOS 12.1(11) and 12.2(37) SE                                                                                                                                                                          |
| Cisco 3800 (ISR) Series Routers                            | Cisco IOS 12.3(14) T                                                                                                                                                                                        |
| Cisco 6400 Series Routers                                  | Cisco IOS 12.1(5) DC1 and 12.2(2) B5                                                                                                                                                                        |
| Cisco Catalyst 6500 Series Switches                        | Cisco IOS 12.2(18) ZU1                                                                                                                                                                                      |
| Cisco 7200 Series Routers                                  | Cisco IOS 12.0(23) S, 12.0(27) S, 12.0(27) S2, 12.0(31) S, 12.0(19991029:003049), 12.1(5) a, 12.2(2) T2, 12.2(3), 12.2(4) SBD, 12.2(13) T, 12.2(15) T2, 12.2(28) SB, 12.2(31) SB5, 12.4(4) XD, and 12.4(13) |
| Cisco 7300 Series Routers                                  | Cisco IOS 12.2(4) SBD                                                                                                                                                                                       |
| Cisco 7500 Series Routers                                  | Cisco IOS 12.0(22) S1, 12.0(28) S, 12.2(4) SBD, 12.2(8) T, and 12.2(28) SB                                                                                                                                  |
| Cisco 7600 Series Routers                                  | Cisco IOS 12.2(16.13) S, 12.2(17a) SX3, 12.2(17b) SX, 12.2(17d) SXB4, 12.2(18) SXE, 12.2(18) SXF, 12.2(33) SRA, 12.2(33) SRB, and 12.2(33) SRC                                                              |
| Cisco 10000 Edge Services Router (ESR) Series Routers      | Cisco IOS 12.2(4) SBD, 12.2(8) BC2a, 12.2(16) BX2, 12.2(28) SB, and 12.2(31) SB5                                                                                                                            |
| Cisco 12000 (GSR) Series Routers                           | Cisco IOS 12.0(14) ST, 12.0(26) S, 12.0(27) S, 12.0(27) S2, 12.0(27)Sv2, 12.0(28) S, 12.0(31) S, 12.0(32) S, and 12.0(32) SY and Cisco IOS XR 3.4.2, 3.5.2, 3.5.3, 3.6.0, 3.6.1, 3.6.2, 3.7.0, and 3.7.1    |
| Cisco Carrier Routing System-1 (CRS-1) Series Routers      | Cisco IOS XR 3.4.2, 3.5.2, 3.5.3, 3.6.0, 3.6.1, 3.6.2, 3.7.0, and 3.7.1                                                                                                                                     |
| Cisco MGX 8000 Series Multiservice Switches                | Cisco IOS 12.1(1), 12.1(5), 12.2(4) T, 12.2(15) ZS3, and 12.3(11) T5                                                                                                                                        |

Table 1-4 specifies the version of software supported on alphabetically listed L2VPN/Ethernet over MPLS (including VPLS) N-PE devices.

**Table 1-4 L2VPN/Ethernet Over MPLS (Including VPLS) N-PE Devices and Related Software Supported with ISC 5.1**

| <b>L2VPN/Ethernet Over MPLS (Including VPLS) N-PE Devices</b>                                                | <b>Specified Software Supported</b>                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cisco 2600 Series Routers                                                                                    | Cisco IOS 12.0(27) SV2, 12.0(28) S, 12.1, and 12.2(3)                                                                                                                                                                    |
| Cisco 3620 Series Routers                                                                                    | Cisco IOS 12.0(27) SV2, 12.0(28) S, and 12.1(1a) T1                                                                                                                                                                      |
| Cisco Catalyst 3750 ME Series Switches, ERS/EWS service only, not VPLS                                       | Cisco IOS 12.2(25) EXA, 12.2(25) EY, and 12.2(25) EY2-7                                                                                                                                                                  |
| Cisco Catalyst 4000 Series Switches                                                                          | Cisco IOS 12.1(12c) EW1 and 12.1(13) EW                                                                                                                                                                                  |
| Cisco Catalyst 6500 Series Switches                                                                          | Cisco CatOS 7.5 and 7.5(1) and Cisco IOS 12.1(11b) EX1, 12.1(12c) EW1, and 12.2(18) SXF                                                                                                                                  |
| Cisco 7200 Series Routers                                                                                    | Cisco IOS 12.0(22) S, 12.0(27) SV2, 12.0(28) S, and 12.2(28) SB                                                                                                                                                          |
| Cisco 7500 Series Routers                                                                                    | Cisco IOS 12.0(22) S, 12.0(27) SV2, and 12.0(28) S                                                                                                                                                                       |
| Cisco 7600 Series Routers                                                                                    | Cisco IOS 12.2(17a) SX3, 12.2(18) SXD1, 12.2(18) SXD4, 12.2(18) SXE, 12.2(18) SXF, 12.2(33) SRA, 12.2(33) SRB, 12.2(33) SRB1, 12.2(33) SRC, 12.2(TETONS_SXB_THROTTLE_INTEG_040519), and 12.2(TETONS_3_1_SBC_EON2.041120) |
| Cisco 12000 (GSR) Series Routers                                                                             | Cisco IOS 12.0(22) S, 12.0(27) S, 12.0(28) S, 12.0(32) S, and 12.0(32) SY                                                                                                                                                |
| Cisco Carrier Routing System-1 (CRS-1) Series Routers, ERS/ERW service only, UNI on NPE for ERS service only | Cisco IOS XR 3.4.2, 3.5.2, 3.6.0, 3.6.1, 3.6.2, 3.7.0, and 3.7.1                                                                                                                                                         |

Table 1-5 specifies the version of software supported on alphabetically listed Ethernet U-PE and PE-AGG devices for access into L2VPN and MPLS/L3VPN.

**Table 1-5 Ethernet U-PE and PE-AGG Devices for Access Into L2VPN and MPLS/L3VPN and Related Software Supported with ISC 5.1**

| Ethernet U-PE and PE-AGG Devices for Access into L2VPN and MPLS/L3VPN | Specified Software Supported                                                                                                                                                                               |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cisco Catalyst 2950 Series Switches                                   | Cisco IOS 12.1(11) EA1 and 12.1(22) EA1                                                                                                                                                                    |
| Cisco ME 3400 Series Ethernet Access Switches                         | Cisco IOS 12.2(25) EX, 12.2(25) SEG, and 12.2(37) SE                                                                                                                                                       |
| Cisco Catalyst 3550 Series Switches                                   | Cisco IOS 12.1(11) EA1, 12.1(22) EA1, 12.1(22) EA1a and 12.2(37) SE                                                                                                                                        |
| Cisco Catalyst 3750 ME Series Switch                                  | Cisco IOS 12.2(25) EXA, 12.2(25) EY, and 12.2(25) EY2-7                                                                                                                                                    |
| Cisco Catalyst 4500 Series Switches                                   | Cisco IOS 12.2(20) EW and 12.2(25) EWA                                                                                                                                                                     |
| Cisco Catalyst 6500 Series Switches                                   | Cisco CatOS 7.5 and 7.5(1) and Cisco IOS 12.1(11b) EX1, 12.1(12c) EW1, and 12.2(18) SXF                                                                                                                    |
| Cisco ME 6524 Ethernet Switch                                         | Cisco IOS 12.2(25) EX and 12.2(18) ZU1 (with N-PE role)                                                                                                                                                    |
| Cisco 7600 Series Routers                                             | Cisco IOS 12.2(17a) SX3, 12.2(18) SXD1, 12.2(18) SXD4, 12.2(18) SXE, 12.2(18) SXF, 12.2(33) SRA, 12.2(33) SRB, 12.2(33) SRB1, 12.2(TETONS_SXB_THROTTLE_INTEG_040519), and 12.2(TETONS_3_1_SBC_EON2.041120) |

Table 1-6 specifies the version of software supported on alphabetically listed MVRFCE devices for MPLS/L3VPN.

**Table 1-6 MVRFCE Devices for MPLS/L3VPN and Related Software Supported with ISC 5.1**

| <b>Multi-VPN Routing and Forwarding CE (MVRFCE) Devices for MPLS/L3VPN</b> | <b>Specified Software Supported</b>                    |
|----------------------------------------------------------------------------|--------------------------------------------------------|
| Cisco 836                                                                  | Cisco IOS 12.3(11) T3                                  |
| Cisco Catalyst 3750 ME Series Switch                                       | Cisco IOS 12.1(14) AX1, 12.2(25) EYa, and 12.2(25) EY2 |
| Cisco 7400 Series Routers                                                  | Cisco IOS 12.2(4) B3 and 12.2(4) SBD                   |

Table 1-7 specifies the version of software supported on alphabetically listed MDE devices.

**Table 1-7 MPLS Diagnostics Expert (MDE) 2.1.3 Devices and Related Software Supported with ISC 5.1**

| <b>P and PE Network Devices, Exceptions Noted</b>           | <b>MDE 2.1 Supported with Specified Software</b>                                            |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| MGX8800/RPM-PR (PE only)                                    | Cisco IOS 12.4(6) T5a                                                                       |
| MGX8800/RPM-XF (PE only)                                    | Cisco IOS 12.2(15) ZS5                                                                      |
| Cisco ASR 1000 Series Routers                               | Cisco IOS XE 2.1.0 (discovered as a Cisco 7200 in ISC)                                      |
| Cisco 3800 Series (PE only)                                 | Cisco IOS 12.4(6) T*                                                                        |
| Cisco Catalyst 6500 Series Switches                         | Cisco IOS 12.2(18) SXF                                                                      |
| Cisco 7200 Series                                           | Cisco IOS 12.0(27) S to 12.0(31) S, 12.2(28) SB, and 12.2(31) SB5                           |
| Cisco 7200 Series (PE only)                                 | Cisco IOS 12.2(15) T4, 12.2(18) S, 12.2(28) SB3, 12.3(9), 12.3(10), 12.3(10c), and 12.3(13) |
| Cisco 7300 Series                                           | Cisco IOS 12.2(20) S, 12.2(28) SB, 12.2(28) SB3, 12.2(31) SB5, and 12.2(33) SRA             |
| Cisco 7300 Series (PE only)                                 | Cisco IOS 12.2(20) S and 12.2(25) S4                                                        |
| Cisco 7500 Series                                           | Cisco IOS 12.0(27) S to 12.0(31) S, 12.0(30) S1, 12.2(22) S, 12.2(28) SB, and 12.2(28) SB3  |
| Cisco 7500 Series (PE only)                                 | Cisco IOS 12.2(15) T4, 12.2(18) S, 12.3(15) B, and 12.3(17) A                               |
| Cisco 7600 Series with SUP 720                              | Cisco IOS 12.2(18) SXE, 12.2(18) SXF, 12.2(33) SRA, 12.2(33) SRB1, and 12.2(33) SRC         |
| Cisco 10000 Series with Performance Routing Engine 2 (PRE2) | Cisco IOS 12.2(28) SB and 12.2(31) SB5                                                      |



**Table 1-7 MPLS Diagnostics Expert (MDE) 2.1.3 Devices and Related Software Supported with ISC 5.1 (continued)**

| <b>P and PE Network Devices, Exceptions Noted</b>                     | <b>MDE 2.1 Supported with Specified Software</b>                                                                                                                  |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cisco 10000 Series with Performance Routing Engine 2 (PRE2) (PE only) | Cisco IOS 12.2(3) 7XI, 12.2(28) SB3, and 12.3(7) X17                                                                                                              |
| Cisco 12000 (GSR) Series                                              | Cisco IOS 12.0(27) S to 12.0(32) S, 12.0(32) SY, 12.0(32) S10**, 12.0(33) S1, and Cisco IOS XR 3.3.0, 3.4.2*, 3.5.3, 3.5.4, 3.6.0, 3.6.1, 3.6.2, 3.7.0, and 3.7.1 |
| Cisco Carrier Routing System-1 (CRS-1) Series Routers                 | Cisco IOS XR 3.3, 3.3.5, 3.4.2*, 3.5.3, 3.5.4, 3.6.0, 3.6.1, 3.6.2, 3.7.0, and 3.7.1                                                                              |

\* Cisco IOS and IOS XR MPLS LSP Ping/Traceroute must be configured to use version 3 of the Internet Engineering Task Force (IETF) label switched path (LSP) Ping draft (draft-ietf-mpls-lsp-ping-03.txt). For details of how to configure the Cisco IOS and IOS XR MPLS LSP Ping/Traceroute version, see the [Cisco MPLS Diagnostics Expert 2.1.3 User Guide on ISC 5.1](#).

\*\* Cisco IOS 12.0(32) S10 supports MPLS OAM RFC.

Table 1-8 specifies the version of software supported on alphabetically listed TEM devices.

**Table 1-8 Traffic Engineering Management (TEM) Devices and Related Software Supported with ISC 5.1**

| <b>P and PE Network Devices</b>                       | <b>Traffic Engineering Management (TEM) Supported with Specified Software</b>                                                                                                                                             |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cisco 7200 Series Routers                             | Cisco IOS 12.0(22) S, 12.0(22) S2, 12.0(24) S, 12.0(26) S, 12.0(26) S2, 12.0(27) S, 12.0(27) S4, 12.0(28) S, 12.0(28) S5, 12.0(31) S, 12.0(32) S, and 12.2(31) SB5**<br>** No Fast Re-route (FRR) support for 12.2(28) SB |
| Cisco 7500 Series Routers                             | Cisco IOS 12.0(22) S, 12.0(22) S2, and 12.0(27) S4                                                                                                                                                                        |
| Cisco 7600 Series Routers                             | Cisco IOS 12.2(18) SXD1, 12.2(18) SXF, 12.2(33) SRA, 12.2(33) SRB, and 12.2(33) SRC                                                                                                                                       |
| Cisco 10000 (ESR) Series Routers                      | Cisco IOS 12.0(25) S1, 12.0(30) S3, 12.0(32) S, 12.2(31) SB5, and 12.2(SB) REL3**<br>** No Fast Re-route (FRR) support for 12.2(28) SB                                                                                    |
| Cisco 12000 (GSR) Series Routers                      | Cisco IOS 12.0(26) S, 12.0(31) S, and 12.0(32) S and Cisco IOS XR 3.2, 3.3, 3.4.2, 3.5.2, 3.6.0, 3.6.1, 3.6.2, 3.7.0, and 3.7.1                                                                                           |
| Cisco Carrier Routing System-1 (CRS-1) Series Routers | Cisco IOS XR 3.2, 3.3, 3.4.2, 3.5.2, 3.6.0, 3.6.1, 3.6.2, 3.7.0, and 3.7.1                                                                                                                                                |

