



Preinstallation

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Preinstallation Task Flow

Before you can install Unified CCE and the associated components, set up the network, create virtual machines, and install and configure third-party software.



Important

The length of the hostname of any Unified CCE server must not exceed 15 characters.

| Task | See |
|--|---|
| If you are integrating Unified CCE into an existing corporate network, verify Domain Controller health. If you are installing into a new Active Directory domain, install and configure Active Directory and DNS server. | Set up Active Directory, on page 1 |
| Download Open Virtualization Format (OVA) templates and create virtual machines. | Set Up Virtual Machines, on page 5 |
| Install and configure third-party software. | Set Up Third-Party Software, on page 10 |

Preinstallation Tasks

Set up Active Directory

Ensure that you have a completed plan for your domain structure and Active Directory implementation before you set up your network. For more information, see the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise* at

<http://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-guides-list.html>.

Verify Domain Controller Health

Before you set up the Unified CCE DNS and Active Directory (AD) structure, ensure that your existing domain controller environment is stable. Install and run the following tools, available from the Microsoft Windows Server 2012 R2 installation media, in the Tools subfolder:

- `dcdiag.exe`—Generates a report on AD health, including connectivity, replication, topology integrity, intersite health, and trust verification. Checks Network Card (NC) head security descriptors, net logon rights, and roles. Locates the domain controller.
- `readmin.exe`—Retrieves the replication status of all `/csv >showrepl.csv` domain controllers in a spreadsheet, verifies DNS infrastructure, Kerberos, Windows time service (W32time), remote procedure call (RPC), and network connectivity.

Ask your network administrator or qualified AD expert (for example, Microsoft Support Services) to evaluate the resulting reports from these tools.

Run `dcdiag.exe`

Procedure

Step 1 Choose **Start > Run**.

Step 2 Type `cmd`.

Step 3 Press **Enter**.

A command console opens.

Step 4 At the prompt, enter `dcdiag.exe /e /v /f:dcdiag.txt`.

Note If you use the `/e` option, run `dcdiag.exe` at the root level. If you do not use the `"/e"` option, run `dcdiag.exe` on each individual domain controller.

The application creates the text file `dcdiag.txt` in the folder containing `dcdiag.exe`.

Step 5 Open the text file and note any items that are prefaced with "Warning" or "Error."

Step 6 Correct all the issues, then rerun `dcdiag.exe` to ensure that no issues remain.

Run `readmin.exe`

Procedure

Step 1 Choose **Start > Run**.

Step 2 Type `cmd`.

Step 3 Press **Enter**.

A command console opens.

Step 4 At the prompt, enter `readmin.exe /showrepl * /csv >showrepl.csv`.

Step 5 Open Excel and choose **File > Open**.

Note Depending on your version of Excel, the menu cascades may be slightly different.

- Step 6** In the “Files of type” section, click **Text Files (*.prn;*.txt;*.csv)**.
- Step 7** In the “Look in” section, navigate to *showrepl.csv*, then click **Open**.
- Step 8** In the Excel spreadsheet, right-click the column heading for showrepl_COLUMNS (column A), then click **Hide**.
- Step 9** In the Excel spreadsheet, right-click the column heading for Transport Type, then click **Hide**.
- Step 10** Select the row just under the column headings, then choose **Windows > Freeze Pane**.
- Step 11** Click the upper-left corner of the spreadsheet to highlight the entire spreadsheet. Choose **Data > Filter > AutoFilter**.
- Step 12** In the heading of the Last Success column, click the **down arrow**, then click **Sort Ascending**.
- Step 13** In the heading of the Source DC column, click the **down arrow**, then click **Custom**.
- In the Custom AutoFilter dialog box, complete the custom filter as follows:
- Under Source DC, click **does not contain**.
 - In the corresponding text box, enter **del** to filter deleted domain controllers from the spreadsheet.
- Step 14** In the heading of the Last Failure column, click the **down arrow**, then click **Custom**.
- In the Custom AutoFilter dialog box, complete the custom filter as follows:
- Under Last Failure, click **does not equal**.
 - In the corresponding text box, enter **0** to filter for only domain controllers that are experiencing failures.
- For every domain controller in the forest, the spreadsheet shows the following:
- Source replication partner
 - The time that replication last occurred
 - The time that the last replication failure occurred for each naming context (directory partition)
- Step 15** Use Autofilter in Excel to view the replication health for the following:
- Working domain controllers only
 - Failing domain controllers only
 - Domain controllers that are the least, or most recent
- You can observe the replication partners that replicate successfully.
- Step 16** Locate and resolve all errors.
- Step 17** Rerun repadmin.exe to ensure that no issues remain.

Add DNS Server to Local Domain Controller

Ensure that the local Active Directory domain controllers have Domain Name Servers installed.

See the Microsoft documentation at <https://docs.microsoft.com/en-us/windows-server/identity/ad-ds/plan/creating-a-dns-infrastructure-design> for adding DNS role to Active Directory servers.



Note If the local domain controllers serve as Forest Root for the domain, see **DNS requirement** in *Staging Guide for Cisco Unified ICM/Contact Center Enterprise* at <http://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-guides-list.html> for additional requirements on Forest Root DNS configuration.

Configure Active Directory Sites

Perform the following procedure on the Unified CCE root domain controller:

Procedure

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- Step 1** **Start > Programs > Administrative Tools > AD Sites and Services.**
- Step 2** Rename the default first site name in accordance with your AD site plan.
- For a geographically separated Domain Controller, right-click **Sites**.
 - Select **New Site**.
 - Enter the site name of the additional domain controller based on your AD site plan.
- Step 3** Create subnets for each Domain Controller site:
- Right-click the Subnets folder and select **New Subnet**.
 - Enter the subnet address and mask associated with the LAN at the Domain Controller Site.
 - Highlight the Site Name that is associated with that subnet.
- Step 4** Expand the Servers folder from the original first site folder.
- Step 5** For each server that you must move to a different site, right-click the server name, select **Move**, and highlight the Site to which you want to move it.
- Step 6** Expand Inter-Site Transport under Sites.
- Open the IP folder and select **DEFAULTIPSITELINK** from the right pane.
 - Right-click and select **Properties**. Ensure that both sites appear as entries in the Sites in this **Site Link** window.
 - Change the Replicate Every value to **15 minutes**.
-

Assign Global Catalog and Set Time Source

Before you begin

Use the Administrator account and open command prompt to connect to the **Domain Controller** with the **PDC (Primary Domain Controller)** role. If you have multiple Domain Controllers, use the following command to determine which one contains the PDC role:

Procedure

- Step 1** Locate your PDC Server. Open the command prompt and enter the following command: `netdom/query fsmo`
- Step 2** Log in to your PDC Server and open the command prompt as Administrator. Configure the PDC to synchronise to external sources. Type the following command at the command prompt: `w32tm /config /manualpeerlist:"<NTPServer 1> <NTP Server 2>"`
- Step 3** Make the Domain Controller a reliable time source for the clients: `w32tm /config /reliable:yes.`
- Step 4** Start the w32time service: `net stop w32time && net start w32time`. The windows time service begins synchronizing with the time.
- Note** If the Domain Controller does not synchronize time with the external NTP server, check the event logs (**Event Viewer >> System**).
- Step 5** Check the source **Time-Service** in **Event Viewer** for any errors.
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Set Up Virtual Machines

Verify Datastores

Before you install the VMs, verify that the datastore is in place. The type of datastore depends on the type of server on which you deploy the VMs. For example, UCS-B servers use a SAN datastore and UCS-C servers use DAS datastores.

For more information, see the VMware documentation at <https://www.vmware.com/support/pubs/>.

For more information, see *Virtualization for Unified Contact Center Enterprise* at https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/virtualization-unified-contact-center-enterprise.html.

Configure RAID for C240 M4SX

The disk array configuration for the C240 M4SX is already set up to match what is required for Unified CCE. Verify the settings as follows.

Procedure

Using Cisco Integrated Management Controller, check that the following settings are configured correctly:

- Virtual Drive Info: RAID 5 with 5 (Physical Disks) * 4 (Virtual Drives/Datastores)
- Stripe Size: 128KB
- Write Policy: Write Back with BBU
- Read Policy: Read Ahead Always

For more information regarding RAID configuration for C240 M4SX in Configure RAID with GUI (UCS C-Series M4 Servers) section, see *Cisco Collaboration on Virtual Servers Guide* at:
https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/virtual/CHCS_BK_C7C7ED05_00_cisco-collaboration-on-virtual-servers.html

Configure RAID for C240 M5SX

The disk array configuration for the UCS C240 M5SX is already set up to match the requirements. Verify the settings as follows:

Procedure

Using Cisco Integrated Management Controller, check that the following settings are configured correctly:

- Virtual Drive Info: RAID 5 with 6 (Physical Disks) * 4 (Virtual Drives or Datastores)
- Stripe Size: 128KB
- Write Policy: Write Back with BBU
- Read Policy: Read Ahead Always

For more information regarding RAID configuration for C240 M5SX, see the *Installation and Configuration* section of the *Cisco Collaboration on Virtual Servers Guide* at:

https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/virtual/chcs_b_cisco-collaboration-on-virtual-servers.html

Download Unified CCE OVA Files

The Unified CCE Open Virtualization Format (OVA) files define the basic structure of the corresponding VMs that are created. The structure definition includes the CPU, RAM, disk space, reservation for CPU, and reservation for memory.

Before you begin

You must have a valid service contract associated with your Cisco.com profile.

Procedure

- Step 1** Go to the Unified CCE [Download Software](#) page on Cisco.com.
 - Step 2** Click **Download** to download and save the appropriate OVA file to your local hard drive. When you create VMs, you select the OVA required for the application.
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Create a Virtual Machine from the OVA

To create virtual machines (VMs) from the OVA files, complete the following procedure.



Note ECE requires a second virtual hard drive on its VM. The OVA creates one virtual hard drive. Create a second hard drive of an appropriate size for your solution requirements.

Procedure

- Step 1** Select the Host in the vSphere client.
- Step 2** Choose **File > Deploy OVF Template**.
- Step 3** Browse to the location on your local drive where you stored the OVA. Click **Open** to select the file. Click **Next**.
- Step 4** Click **Next** at the **OVF Template Details** page.
- Step 5** Enter the virtual machine name. It cannot contain spaces or special characters. Enter a maximum of 32 characters. Click **Next**.
- Step 6** On the **Name and Location** page, enter a name of your choice in the **Name** field. Click **Next**.
- Important** After the VM is created, you cannot rename it.
- Step 7** On the **Deployment Configuration** page, select the applicable configuration from the drop-down list. Click **Next**.
- Step 8** Choose a data store on which to deploy the new virtual machine. Click **Next**.

For each datastore, the following tables describe the RAID group, the ESXi Host, and the virtual machines for the C240 M4SX and the C240 M5SX servers.

RAID configuration for the C240 M4SX and C240 M5SX

| RAID Group | VM Datastore | ESXi Host | Virtual Machines |
|------------|--------------|-----------|--|
| VD0 | datastore 1 | A | ESXi operating system Unified CCE Rogger, Side A Unified Communications Manager Publisher Cisco Finesse Primary |
| VD1 | datastore 2 | A | Unified CCE AW-HDS-DDS, Side A |
| VD2 | datastore 3 | A | Unified Communications Manager Subscriber 1 Unified CVP OAMP Server Unified CVP Server, Side A |
| VD3 | datastore 4 | A | Unified Intelligence Center Server Publisher Unified CCE PG, Side A |

| RAID Group | VM Datastore | ESXi Host | Virtual Machines |
|------------|--------------|-----------|---|
| VD0 | datastore 1 | B | ESXi operating system Unified CCE Rogger, Side B Unified Communications Manager Subscriber 2 Cisco Finesse Secondary |
| VD1 | datastore 2 | B | Unified CCE AW-HDS-DDS, Side B |
| VD2 | datastore 3 | B | Unified Customer Voice Portal Reporting Server (optional) Unified CVP Server, Side B |
| VD3 | datastore 4 | B | Unified Intelligence Center Server Subscriber Unified CCE PG, Side B Enterprise Chat and Email Server (optional) |

Step 9 On the **Disk Format** page, choose **Thick provisioned Eager Zeroed format** for the virtual disk format. Click **Next**.

Note **Thick provisioned Lazy Zero** is also supported, but **Thin provisioned** is not supported.

Step 10 Confirm that the **Network Mapping** page is correct:

- a) Public network adapter to Public network
- b) Private network adapter to Private network

Note Certain VMs do not require a private network connection. The OVAs for those VMs do not create a second network adapter.

Step 11 Click **Finish**.

Step 12 At the Successfully Completed message, click **Close**.

Note For more information, see *Virtualization for Unified Contact Center Enterprise* at http://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/virtualization-unified-contact-center-enterprise.html.

Allocate a Second Virtual Hard Drive

After deploying the OVA files, the second hard drive is no longer automatically created. To create a second hard drive:

Procedure

- Step 1** Right-click the virtual machine and click **Edit Settings**.
- Step 2** In the **Hardware** tab, click on **Add**.
The **Add Hardware** window appears.
- Step 3** You can select the type of device you wish to add. Select **Hard Disk**, and then click **Next**.
- Step 4** Select the **Create a new virtual disk** option, and then click **Next**.
- Step 5** In the **Capacity** section, use the **Disk Size** box to assign the desired disk space, and then click **Next**.

Note Virtual machine templates for Logger, Rogger, AW, and HDS servers do not have a SQL database drive preprovisioned. The following reference table can be used to assign disk space to the virtual machine based on the type:

| Virtual Machine Template | Default Second Disk Size |
|--------------------------|--------------------------|
| Logger | 500 GB |
| Rogger | 150 GB |
| AW-HDS-DDS | 500 GB |
| AW-HDS | 500 GB |
| HDS-DDS | 500 GB |

You can custom size the SQL database disk space to meet data retention requirements, as calculated by the Database Estimator tool.

- Step 6** On the **Disk Provisioning** section choose **Thick provision Lazy Zeroed format**. Click **Next**.
- Step 7** In the **VM Options > Advanced Options** section, retain the default options and then click **Next**.
- Step 8** In the **Ready to Complete** section, click **Finish** to create the hard disk.
- Step 9** Click **OK** to confirm the changes.
The Recent Tasks window at the bottom of the screen displays the progress.
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Mount ISO Files

Upload ISO image to data store:

1. Select the host in the vSphere client and click **Configuration**. Then click **Storage** in the left panel.
2. Select the datastore that will hold the ISO file.
3. Right click and select **Browse datastore**.
4. Click the **Upload** icon and select **Upload file**.

5. Browse to the location on your local drive where you saved the ISO file, and upload the ISO to the datastore.

Mount the ISO image:

1. Right-click the VM in the vSphere client and select **Edit virtual machine settings**.
2. Click **Hardware** and select **CD/DVD Drive 1**.
3. Check **Connect at power on** (Device status panel upper right).
4. Click the **Datastore ISO File** radio button and then click **Browse**.
5. Navigate to the data store where you uploaded the file.
6. Select the ISO file and click **OK**.

Initialize and Format Secondary Disk

After the second hard disk is created, allocate memory to the hard disk.

Procedure

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- Step 1** Open the command prompt, and type `diskmgmt.msc`.
 - Step 2** Right-click **Disk 1**, and click **Online**.
 - Step 3** After the disk goes online, right-click the disk, and then click **Initialize Disk**.
 - Step 4** Select **Master Boot Record (MBR)** radio button.
 - Step 5** After the disk is initialized, right-click the disk, and then click **Convert to Dynamic Disk**.
 - Step 6** In the **Convert to Dynamic Disk** window, check the **Disk 1** check box to select it, and then click **OK**.
 - Step 7** Right click on the unallocated disk space, and click **New Simple Volume**. The **New Simple Volume Wizard** window appears.
 - Step 8** Click **Next** and follow the on-screen instructions to create a simple volume on the disk.
 - Step 9** Click **Finish** to complete the process of allocating memory to the hard drive.
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Set Up Third-Party Software

Install Microsoft Windows Server

Complete the following procedure to install Microsoft Windows Server on the virtual machines deployed.



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- Note** For information about supported editions, see the *Unified CCE Solution Compatibility Matrix* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-device-support-tables-list.html>
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Procedure

- Step 1** Mount the Microsoft Windows Server ISO image to the virtual machine.
Check the **Connect at power on** check box when mounting the ISO.
For more information, see *Mount and Unmount ISO File*.
- Step 2** Power on the VM.
- Step 3** Enter the Language, Time and Currency Format, and Keyboard settings. Click **Next**.
- Step 4** Click **Install Now**.
- Step 5** If prompted, enter the product key for Windows Server and click **Next**.
- Step 6** Select the Desktop Experience option for the Windows Server and click **Next**.
- Step 7** Accept the license terms and click **Next**.
- Step 8** Select **Custom: Install Windows only (advanced)**, select **Drive 0** to install Microsoft Windows Server, and then click **Next**.
The installation begins. After the installation is complete, the system restarts without prompting.
- Step 9** Enter and confirm the password for the administrator account, and then click **Finish**.
- Step 10** Enable Remote Desktop connections as follows:
- Navigate to **Control Panel > System and Security > System**.
 - Click **Remote Settings**.
 - Click the **Remote** tab.
 - Select the **Allow remote connections to this computer** radio button. The Remote Desktop Connection dialog displays a notification that the Remote Desktop Firewall exception is enabled. Click **OK**.
- Step 11** Install VMWare tools. See [Install Vmware Tools, on page 12](#)
- Step 12** Open the **Network and Sharing Center**, and in the View your basic network info and set up connections section, click **Ethernet**.
- Step 13** In the Ethernet Status window, click **Properties**.
- Step 14** In the **Ethernet Properties** dialog box, configure the network settings and the Domain Name System (DNS) data:
- Uncheck **Internet Protocol Version 6 (TCP/IPv6)**.
 - Select Internet Protocol Version 4 (TCP/IPv4) and click **Properties**.
 - Select **Use the following IP Address**.
 - Enter the IP address, subnet mask, and default gateway.
 - Select **Use the following DNS Server Address**.
 - Enter the preferred DNS server address, and click **OK**.
- Step 15** Navigate to **Control Panel > System and Security > System**. Follow the instructions:
- Click **Change Settings**.
 - In Computer name tab, click **Change**.
 - Change the name of the computer from the name randomly generated during Microsoft Windows Server installation. The name does not contain underscores or spaces.
 - Select **Domain** radio button to change the member from Workgroup to Domain.
 - Enter qualified domain name and click **OK**.
 - In the Windows security dialog, validate the domain credentials and click **OK**.

- g) On successful authentication, click **OK**.
 - h) Reboot the server and sign in with domain credentials.
- Restart your system for the change to take effect.

Step 16 Go to **Settings > Update & Security** and run Microsoft Windows Update. .
After the update is complete, click **Do not enable automatic updates**.

Microsoft Windows Server is installed. In addition, Internet Explorer 11 is installed automatically.



Note If you want to install Unified CCE on a multilingual version of Windows Server, run the Multilingual User Interface (MUI) language pack. See <https://software.cisco.com/download/release.html?mdfid=268439622&flowid=46046&softwareid=280840583>.

If Unified CCE language pack is applied on Chinese Windows OS machine, set the screen resolution to 1600 x 1200.

Set Windows Locale

If the Windows system locale differs from the display language (and therefore also the SQL collation setting), some characters appear incorrectly in the user interface and are saved incorrectly to the database. For example, if the system locale is English and an agent works in Spanish, characters such as the acute *a* do not appear correctly.

If you use a multilingual version of Microsoft Windows Server, complete this procedure to set the Windows locale.

Procedure

- Step 1** Open **Control Panel > Clock, Region and Language**.
 - Step 2** In the Region section, click **Change date, time, or number formats**.
 - Step 3** Click the **Administrative** tab.
 - Step 4** In the Language for non-Unicode programs section, click **Change system locale**.
 - Step 5** In the **Region Settings** window, select the language that matches the display language.
 - Step 6** Restart the virtual machine.
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Install VMware Tools

VMware Tools is a suite of utilities that enhance the performance of the virtual machine guest operating system. It also aids virtual machine management.

Install VMware Tools for Windows

Procedure

- Step 1** From the vSphere Client, right-click the virtual machine, select **Power**, and click **Power On**.
- Step 2** Click the **Summary** tab.
In the General section, the VMware Tools field indicates whether VMware Tools are:
- installed and current
 - installed and not current
 - not installed
- Step 3** Click the **Console** tab to make sure that the guest operating system starts successfully. Log in if prompted.
- Step 4** Right-click the virtual machine, select **Guest OS**, and then click **Install/Upgrade VMware Tools**. The **Install/Upgrade VMware Tools** window appears with the option - Interactive Tools Upgrade and Automatic Tools Upgrade.
- To install/upgrade the VMware tools manually, select the **Interactive Tools Upgrade** option, and click **OK**. Follow the on-screen instructions to install/upgrade the VMware tools, and restart the virtual machine when prompted.
 - To install/upgrade the VMware tools automatically, select the **Automatic Tools Upgrade** option, and click **OK**. This process takes a few minutes to complete, and restart the virtual machine when prompted.
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Install VMware Tools for VOS

To install or upgrade VMware Tools using VOS, perform the following steps:

Procedure

- Step 1** Ensure that your virtual machine is powered on.
- Step 2** Right-click the VM menu. Select **Guest > Install / Upgrade VMware tools** .
- Step 3** Choose the interactive tools update and press **OK**.
- Step 4** Open the console and log in at the command prompt.
- Step 5** Enter the command **utils vmtools refresh** and confirm.
The server automatically reboots twice.
- Step 6** After reboot, check the **Summary** tab for the VM to verify that the VMware Tools version is current. If it is not current, reboot the VM and check the version again.
The process takes a few minutes. After the process completes, the tools are listed as Running (Current) on the VM's Summary tab in vSphere.
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Install Microsoft SQL Server

To use the **default** (two) vDisk design, install Microsoft SQL Server 2014, and store the SQL Server log and temporary files on the same vDisk as the operating system. If you choose to use more than two virtual disks, then the tempDB cannot be on the same vDisk as the solution database.

For further information about the database placement and performance tuning the SQL installation, see the Microsoft documentation.



Note For information about supported editions, see the Unified CCE Solution Compatibility Matrix at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-device-support-tables-list.html>.

Before you begin

Enable Microsoft .NET Framework 3.5 SP1 before installing SQL Server 2014. In the Windows Server, Server Manager, use the Add Roles and Features Wizard to enable the .NET Framework 3.5 SP1. See the Microsoft documentation at <https://technet.microsoft.com/en-au/library/dn482071.aspx> for detailed instructions.



Note If your computer is not connected to the internet to get the updates, download and install Microsoft .NET Framework 3.5 SP1 manually.

Procedure

- Step 1** Mount the Microsoft SQL Server ISO image to the virtual machine. For more information, see [Mount ISO Files, on page 9](#).
- Step 2** Select **Installation** in the left pane and then click **New SQL Server stand-alone installation or add features to an existing installation**. Click **OK**.
- Step 3** On the **Product Key** page, enter the product key and then click **Next**.
- Step 4** Accept the **License Terms** and then click **Next**.
- Step 5** Optional: On the **Microsoft Update** page, check the **Use Microsoft Update to check for updates** check box, and then click **Next**.
- Note** If you do not check the **Use Microsoft Update to check for updates** option, click **Next** on the **Product Updates** page.
- Step 6** On the **Install Rules** page, click **Next**.
- In this step, the installation program checks to see that your system meets the hardware and software requirements. If there are any issues, warnings or errors appear in the **Status** column. Click the links for more information about the issues.
- Step 7** On the **Setup Role** page, select **SQL Server Feature Installation** and click **Next**.
- Step 8** On the **Feature Selection** page, select only the following, and click **Next**:

If you intend to use Outbound Option High Availability two-way replication, be sure to select the Replication feature on this page. For more information about replication, see the *Outbound Option Guide for Unified Contact Center Enterprise*.

Step 9 On the **Instance Configuration** page, select **Default Instance** and click **Next**.

Step 10 On the **Server Configuration** page, click the **Services Account** tab.

a) Associate the SQL services with the virtual account.

- For the SQL Server Agent service, in the Account Name field, select **NT Service\SQLSERVERAGENT**. If you have enabled Outbound Option High Availability, this account must have the system administrator privilege.
- For the SQL Server Database Engine, in the Account Name field, select **NT Service\MSSQLSERVER**.

Note While you can use the Network or Local Services account instead of the Virtual account, using the Virtual account provides security.

b) For the remaining services, accept the default values.

c) In the **Start Up Type** column, for the **SQL Server Agent service** account, select **Automatic** from the list.

d) Enable **Grant Perform Volume Maintenance Task privilege to SQL Server Database Engine Service**.

Note ICM Installer automatically enables the **Grant Perform Volume Maintenance Task** for the NT service account. If it is not enabled automatically then you must enable **Grant Perform Volume Maintenance Task privilege to SQL Server Database Engine Service** manually on the SQL server.

Step 11 On the **Server Configuration** page, click the **Collation** tab.

a) In the Database Engine section, click **Customize**.

b) Select the **Windows Collation designator and sort order** radio button.

c) Select the appropriate collation. Typically, you choose the SQL Server collation that supports the Windows system locale most commonly used by your organization; for example, "Latin1_General" for English.

Note See the *Unified CCE Solution Compatibility Matrix* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-device-support-tables-list.html> for details about collations used for other languages.

The database entry is related to the collation that you select. For example, if you set the collation for Latin1_General, but you select Chinese language at sign-in. When you enter field values in Chinese, the application displays the `unsupported character` error, because the database does not support the characters.

Important It is critical to select the correct collation setting for the language display on your system. If you do not select the correct collation during installation, you must uninstall and reinstall Microsoft SQL Server.

d) Check the **Binary** check box.

e) Click **OK**, and then click **Next**.

Step 12 On the **Database Engine Configuration** page:

a) On the Server Configuration tab, click the **Mixed Mode** radio button.

- b) Enter the password for the SQL Server system administrator account, and confirm by reentering it.
- c) Click **Add Current User** to add the user who is installing the SQL Server as an administrator.
- d) On the **TempDB** tab, set the **Initial size** and **Autogrowth** for Rogger, Logger, AW-HDS-DDS, AW-HDS, and HDS-DDS. For information about values for respective components .

For more information about the SQL Server TempDB Database and its use, see the Microsoft SQL Server documentation.

- e) Click **Next**.

Step 13 On the **Ready to Install** page, click **Install**.

Step 14 On the **Complete** page, click **Close**.

Step 15 Enable Named Pipes and set the sort order as follows:

- a) Open the SQL Server Configuration Manager.
- b) In the left pane, navigate to **SQL Native Client 11.0 Configuration (32bit) > Client Protocols**.
- c) In the right pane, confirm that **Named Pipes** is **Enabled**.
- d) Right-click **Client Protocols** and select **Properties**.
- e) In the **Enabled Protocols** section of the **Client Protocols Properties** window, use the arrow buttons to arrange the protocols in the following order:
 1. Named Pipes
 2. TCP/IP
- f) Check the **Enable Shared Memory Protocol** and then click **OK**.
- g) In the left pane, navigate to **SQL Server Network Configuration > Protocols for MSSQLSERVER**.
- h) In the right pane, right-click **Named Pipes** and select **Enable**.

Note By default, Microsoft SQL Server dynamically resizes its memory. The SQL Server reserves the memory based on process demand. The SQL Server frees its memory when other processes request it, and it raises alerts about the memory monitoring tool.

Cisco supports the Microsoft validation to dynamically manage the SQL Server memory. If your solution raises too many memory alerts, you can manually limit SQL Server's memory usage. Set the maximum and minimum limit of the SQL memory using the **maximum memory usage** settings in the **SQL Server Properties** menu.

For more information about the SQL Server memory settings and its use, see the Microsoft SQL Server documentation.

Step 16 Set the SQL Server's default language to English as follows:

- a) Launch SQL Server Management Studio.
- b) In the left pane, right-click the server and select **Properties**.
- c) Click **Advanced**.
- d) In the **Miscellaneous** section, set the **Default Language** to **English**.
- e) Click **OK**.

Important Set the SQL Server default language to English because Cisco Unified Contact Center Enterprise requires a US date format (MDY). Many European languages use the European date format (DMY) instead. This mismatch causes queries such as `select * from table where date = '2012-04-08 00:00:00'` to return data for the wrong date. Handle localization in the client application, such as Cisco Unified Intelligence Center.

- Step 17** Restart the SQL Server service as follows:
- Navigate to the **Windows Services** tool.
 - Right-click **SQL Server (MSSQLSERVER)** and click **Stop**.
 - Right-click **SQL Server (MSSQLSERVER)** and click **Start**.
- Step 18** Ensure that the SQL Server Browser is started, as follows:
- Navigate to the **Windows Services** tool.
 - Navigate to the SQL Server Browser.
 - Right-click to open the **Properties** window.
 - Enable the service, change the startup type to **Automatic**, and click **Apply**.
 - To start the service, click **Start**, and then click **OK**.

What to do next



Caution Do not change the SQL port number. Retain the default port numbers as 1433 for TCP and 1434 for UDP connections. In case you change the port numbers, the applications like CCEAdmin will not work.

Set Users as System Administrators

Any users who are involved in installing or upgrading a Unified ICM/CCE solution must be added as part of SQL Server Security login and associated with the System Administrator role. Complete the following steps to set a user as a System Administrator:

Procedure

- Step 1** Open the Microsoft SQL Server Management Studio using the System Administrator login credentials.
- Step 2** In the Object Explorer pane, click the **Security** folder.
The **Security** folder expands.
- Step 3** Right-click the **Logins** folder, and then click **New Login**.
The Login-New view appears.
- Step 4** In the **Login name** field, enter the Domain login name of the user whom you want to associate with the System Administrator role.
Use the following format:
<domain>\<username>
- Step 5** In the Object Explorer pane, click the **Server Roles** folder.
The Server Roles view appears.
- Step 6** Check the **sysadmin** check box.
- Note** This step is mandatory.

System administrator is a predefined fixed server-level role in the Microsoft SQL Server. The system administrator performs operations on a site-level. System administrators manage jobs, role definitions, and shared schedules that are used to run reports.

You must be a system administrator to create, modify, and delete individual records in the Configuration Manager tool.

For details about the **sysadmin** role, see the *Microsoft SQL* documentation.

Step 7 Click **OK**.

The user is now a part of the SQL Security login and is also associated with the System Administrator role.

Increase Database and Log File Size

Use the Microsoft SQL Server Management Studio to increase the database and log sizes.

For more information, see the corresponding Microsoft documentation.

For the Tempdb, follow these guidelines:

- For Data Files:
 - Set the **Space Allocated** to **1400 MB**.
 - Set **Automatically grow files** to **100MB**.
 - Set **Unlimited** file size.
- For Transaction Log Files, follow these guidelines:
 - Set the **Space Allocated** to **400 MB**.
 - Set **Automatically grow files** to **10%**.
 - Set **Unlimited** file size.
 - In the **Options** page, ensure that the following options are set to **False**: **ANSI NULL Enabled**, **Recursive triggers Enabled**, **Auto close**, **Auto shrink** and **Quoted identifiers Enabled**.

Install Antivirus Software

For details about supported antivirus softwares, see *Unified CCE Solution Compatibility Matrix*, see <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-device-support-tables-list.html>

Use your antivirus vendor's product documentation for installation instructions, and adhere to the following:

- Update antivirus software manually. Do not enable automatic updates.
- To allow required access to installation program files or folders, perform file-blocking exclusions in the antivirus product file-and-folder protection rules. For example, to create the exclusions in McAfee VirusScan:
 1. Open the VirusScan console.
 2. Right-click **Access Protection** and select **Properties**.

3. In the Anti-virus Standard Protection category, make sure that the rule **Prevent IRC communication** is unchecked in the **Block** column.

- Be aware that in the firewall component of Symantec Endpoint Protection 12.1, the Network Threat Protection feature must be disabled. The feature is enabled by default. When the feature is enabled, both sides of a redundant router come up in stand-alone mode which blocks communication between each side of the router pair. This blocking affects all deployment types.

If you retain the default (enabled) and start services on side A and B of the router, the following Symantec message appears in the system tray: “The client will block traffic from IP address [side A router address] for the next 600 seconds.” The same message is also written to the security login client management. The Symantec Network Threat Protection traffic log indicates that a default firewall rule called “Block_all” was dynamically enabled. The router logs show that both sides of the router came up in stand-alone mode.

- The firewall component of Trend Micro Deep Security blocks communication between each side of the Router/PG.

If you retain the default (enabled) and start service on side A and B you can see a new deny event logged in **Trend Micro Manager > Events > Firewall Events**.

To resolve the issue, disable the Trend Micro firewall policy or add a new firewall exception for that particular policy.

To resolve the issue, disable the Symantec firewall on all Unified CCE boxes and restart the services.

If you are using a managed client, perform the following steps:

1. Launch Symantec Endpoint Protection Manager.
2. Click **Policies**.
3. Right-click the firewall policy that you want to disable, and then select **Edit**.
4. Uncheck the check mark next to the policy to disable it.
5. Click **OK** to confirm.

If you are using an unmanaged client, perform the following steps:

1. Double-click the Symantec icon in the system tray and select **Change Settings**.
2. Configure settings for **Network Threat Protection** and uncheck the **Enable Firewall** check box at the top of the Firewall tab.

Install .NET Framework 4.5.2

The Unified CCE installation or upgrade runs faster if .NET Framework 4.5.2 or later version is pre-installed. If the appropriate version of the .NET Framework is not installed, the Unified CCE installer installs it.

