



# Cisco Unity Express Virtual Software Support on Cisco 4000 Series Integrated Services Routers KVM Service Containers

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The Cisco Unity Express Virtual software release adds support for installing Cisco Unity Express Virtual software on the Cisco 4000 Series Integrated Services Routers KVM Service Containers.

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## Overview of OVA Installation Steps on KVM Service Container

The following steps provide an overview of Cisco Unity Express Virtual software installation on the Kernel Virtual Machine Service Container.

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- Step 1** Download and copy the Cisco Unity Express Virtual software OVA file from the FTP server to Cisco 4000 Series Integrated Services Routers (Cisco 4000 Series ISR) hard disk or boot flash drive.
  - Step 2** Install, Configure, and Activate virtual service.
  - Step 3** Connect to the installed virtual service.

For more information on how to install and configure, see [Install and Configure the Cisco Unity Express Virtual OVA on KVM Service Containers, on page 2](#).

If you want to re-install the OVA, you must first deactivate the installed virtual service and then uninstall the Cisco Unity Express Virtual. For more information on deactivating and uninstalling Cisco Unity Express Virtual, see [Deactivate and Uninstall Cisco Unity Express Virtual from KVM Service Containers, on page 6](#).

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# Hardware Requirements for Cisco Unity Express Virtual KVMs on Cisco 4000 Series Integrated Services Routers

Cisco Unity Express Virtual Software requires Cisco 4000 Series Integrated Services Routers (Cisco 4000 Series ISR) configured with Kernel Virtual Machine Service Container.

[Table 1: Kernel Virtual Machine Requirements for Cisco 4000 Series ISR Service Container, on page 2](#) provides the Kernel Virtual Machine recommendations on Cisco 4000 Series ISR Service Container.

*Table 1: Kernel Virtual Machine Requirements for Cisco 4000 Series ISR Service Container*

Mailboxes	CPU	RAM	Hard Disk	Flash	External Interface	Recording hours	Maximum Voice Ports
1-200	As per Cisco 4000 Series ISR platform	8 GB	Minimum 50 GB	8 GB	1 Gigabit Interface	120	20



**Note** The Cisco Unity Express Virtual uses hard disk with a maximum ceiling limit of 20 GB only. Hence, when you execute the **show version** CLI command on the Cisco Unity Express Virtual prompt, the hard disk capacity displays as 20 GB, even when your router hard disk capacity may be 50 GB or higher.



**Note** You need a minimum of 8 GB memory to configure the virtual-service commands while installing and configuring the Cisco Unity Express Virtual Software.



**Note** The above-mentioned hardware requirements are applicable exclusively for installing and configuring Cisco Unity Express and its resources. However, you must provision additional memory in the router to configure other features like Cisco Unified CME.

## Install and Configure the Cisco Unity Express Virtual OVA on KVM Service Containers

The Open Virtualization Archive (OVA) file contains a compressed, installable version of the virtual machine. To download the Cisco Unity Express Virtual server (OVA) file from the FTP server and then, install and configure the Cisco Unity Express Virtual virtual service use the following procedure.



**Note** Note that the virtual service upgrade and installation procedures are the same for Cisco Unity Express Virtual. Ensure that you take backup of the system if you want to upgrade or re-install. For more information, see [Manually Backing Up Files](#).

### Before you begin

- Cisco Unity Express Virtual OVA file downloaded to your local drive or to a boot flash drive
- Command Line Interface to interact with the router
- SSH client to configure Cisco Unity Express Virtual

### SUMMARY STEPS

1. **telnet** *ip-address*
2. **enable**
3. **copy tftp** {flash | harddisk}
4. **virtual-service install name** *service-name* **package** *uri/package-location: .ova*
5. **show virtual-service list**
6. **configure terminal**
7. **interface VirtualPortGroup** *number*
8. **ip unnumbered** *type number*
9. **virtual-service** *service-name*
10. **vnic gateway VirtualPortGroup** *instance-number*
11. **guest ip address** *vm ip-address*
12. **end**
13. **configure terminal**
14. **ip route** *vm-ip / subnet mask / VirtualPortGroup Interface*
15. **virtual-service** *service-name*
16. **activate**
17. **virtual-service connect name** *service-name* **console**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>telnet</b> <i>ip-address</i> <b>Example:</b> telnet 10.65.125.154	Log in to the router terminal using your telnet or ssh log in credentials. Enter your password if prompted.
Step 2	<b>enable</b> <b>Example:</b> Router> enable	Enters the privileged EXEC mode.

	Command or Action	Purpose
<b>Step 3</b>	<b>copy tftp {flash   harddisk}</b> <b>Example:</b>	<p>Allows you to access the tftp file server and to copy the OVA package to a desired location on your local hard disk or a boot flash drive.</p> <p>Select the filename and press Enter to confirm the Destination filename.</p>
<b>Step 4</b>	<b>virtual-service install name <i>service-name</i> package <i>uri/package-location: .ova</i></b>	<p>Installs the virtual service.</p> <p><b>Note</b> The command virtual-service name is case-sensitive. For example, if you configure virtual-service vCUE and virtual-service vcue, two different instances of Cisco Unity Express Virtual is created.</p>
<b>Step 5</b>	<b>show virtual-service list</b> <b>Example:</b>	Lists the service package name and the installation status.
<b>Step 6</b>	<b>configure terminal</b> <b>Example:</b> Router# configure terminal	Enters the router configuration mode.
<b>Step 7</b>	<b>interface VirtualPortGroup <i>number</i></b> <b>Example:</b> Router(config)# interface VirtualPortGroup 1	<p>To configure the installed service, you must first configure the VirtualPortGroup interfaces.</p> <p>The VirtualPortGroup forms a bridge and is configured as the default gateway between the installed VM and the host router.</p>
<b>Step 8</b>	<b>ip unnumbered <i>type number</i></b> <b>Example:</b> Router(config-if)# ip unnumbered GigabitEthernet 0/0/0	<p>Enables IP processing on an interface without assigning an explicit IP address to that interface, where:</p> <ul style="list-style-type: none"> <li>• <b>type</b>—Type of interface on which the router has an assigned IP address.</li> <li>• <b>number</b>—Number of the interface and sub-interface on which the router has an assigned IP address.</li> </ul> <p><b>Note</b> The unnumbered interface must be unique. It cannot be another unnumbered interface.</p>
<b>Step 9</b>	<b>virtual-service <i>service-name</i></b> <b>Example:</b> Router(config)# virtual-service cue	<p>Enters the virtual service in configuration mode.</p> <p><b>Note</b> You need a minimum of 8 GB memory to configure the virtual-service commands.</p>
<b>Step 10</b>	<b>vnic gateway VirtualPortGroup <i>instance-number</i></b> <b>Example:</b>	Associates the VirtualPortGroup interface with the virtual service.

	Command or Action	Purpose
	<pre>Router(config-virt-serv)# vnic gateway VirtualPortGroup 1</pre>	<p><b>Note</b> VirtualPortGroup 1 is mapped to FastEthernet0 interface, and VirtualPortGroup 2 is mapped to FastEthernet1 interface of Cisco Unity Express Virtual. Hence, you must associate both the VirtualPortGroup interfaces with the virtual service in correct sequence for Cisco Unity Express Virtual 9.0.2 and later releases. For example,</p> <pre>virtual-service cue vnic gateway VirtualPortGroup 1 vnic gateway VirtualPortGroup 2</pre>
<b>Step 11</b>	<p><b>guest ip address</b> <i>vm ip-address</i></p> <p><b>Example:</b></p> <pre>Router(config-virt-serv-vnic)# guest ip address 10.65.125.155</pre>	Allows you to specify ip address of the virtual machine.
<b>Step 12</b>	<p><b>end</b></p> <p><b>Example:</b></p> <pre>Router(config-virt-serv-vnic)# end</pre>	Exits the virtual service configuration vnic mode.
<b>Step 13</b>	<p><b>configure terminal</b></p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>	Enters the router configuration mode.
<b>Step 14</b>	<p><b>ip route</b> <i>vm-ip / subnet mask / VirtualPortGroup Interface</i></p> <p><b>Example:</b></p> <pre>Router(config)# ip route 10.65.125.155 255.255.255.255 VirtualPortGroup1</pre>	<p>Allows you to add static IP route for the guest VM instance.</p> <p>The VirtualPortGroup forms a bridge and a gateway between the host router and the installed VM using this ip route.</p>
<b>Step 15</b>	<p><b>virtual-service</b> <i>service-name</i></p> <p><b>Example:</b></p> <pre>Router(config)# virtual-service cue</pre>	Enters the virtual-service configuration mode.
<b>Step 16</b>	<p><b>activate</b></p> <p><b>Example:</b></p> <pre>Router(config-virt-serv)# activate  % Activating virtual-service 'cue', this might take a few minutes. Use 'show virtual-service list' for progress.</pre>	<p>Activates the virtual service.</p> <p><b>Note</b> To view the service activation status, enter the <b>show virtual-service list</b> command after exiting from the virtual service configuration.</p>

	Command or Action	Purpose
Step 17	<b>virtual-service connect name <i>service-name</i> console</b> <b>Example:</b> <pre>Router# virtual-service connect name cue console Connected to appliance. Exit using ^c^c^c</pre>	Allows you to connect to the virtual service. The <i>service-name</i> is the same service name given in the previous step.

## Deactivate and Uninstall Cisco Unity Express Virtual from KVM Service Containers

If you want to reinstall or uninstall the Cisco Unity Express Virtual virtual service from the KVM Service Container, you must first deactivate the virtual service. To uninstall Cisco Unity Express virtual service, perform the following procedure:

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **virtual-service *service-name***
4. **no activate**
5. **end**
6. **show virtual-service list**
7. **virtual-service uninstall name *service-name***
8. **exit**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> <pre>Router# enable</pre>	<b>Note</b> We recommend you to unregister from smart licensing server before uninstalling CUE.  Enters the privileged EXEC mode.
Step 2	<b>configure terminal</b> <b>Example:</b> <pre>Router# configure terminal</pre>	Enters the router configuration mode.
Step 3	<b>virtual-service <i>service-name</i></b> <b>Example:</b> <pre>Router(config)# virtual-service cue</pre>	Enters the virtual-service configuration mode.
Step 4	<b>no activate</b> <b>Example:</b> <pre>Router(config-virt-serv)# no activate</pre>	Deactivates the virtual service.

	Command or Action	Purpose
Step 5	<b>end</b> <b>Example:</b> Router(config-virt-serv)# end	Exits the virtual service mode.
Step 6	<b>show virtual-service list</b>	To view the service activation status, enter the <b>show virtual-service list</b> command after exiting from the virtual service configuration.
Step 7	<b>virtual-service uninstall name <i>service-name</i></b> <b>Example:</b> Router# virtual-service uninstall name cue	Enter this command to uninstall the virtual service.
Step 8	<b>exit</b> <b>Example:</b> Router# exit	Exits the current mode.

## Upgrade Cisco Unity Express Virtual 9.0.6 to 10.2

### Before you begin

- To upgrade the Cisco Unity Express Virtual from Release version 9.0.6 to 10.2, you must configure two virtual port group interfaces and associate both the interfaces to the virtual-service. For details on configuration, see [Install and Configure the Cisco Unity Express Virtual OVA on KVM Service Containers, on page 2](#).

### SUMMARY STEPS

- Log in to Cisco Unity Express Virtual.
- Deactivate the virtual service. For details on deactivating the virtual service, see [Deactivate and Uninstall Cisco Unity Express Virtual from KVM Service Containers, on page 6](#).
- Use the **virtual-service upgrade** command in Privileged EXEC mode to upgrade the Cisco Unity Express Virtual from Release version 9.0.6 to 10.2.

### DETAILED STEPS

- 
- Step 1** Log in to Cisco Unity Express Virtual.
- Step 2** Deactivate the virtual service. For details on deactivating the virtual service, see [Deactivate and Uninstall Cisco Unity Express Virtual from KVM Service Containers, on page 6](#).
- Step 3** Use the **virtual-service upgrade** command in Privileged EXEC mode to upgrade the Cisco Unity Express Virtual from Release version 9.0.6 to 10.2.

#### Example:

```
Router# virtual-service upgrade name cue package bootflash:CUE-Virtual-10-1-0-ISR4K.ova
```

## Example for Accessing and Configuring the Cisco Unity Express Virtual in Cisco 4000 Series Integrated Services Routers Service Container

When you access virtual-service for the first time, the system automatically launches the post installation configuration procedure, and asks you if you want to start configuration immediately.

Enter the appropriate response, **y** or **n**. If you enter **y**, the system asks you to confirm, then begin the interactive post installation configuration process.

If you enter **n**, the initial setup wizard is skipped, and you are prompted to enter the administrator user ID and password.

If you do not enter any input for two minutes, the initial setup wizard is skipped, and you are prompted to enter the IP address, netmask, and default gateway address.

The following is a sample configuration if **y** is selected:

```
IMPORTANT::
IMPORTANT:: Welcome to Cisco Systems Service Engine
IMPORTANT:: post installation configuration tool.
IMPORTANT::
IMPORTANT:: This is a one time process which will guide
IMPORTANT:: you through initial setup of your Service Engine.
IMPORTANT:: Once run, this process will have configured
IMPORTANT:: the system for your location.
IMPORTANT::
IMPORTANT:: If you do not wish to continue, the system will be halted
IMPORTANT:: so it can be safely removed from the router.
IMPORTANT::
```

```
Do you wish to start configuration now (y,n)? y
Are you sure (y,n)? y
```

```
*****
* Service Engine IP configuration *
*****
Please enter the IP address of your Module: 192.0.2.10
Please enter the netmask of your Module: 255.255.0.0
Please enter the default gateway for your Module: 192.0.2.20
```

The following IP configuration is set:

```
IP : 192.0.2.10
NETMASK:255.255.0.0
GATEWAY: 255.255.0.0
```

```
Do you wish to use this configuration (y, n) [n]: y
```

```
Enter Hostname
(my-hostname, or enter to use Router): Enter
Using Router as default
```



```

Enter Domain Name
(mydomain.com, or enter to use local domain): Enter
Using localdomain as default

IMPORTANT:: DNS Configuration:
IMPORTANT::
IMPORTANT:: This allows the entry of hostnames, for example foo.cisco.com, instead
IMPORTANT:: of IP addresses like 1.123.45.678 for application configuration. In order
IMPORTANT:: to set up DNS you must know the IP address of at least one of your
IMPORTANT:: DNS Servers.

Would you like to use DNS (y,n)?y

Enter IP Address of the Primary DNS Server
(IP address): 192.0.2.10
Found server 192.0.2.10

Enter IP Address of the Secondary DNS Server (other than Primary)
(IP address, or enter to bypass): Enter

Enter Fully Qualified Domain Name(FQDN: e.g. myhost.mydomain.com)
or IP address of the Primary NTP server
(FQDN or IP address, or enter for 192.0.2.10): demo.cisco.com
Found server cantor.cisco.com

Enter Fully Qualified Domain Name(FQDN: e.g. myhost.mydomain.com)
or IP address of the Secondary NTP Server
(FQDN or IP address, or enter to bypass): Enter

Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
1) Africa 4) Arctic Ocean 7) Australia 10) Pacific Ocean
2) Americas 5) Asia 8) Europe
3) Antarctica 6) Atlantic Ocean 9) Indian Ocean
#? 2
Please select a country.
 1) Anguilla 29) Honduras
 2) Antigua & Barbuda 30) Jamaica
 3) Argentina 31) Martinique
 4) Aruba 32) Mexico
 5) Bahamas 33) Montserrat
 6) Barbados 32) Netherlands Antilles
 7) Belize 34) Nicaragua
 8) Bolivia 35) Panama
 9) Brazil 36) Paraguay
10) Canada 37) Peru
11) Caribbean NL 38) Puerto Rico
12) Cayman Islands 39) St Barthelemy
13) Chile 40) St Kitts & Nevis
14) Colombia 41) St Lucia
15) Costa Rica 42) St Maarten (Dutch)
16) Cuba 43) St Martin (French)
17) Curacao 44) St Pierre & Miquelon
18) Dominica 45) St Vincent
19) Dominican Republic 46) Suriname
20) Ecuador 47) Trinidad & Tobago
21) El Salvador 48) Turks & Caicos Is
22) French Guiana 49) United States
23) Greenland 50) Uruguay
24) Grenada 51) Venezuela
25) Guadeloupe 52) Virgin Islands (UK)
26) Guatemala 53) Virgin Islands (US)
27) Guyana
28) Haiti

```

#? 49

Please select one of the following time zone regions.

- 1) Eastern (most areas)
- 2) Eastern - MI (most areas)
- 3) Eastern - KY (Louisville area)
- 4) Eastern - KY (Wayne)
- 5) Eastern - IN (most areas)
- 6) Eastern - IN (Da, Du, K, Mn)
- 7) Eastern - IN (Pulaski)
- 8) Eastern - IN (Crawford)
- 9) Eastern - IN (Pike)
- 10) Eastern - IN (Switzerland)
- 11) Central (most areas)
- 12) Central - IN (Perry)
- 13) Central - IN (Starke)
- 14) Central - MI (Wisconsin border)
- 15) Central - ND (Oliver)
- 16) Central - ND (Morton rural)
- 17) Mountain (most areas)
- 18) Mountain - ID (south); OR (east)
- 19) Mountain Time - Navajo
- 20) MMST - Arizona (except navajo)
- 21) Pacific
- 22) Alaska (most areas)
- 23) Alaska - Juneau area
- 24) Alaska - Sitka area
- 25) Alaska - Annette Island
- 26) Alaska - Yakutat
- 27) Alaska (west)
- 28) Aleutian Islands
- 29) Hawaii

#? 21

The following information has been given:

United States  
Pacific Time

Therefore TZ='America/Los\_Angeles' will be used.

Is the above information OK?

- 1) Yes
- 2) No

#? 1

Local time is now: Thu May 16 17:12:11 PDT 2019.

Universal Time is now: Fri May 17 00:12:11 UTC 2019.

No NTP servers configured.

Would you like to manually adjust the system time (y,n)? n executing app post\_install

Enter Call Agent

- 1) Cisco Unified Communications Manager (CUCM)
- 2) Cisco Unified Communications Manager Express (CUCME)

-- default #? 2

Setting Call Agent to CUCME

executing app post\_install done postinstall2 - starting all the services

Created symlink from /etc/systemd/system/multi-user.target.wants/tomcat.service to /usr/lib/systemd/system/tomcat.service.

Created symlink from /etc/systemd/system/multi-user.target.wants/superthread.service to /usr/lib/systemd/system/superthread.service.

Created symlink from /etc/systemd/system/multi-user.target.wants/wfengine.service to /usr/lib/systemd/system/wfengine.service.

Created symlink from /etc/systemd/system/multi-user.target.wants/media\_ums.service to /usr/lib/systemd/system/media\_ums.service.

Created symlink from /etc/systemd/system/multi-user.target.wants/smartagent.service to /usr/lib/systemd/system/smartagent.service.

Created symlink from /etc/systemd/system/default.target.wants/monit.service to /usr/lib/systemd/system/monit.service.

Created symlink from /etc/systemd/system/default.target.wants/monitEnableAll.service to

```

/usr/lib/systemd/system/monitEnableAll.service.
Removed symlink /etc/systemd/system/serial-getty@ttyS0.service.
Created symlink from /etc/systemd/system/getty.target.wants/serial-getty@ttyS0.service to
/usr/lib/systemd/system/serial-getty@.service.

```

```
waiting for all services to come online ... 50
```

```

IMPORTANT::
IMPORTANT:: Administrator Account Creation
IMPORTANT::
IMPORTANT:: Create an administrator account.
IMPORTANT:: With this account, you can log in to the
IMPORTANT:: Cisco Unity Express Virtual
IMPORTANT:: GUI and run the initialization wizard.
IMPORTANT::

```

```

Enter administrator user ID:
(user ID): test
Enter password for test:
(password):
Confirm password for test by reentering it:
(password):

```

```

SYSTEM ONLINE
Router# show software versions
Cisco Unity Express Virtual version (10.2.0)
Components:

```

```

- CUE Voicemail Language Support version 10.2.0
- Netconf version 10.2.0

```

```
Router# show software packages
```

```

Installed Packages:
- Installer (Installer application) (10.2)
- Thirdparty (Service Engine Thirdparty Code) (10.2)
- Infrastructure (Service Engine Infrastructure) (10.2)
- Global (Global manifest) (10.2)
- GPL Infrastructure (Service Engine GPL Infrastructure) (10.2)
- Voice Mail (Voicemail application) (10.2)
- Bootloader (Primary) (Service Engine Bootloader) (10.2)
- Core (Service Engine OS Core) (10.2)
- Auto Attendant (Service Engine Telephony Infrastructure) (10.2)

```

```

Installed Plug-ins:
- CUE Voicemail Language Support (Languages global pack) (10.2)
- CUE Voicemail US English (English language pack) (10.2)
Router-Module>

```

The following is a sample configuration if **n** is selected:

```

IMPORTANT::
IMPORTANT:: Welcome to Cisco Systems Service Engine
IMPORTANT:: post installation configuration tool.
IMPORTANT::
IMPORTANT:: This is a one time process which will guide
IMPORTANT:: you through initial setup of your Service Engine.
IMPORTANT:: Once run, this process will have configured
IMPORTANT:: the system for your location.
IMPORTANT::
IMPORTANT:: If you do not wish to continue, initial setup will be skipped

```

```
IMPORTANT:: and you need to manually configure the system
IMPORTANT::
```

```
Do you wish to start configuration now (y,n)? n
Autoconfig: Skipping post install...
executing app post_install
Skipping product specific post install... defaulting values
Setting Call Agent to CUCME
executing app post_install done
Creating Postgres database .... done.
INIT: Switching to runlevel: 4
INIT: Sending processes the TERM signal
STARTED: ntp_startup.sh
STARTED: LDAP_startup.sh
STARTED: SQL_startup.sh
STARTED: dnwldr_startup.sh
STARTED: HTTP_startup.sh
STARTED: probe
STARTED: fndn_udins_wrapper
STARTED: superthread_startup.sh
STARTED: /usr/wfavvid/run-wfengine.sh
STARTED: /usr/bin/launch_ums.sh
STARTED: /bin/products/cue/nesla_licensing.sh
```

```
Waiting 49 ...
```

```
IMPORTANT::
IMPORTANT:: Administrator Account Creation
IMPORTANT::
IMPORTANT:: Create an administrator account. With this account,
IMPORTANT:: you can log in to the Cisco Unity Express GUI and
IMPORTANT:: run the initialization wizard.
IMPORTANT::
```

```
Enter administrator user ID:
  (user ID): admin
Enter password for admin:
  (password):
Confirm password for admin by reentering it:
  (password):
```

```
(INIT)se-0-0-0-0#
(INIT)se-0-0-0-0#
(INIT)se-0-0-0-0#
(INIT)se-0-0-0-0# conf t
Enter configuration commands, one per line. End with CNTL/Z.
(INIT)se-0-0-0-0(config)# inter
(INIT)se-0-0-0-0(config)# interface Fast
(INIT)se-0-0-0-0(config)# interface FastEthernet 0
(INIT)se-0-0-0-0(config-interface)# ip add
(INIT)se-0-0-0-0(config-interface)# ip address 192.0.2.35 255.255.0.0
(INIT)se-0-0-0-0(config-interface)# exit
(INIT)se-0-0-0-0(config)# def
(INIT)se-0-0-0-0(config)# default gat
(INIT)se-0-0-0-0(config)# ip de
(INIT)se-0-0-0-0(config)# ip default-gateway 192.0.2.36
(INIT)se-0-0-0-0(config)# end
SYSTEM ONLINE
se-0-0-0-0# conf t
Enter configuration commands, one per line. End with CNTL/Z.
se-0-0-0-0(config)# hostn
se-0-0-0-0(config)# hostname se-192.0.2.35
```

```
se-192-0-2-35(config)# end  
se-192-0-2-35# wr  
se-192-0-2-35#
```

