Cisco BE6000 and Cisco BE7000 Coresidency Policy Requirements

First Published: 2017-02-08
THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB’s public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED “AS IS” WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: http://www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

© 2017 Cisco Systems, Inc. All rights reserved.
CONTENTS

CHAPTER 1
Introduction to Coresidency 1
  Coresidency Inclusions 1
    BE6000M, BE6000H, BE7000M, and BE7000H 1
    BE6000S 2
  Non-Business Edition Applications 3

CHAPTER 2
Planning for Coresidency 5
  Sizing for Coresidency 5
    RAM 5
    CPU 6
  Disk Storage and Performance 6
    Network 7
  Summary of Coresidency 7
Introduction to Coresidency

Coresidency Inclusions

Coresident means "running different Collaboration applications in dedicated virtual machines on the same virtualized Business Edition physical server or host." In addition to Cisco Unified Communications (UC) applications sold with Cisco Business Edition 6000 (BE6000M, BE6000H, and BE6000S) and Cisco Business Edition 7000 (BE7000M and BE7000H), Cisco also allows the installation of a broader range of Cisco and third-party virtualized applications, subject to the conditions that are detailed in this document.

This policy applies to any Cisco UCS server using embedded virtualization software licenses. This includes Cisco UC Virtualization Hypervisor, Cisco UC Virtualization Hypervisor Plus, or Cisco UC Virtualization Foundation. This policy includes all new and previously supplied BE6000S, BE6000M, BE6000H, BE7000M, and BE7000H servers.

BE6000M, BE6000H, BE7000M, and BE7000H

Business Edition applications include the Collaboration applications that are explicitly integrated in the BE6000 and BE7000 Solutions. These applications are preloaded on the server and are usually integrated with BE6000 starter licensing. Business Edition applications that are preloaded on BE6000M, BE6000H, BE7000M, and BE7000H servers are as follows:

- Cisco Unified Communications Manager
- Cisco Unity Connection
- Cisco Unified Provisioning Manager Business Edition (8.x and 9.x releases only)
- Cisco Prime Collaboration Provisioning (10.0 and later releases only)
- Cisco Unified Communications Manager IM and Presence Service
- Cisco Unified Contact Center Express
- Cisco TelePresence Video Communication Server (CSR 11.5 and earlier releases only)
• Cisco Expressway
• Cisco TelePresence Conductor
• Cisco TelePresence Server Virtual Machine
• Cisco TelePresence Management Suite
• Cisco Paging Server
• Cisco Emergency Responder
• Cisco Unified Attendant Console
• Cisco TelePresence Content Server (10.6 through 11.5 releases only)

On BE6000M, BE6000H, BE7000M, BE7000H servers (or any non-Business Edition Cisco UCS server) with embedded virtualization software licenses:

• Cisco supports all Business Edition applications listed above.
• Non-Business Edition applications are allowed if all rules in this document are followed. Note that Cisco TAC support is only for products purchased from Cisco with a valid, active maintenance contract. Refer to Non-Business Edition Applications, on page 3.

In a BE6000 or BE7000 deployment with one physical server, up to three third-party virtual machines may run on the server. For larger deployments, a maximum of three times the number of physical servers is permitted. The allowed quantity of third-party virtual machines can be deployed across physical servers in any combination. For example, with two physical servers, the six virtual machines can be distributed evenly across both, all, or one physical server.

Not all UC applications support coresidency, or they may have limited support of coresidency. See each product's page on www.cisco.com/go/uc-virtualized for its coresidency policy.

All other general UC virtualization rules apply; for example, VMware feature support and supported ESXi versions. For more information, see www.cisco.com/go/uc-virtualized.

BE6000S

BE6000S supports the following Core Business Edition applications that are preloaded on a BE6000S server:

• Cisco Unified Communications Manager
• Cisco Unity Connection
• Cisco Unified Communications Manager IM and Presence Service
• Cisco Prime Collaboration Provisioning
• Cisco Paging Server

Cisco only supports the Core Business Edition applications listed above for BE6000S servers. No other applications (either Cisco or third party) are supported with BE6000S currently, even if other virtualization software licenses are substituted.
Non-Business Edition Applications

Non-Business Edition applications include the following:

- Other Cisco Collaboration applications listed at www.cisco.com/go/uc-virtualized (such as MediaSense) that are not explicitly listed as part of the BE6000 or BE7000 solutions.

- Virtualized third-party applications that are included in the Solution Partner Program (SPP), formerly known as Cisco Developer Network (CDN) Marketplace Solutions Catalog for Collaboration. A list of all permitted third-party Collaboration applications can be found here. Select Technology = Collaboration.

  **Note** You may only use third-party applications from the Collaboration category with the Business Edition embedded Hypervisor licenses.

- Virtualized third-party applications that are offered through the Cisco SolutionsPlus Program and complementary to Collaboration are described at http://www.cisco.com/web/partners/pr46/solutions_plus/index.html.


For permitted third-party applications, there is a maximum number of virtual machines allowed in a BE6000, BE7000, and Cisco UCS server deployments using Cisco Unified Communications Virtualization Hypervisor or Cisco Unified Communications Virtualization Foundation licensing.

All non-Business Edition applications must be qualified to run virtualized on VMware and must align with the virtualization software requirements for Cisco Collaboration that are outlined at http://docwiki.cisco.com/wiki/Unified_Communications_VMware_Requirements.

**Important**

1. All applications must support ESXi 6.0 as a minimum and align with supported versions of Business Edition and Non-Business Edition Collaboration applications.

2. If you run a coresident deployment that includes third-party non-Business Edition applications, you must agree to temporarily reduce the number of virtual machines that are running on a host if we deem it necessary for debugging purposes.

3. You must permanently reduce the number of virtual machines that are running on a host if we determine that the host is overloaded.

4. If you are unwilling to agree to these requirements, Cisco TAC will not support the coresident deployment.

5. Support for third-party applications is provided by the vendor of the individual application.
Planning for Coresidency

When planning a coresident deployment, consider four areas: CPU, RAM, storage, and network.

For details on virtual to physical sizing rules in a coresidency context, see http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines.

The sizing rules refer to the "Tested Reference Configuration" hardware support approach, described at http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware.

RAM

To ensure that there is no over subscription of memory, set up all coresident virtual machines with a physical memory reservation equivalent to the vRAM setting. For example, if a virtual machine is configured with 4 GB of vRAM, assign a physical memory reservation of 4-GB.

To virtualize a BE6000 or BE7000 server, the Hypervisor requires physical memory to host and run the virtual machines. To ensure that virtual machines have sufficient resources, this memory overhead must be taken into account to avoid resource oversubscription. ESXi 5.0 and 5.1 hosts must reserve 2-GB RAM for this overhead. ESXi 5.5 hosts must reserve at least 4-GB RAM.

Note

The overhead reservation by ESXi hosts is not applicable to BE6000S release 11.0 and older. As BE6000S is a special configuration with deployment model restrictions, in release 11.0 and older, it does not ship with, or require extra memory for ESXi as described for other Business Edition models.

For example, if the BE6000 host running ESXi 5.1 has 32 GB of physical RAM, only 30 GB of RAM is available to virtual machines. For more information, see "Understanding Memory Overhead" at http://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.resmgmt.doc%2F2FGUID-98BD5A8A-260A-494F-BAAE-74781F5C4B87.html.
CPU

A BE6000 deployment must have a one-to-one allocation of vCPUs to physical cores. For example, if you have a host with 16 physical cores, you can deploy any combination of virtual machines with a combined requirement of no more than 16 vCPUs. There is a special case for ESXi 5.0 and 5.1 if one or more of the virtual machines are running Cisco Unity Connection. In this case, you must reserve one vCPU for ESXi, leaving the remaining 15 vCPUs for the installed virtual machines. For servers using ESXi 5.5, you may configure Cisco Unity Connection virtual machines to use High Latency Sensitivity. In this case, and if at least one other virtual machine is configured with Normal Latency Sensitivity, you do not need to reserve a vCPU for ESXi.

Because the number of vCPUs must not exceed the number of physical cores, you do not have to configure CPU reservations or limits. You can never oversubscribe a physical core.

Some processors support Hyperthreading, which allows a Hypervisor to see a physical core as two logical processors. Logical processors must not be used for coresidency planning.

For more details, see the "No Hardware Oversubscription" section at http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines.

Disk Storage and Performance

The server Direct Attached Storage (DAS) must supply the combined disk space and IOPS (Input Output Operations per Second) capacity for the virtual machines that run on the host, while maintaining a minimum performance level.

It is unlikely that the latency requirements of the Business Edition applications will limit third-party applications. However, you must understand the latency and load requirements of the non-Business Edition applications before installation.

The DAS and RAID are configured during manufacturing, and no field changes are allowed to the BE6000 or BE7000 Unified Computing System Tested Reference Configuration (TRC). The BE6000 TRC is designed to meet the storage requirements of all BE6000 collaboration applications. The BE7000 TRC is designed to meet the storage requirements of higher capacity points of these applications as described at www.cisco.com/go/uc-virtualized.

To ensure the reliable operation of Business Edition applications, disk latency must not exceed 20 ms. We recommend that deployments that include non-Business Edition applications be verified such that the kernel command latency does not exceed 3 ms and the physical device command latency does not exceed 20 ms under any conditions. For more details, see "Sizing Shared Storage" at http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware#Storage.

For example, when you test a TRC with DAS, all UC applications that are designed to run on the TRC are loaded with full traffic and software upgrades are run simultaneously on all virtual machines. This generates the highest IOPS load possible on the host, and if this test passes, it is likely the DAS array can handle the I/O load of the specific set of virtual machines.

To summarize the requirements, the disk subsystem must supply the disk space that is required for all the applications and support the aggregate IOPS load that the virtual machines generate, while not impacting the latency requirements of the UC applications. Otherwise, some virtual machines must be removed.
Network

The aggregate networking load of the coresident virtual machines must not exceed the capacity of the physical networking interfaces. Generally, the I/O capacity of the physical network resources on any modern server is more than adequate to meet the needs of the virtual machines that are being hosted. For UC applications, see the "QoS Design Considerations" at http://docwiki.cisco.com/wiki/QoS_Design_Considerations_for_Virtual_UC_with_UCS.

Understand the networking requirements of the virtual machines that are deployed on the host and how to set up the host networking hardware to meet those needs. If we determine that application performance problems are due to networking congestion within the host, then some VMs must be moved off the host.

Summary of Coresidency

Under certain conditions, we allow coresident deployments with a mix of Business Edition and non-Business Edition applications. The requirements that are listed in this document provide the basis for a successful coresident deployment, but due to the unpredictable behavior of non-Business Edition applications and the impracticality of testing every possible combination of applications that could be deployed, we cannot guarantee that following these guidelines alone are sufficient.

A key principal of virtualization is based on sharing hardware resources among multiple virtual machines. When deploying only Business Edition applications on a host server, we can guarantee levels of performance, because the applications are thoroughly tested and their behavior understood. Deploying coresident third-party applications introduces a degree of unpredictability that can be mitigated by following general principals of virtualization and the specific requirements in this document.

Ultimately, we cannot guarantee that by following these guidelines alone, the virtual machines on a host will never be starved of resources. However, if this does occur, the only recourse is to remove some of the virtual machines from the host so that the load is reduced. This can be done by moving some of the virtual machines to another host, or by moving all the virtual machines to a more powerful host.