Solution Serviceability

Monitor System Performance

Monitoring system performance is one way to help maintain the system. Use vCenter to monitor the following critical HCS for CC components to ensure that the virtual machines perform within system tolerances:

- CPU
- Memory
- Disk
- Network

Virtual Machine Performance Monitoring

The virtual machines must operate within the specified limits of the Virtual Machine performance counters listed in the following table.

Table 1: Virtual Machine Performance Counters

Category	Counter	Description	Threshold
CPU	CPU Usage (Average)	The CPU usage average in percentage for the VM and for each of the vCPUs.	65%
	CPU Usage in MHz (Average)	The CPU usage average in MHz.	95 percentile is less than 65% of the total MHz available on the VM. Total MHz = vCPUs x (Clock Speed).
	CPU Ready	The time a virtual machine or other process waits in the queue in a ready-to-run state before it can be scheduled on a CPU.	150 mSec.
Memory	Memory Usage (Average)	Memory Usage = Active/ Granted * 100	80%
	Memory Active (Average)	Memory that the guest OS and its applications actively use or reference. The server starts swap when it exceeds the amount of memory on the host.	95 percentile is less than 80% of the granted memory.
	Memory Balloon (Average)	ESXi uses balloon driver to recover memoryfrom less memory-intensive VMs so it can be used by those with larger active sets of memory.	0
	Memory Swap used (Average)	ESX Server swap usage. Use the disk for RAMswap.	0

Category	Counter	Description	Threshold
Disk	Disk Usage (Average)	Disk Usage =Disk Read rate + Disk Write rate	Ensure that your SAN is configured to handlethis amount of disk I/O.
	Disk Usage Read rate	The rate of reading data from the disk.	Ensure that your SAN is configured to handlethis amount of disk I/O.
	Disk Usage Write rate	The rate of writing data to the disk.	Ensure that your SAN is configured to handlethis amount of disk I/O.
	Disk Commands Issued	The number of disk commands issued on this disk in the period.	Disk IO per second IOPS = Disk Commands Issued / 20 Ensure that your SAN is configured to handle this amount of disk I/O.
	Stop Disk Command	The number of disk commandsstopped on this disk in the period. The disk command stops when the disk array takes too long to respond to the command (Command timeout).	0
Network	Network Usage (Average)	Network Usage = Data receive rate + Data transmit rate	30% of the available network bandwidth.
	Network Data Receive Rate	The average rate at which data is received on this Ethernet port.	30% of the available network bandwidth.
	Network Data Transmit Rate	The average rate at which data is transmitted on this Ethernet port.	30% of the available network bandwidth.

ESXi Performance Monitoring

The virtual machines must operate within the specified limits of the ESXi performance counters listed in the following table. The counters listed apply to all hosts that contain contact center components.

Table 2: ESXi Performance Counters

Category	Counter	Description	Threshold
CPU	CPU Usage (Average)	CPU Usage Average in percentage for ESXi Server overall and for each of the CPU processors.	60%
	CPU Usage in MHz (Average)	CPU Usage Average in MHz for ESXi server overall and for each of the CPU processors.	60% of the available CPU clock cycles.

Category	Counter	Description	Threshold
Memory	Memory Usage (Average)*	Memory Usage = Active / Granted * 100	80%
	Memory Active (Average)	Memory that the guest OS and its applications actively use or reference. The server starts swap when it exceeds the amount of memory on the host.	95 percentile is less than 80% of 2GB.
	Memory Balloon (Average)	ESX use balloon driver to recover memory from less memory-intensive VMs so it can be used by those with larger active sets of memory.	0
	Memory Swap Used	ESX Server swap usage. Use the disk for RAM swap.	0
Disk	Disk Commands Issued	Number of disk commands issued on this disk in the period.	Disk IO per second IOPS = Disk Commands Issued / 20
	Disk Command Aborts	Number of disk commands stopped on this disk in the period. Disk command stops when the disk array is taking too long to respond to the command (Command timeout).	0
	Disk Command Latency	The average amount of time taken for a command from the perspective of a Guest OS. Disk Command Latency = Kernel Command Latency + Physical Device Command Latency.	20 mSec.
	Kernel Disk Command Latency	The average time spent in ESX Server VMKernel per command.	Kernel Command Latency should be very small compared to the Physical Device Command Latency, and it should be close to zero.

Category	Counter	Description	Threshold
Network	Network Usage (Average)	Network Usage = Data receive rate + Data transmit rate	30% of the available network bandwidth.
	Network Data Receive Rate	The average rate at which data is received on this Ethernet port.	30% of the available network bandwidth.
	Network Data Transmit Rate	The average rate at which data is transmitted on this Ethernet port.	30% of the available network bandwidth.
	droppedTx	Number of transmitting packets dropped.	0
	droppedRx	Number of receiving packets dropped.	0

* The CVP Virtual Machine exceeds the 80% memory usage threshold due to the Java Virtual Machine memory usage.

Collect System Diagnostic Information Using Unified System CLI

When a Unified Contact Center operation issue arises, you can use the Unified System CLI tool to collect data for Cisco engineers to review.

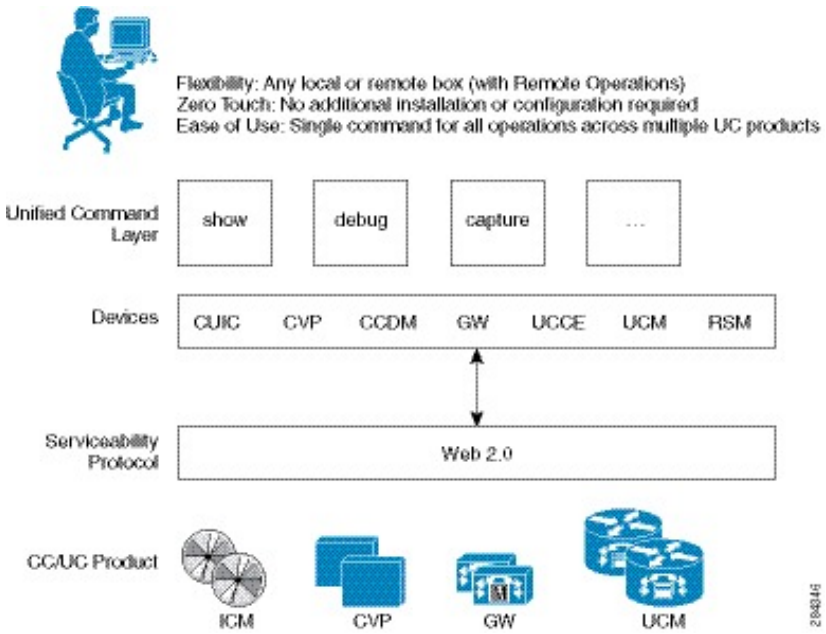
For example, you can use the System CLI if you suspect a call is not handled correctly. In this case you use the **show tech-support** system command to collect data and send the data to Cisco support.

The Unified System CLI includes the following features:

- Installs automatically on all Unified CCE and Unified CVP servers
- Retrieves your entire solution topology automatically from the Unified CCDM/OAMP server.
- Uses a consistent command across multiple products and servers.
- Runs as a Windows scheduled job.

The following figure shows the devices and Cisco Unified products that the Unified System CLI interacts with.

Figure 1: Unified System CLI Commands



To collect system diagnostic information from the components perform the following.

- Run Unified System CLI in the Local Machine, on page 6
- Run Unified System CLI in the Remote Machine, on page 7

Run Unified System CLI in the Local Machine

Procedure

Step 1 Start system CLI from Unified CCE servers.

a) Go to **Start** > **All Programs** > **Cisco Unified CCE Tools** > **Unified System CLI**.
b) Enter the username(domain.com\username) and password.
c) Enter the Instance (optional) and click **Enter**.

Step 2 Start system CLI from Unified CVP servers.

a) Go to **Start** > **All Programs** >**Cisco Unified Customer Voice Portal** > **Unified System CLI**
b) Enter the username(wsmadmin) and password for the wsmadmin user.
c) Click **Enter**.

Step 3 Start system CLI from CCDM servers.

a) Go to **Start** > **All Programs** > **Domain Manager** > **Unified System CLI**.
b) Enter the username(wsmadmin) and password for the wsmadmin user.
c) Enter the Instance (optional) and click **Enter**.

Run Unified System CLI in the Remote Machine

Procedure

Step 1 Install the Unified CVP Operations Console Resource Manager (ORM) component on a separate network management virtual machine to ensure that performance of critical components is not affected during log collections.

Step 2 Add and deploy the network management machine as a web service using Unified CVP OAMP.

Step 3 Make sure that you added all solution components as devices using OAMP as described in these sections:

- Add Unified CCE Devices
- Add Unified Communications Manager Devices
- Add Unified Intelligence Center Devices
- Configure Unified CVP Reporting Server

Step 4 Run the Unified System CLI to collect system diagnostic information from any of the components.

You can use the **show tech-support** system command to collect all information and logs from some or all of the components. You can use other commands to collect a subset of the information.