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Unified CM L2 Upgrade Disk Space Issues

The Cisco Unified Communications Manager (Unified CM) system may experience issues during an L2 upgrade if the necessary disk space is not available. The issue is more common if the implementation comprises different types of endpoints where the TFTP directory can significantly increase due to the firmware. You can also have space issues if you enable detailed logs and traces in a particular Cisco Unified Communications node. In this case, the space issue may not show up immediately, but may be seen over time.

The minimum requirement to start a Unified CM upgrade is the ability to copy the upgrade ISO image to the Unified CM disk. For Unified Communications Release 9.0(1) the size of the Unified CM ISO image is approximately 4.9 GB.

For Unified Communications System Release 9.0(1), the components taking the majority of the disk space are: Unified CM database (8.1 GB), CAR database (9.1 GB), Diagnostic Portal database (5.7 GB) and the TFTP data. The CAR database and the Unified CM database are fixed in size, regardless of how many phones you have. The fixed size for the IDS databases is allocated based on the Unified CM disk size. The CAR database is automatically purged once it reaches its limit of two million records.

In the following example, there are two different clusters with the same virtual disks (vDisks), but with a significant difference on the devices provisioned on the clusters. The Unified CM and the CAR databases are the same size on both clusters.

Table 1: Cisco Unified Communications Manager and CAR Database Size Based on 80 GB vDisks

	CLUSTER 1 ? 2-80 GB vDisk	CLUSTER 2 ? 2-80 GB vDisk
Registered IP Phones	24,151	4
PRI	117	0
MTP, Xcoder, CFB, MOH	30	3
H.323 Gateways	1008	14
Unified CM database size	8.1 GB	8.1 GB
CAR database size	9.1 GB	9.1 GB

Unified_CM_L2_Upgrade_Disk_Space_issues

Based on the information in Table 1, the only significant variable is the TFTP data directory, which is where the phones firmware is located. The TFTP data folder size is determined by the different phones in the Unified CM implementation because a different set of firmware files per model is required. In the example above, the number of devices (IP phones) registered to each cluster requires 5.9 GB of the TFTP data for cluster 1, and 5.5 GB for cluster 2. Because the TFTP data folder contains the phones firmware in the Unified CM deployment, the higher the number of phone models, the greater the space allocated to the TFTP data directory.

The Diagnostic Portal database also affects disk space allocation during a Unified CM upgrade. For Unified CM Release 9.0(1), the size allocated for this is upgrade is about 5.7 GB.

Workaround for Disk Space Issue

Based on the two 80-GB disk drives and the pre-allocated space, the total space required for an upgrade is approximately 29 GB. The most significant variable is the size of the TFTP data on your system. Cisco recommends that for large Unified CM implementations, 80-GB drives can support a commonly deployment environment.

As the Unified CM administrator, follow the steps below to:

- determine the available disk space on your system.
- increase the space to accommodate approximately 29 GB in the /common partition for your L2 upgrade.

Note: You can follow the steps and workarounds described below without the help of Cisco TAC.

Calculate Overall Disk Space

Before starting the Unified CM L2 upgrade, ensure you have the necessary space across all partitions.

From Unified Communications Manager Operating System Administration

Log into the Unified Communications Manager Operating System Administration, and select **Show > System** from the menu options. This displays the following information:

Figure 1: Space Calculation from Unified Communications Operating System Administration.

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```
Host Name : myhost
Date      : Thu Jun 7, 2012 10:31:13
Time Zone : Alaska Daylight Time (America/Juneau)
Locale    : en_US.UTF-8
Product Ver : 9.0.1.10000-19
OS Ver    : 5.0.0.0-2
License MAC : 0879d3147dfa

Uptime:
10:31:14 up 6 days, 23:33, 1 user, load average: 1.59, 0.96, 1.19

CPU Idle: 100.00% System: 00.00% User: 00.00%
IOWAIT: 00.00% IRQ: 00.00% Soft: 00.00% Int/sec: 297.03

Memory Total: 6097272K
  Free:      225616K
  Used:      5871656K
  Cached:    3095544K
  Shared:    0K
  Buffers:   268448K

Disk/active  Total      Free      Used
Disk/inactive 20061452K  8154652K  11702984K (59%)
Disk/inactive 20061388K  7149396K  12708176K (64%)
Disk/logging  81259120K  30469940K  46594880K (61%)
```

From Real Time Monitoring Tool or CLI

You can also get the same information from the Real Time Monitoring Tool (RTMT) or the CLI. From RTMT, select **System > Server > Disk Usage**. Select the server from the Disk Usage at Host drop-down menu and view the Used Space (MB) for the Common partition. From the CLI, run the command: `show status`.

On Specific Drives

You can also determine the space on specific drives on your system by running the `show diskusage common` command. Run this command during off hours or during a maintenance window because it may cause high IOWAIT on your system.

Figure 2: Space Calculation on Specific Drives.

```
This command can take significantly long time,
and can also affect the system-wide IOWAIT.
Continue (y/n) ?y

Filesystem      Size Used Avail Use% Mounted on
/dev/sdb1       78G 45G 30G 61% /common
8.0K /common/ontape_backup_done
8.0K /common/upload
8.0K /common/adminstg/restore
8.0K /common/adminstg/backup
```

CUCM Upgrade 2.jpg

On Individual Subsystems

The `show diskusage ?` command lets you look at individual subsystems, as follows:

Figure 3: Space Calculation on Individual Subsystems.

```
admin:showdiskusage ?
show diskusage activelog
show diskusage common
show diskusage inactivelog
show diskusage install
show diskusage ftp
show diskusage tmp
```

CUCM Upgrade 3.jpg

Free Up Space for Unified CM L2 Upgrade

To free up space from the /common partition on the Cisco Unified Communications Manager node, follow the instructions below:

Retrieve Core Files Using RTMT

- Use RTMT to retrieve any core files that may have been in the system:
 1. Log in to RTMP and double-click **Collect Crash Dump**.
 2. From the pop-up window, select **Cisco Call Manager**. Then click **Next**.
 3. Click **Next** twice.
 4. From the **Collection Time** portion of the pop-up window, select the radio button for **Relative Range**, and specify the time in minutes, hours, days, weeks and months.
 5. On the **Download File Options**, select whether you want to zip the file. The **Download File Location** points to the default location. You can change the location by clicking the **Browse** button. Regardless of whether you zip the file, a pop-up window displays a warning message.
 6. Wait for RTMT to retrieve any core files.

You can use the CLI to determine if the system has any core files on the active or inactive partitions. The system provides a set of commands to display and delete any existing core files, as follows:

1. Log in to the Unified CM CLI as administrator.
2. From the CLI, you can display any existing core files. Select the active/inactive partition where you want to display the core files by using the *utils core active list* or *file list active log core* commands.
3. Delete the specific core file by using the command: *file delete active log core <core file name>*
4. Check for available disk space.

Purge Log Files by Changing the Log Partition Watermarks

- Another way to create additional disk space is by changing the high and low watermarks on the system. This informs Unified CM of the numbers of log files to purge once the watermark is reached. Use RTMT as follows:
 1. Launch RTMT and log in to the desired cluster.
 2. From the left pane, select **Alert Central**.
 3. On the right pane, double-click **LogPartitionHighWaterMarkExceeded**. Change the threshold value to **60**.

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4. On the right pane, double-click **LogPartitionLowWaterMarkExceeded**. Change the threshold value to **50**.
5. This data is polled every five minutes. Allow five to 10 minutes and then check the drive partitions for additional disk space by using one of the methods described above.

If you want to free up more disk space in the common partition, change the LogPartitionHighWaterMarkExceeded and LogPartitionLowWaterMarkExceeded threshold values to lower numbers (for example, 30/20).

Note:

After the L2 upgrade finishes, change the thresholds back to their original values. (The defaults are 95 percent for high watermark and 90 percent for low watermark.)

Note:

Cisco does not recommend removing files without the support of a technical support engineer. Some files may be required and removing them could affect platform and/or application stability. If after performing the procedures and workarounds described above, you are unable to create sufficient disk space, contact Cisco TAC for additional help.