Integrating External Storage Volumes Into Cisco VSM

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The CPS-SS-4RU and CPS-SS-4RU-EX systems provide external storage volumes to the Cisco Video Surveillance servers. This external storage is in addition to the internal storage available in the Cisco VSM server.

To use these external storage systems with a Cisco VSM, you must integrate the external system by running a script on the Cisco VSM server. See the following topics for more information:

Note See the Release Notes for Cisco Video Surveillance Manager for information on supported servers and platforms, such as the Cisco Connected Safety and Security UCS Platform Series servers.

Understanding the Integration Script

The CPS-SS system is configured to provide the full capacity of a given RAID array (with 2TB or 3TB drives) to the Cisco VSM server as a single volume. For example, if you have a RAID-5 set of 10 drives with 3TB, then the entire ~25TB is provided as a single volume; the single volume appears to the Cisco VSM server as a single hard drive (e.g. sdc, sdd, sde).

The `setup_external_storage.sh` script splits the single storage volume into two partitions of equal size, formats the partitions, mounts them, and integrates them into Cisco VSM.

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The `setup_external_storage.sh` script offers the following options:

Table 1-1 Script Options

Script	Purpose
No parameters	Run the script with no parameters (for example, **setup_external_storage.sh**) to discover any connected fibre channel devices and create the new media partitions for use by Cisco VSM. See the "Integration Procedure" section on page 3 for more information.
Restore	Include the restore option (for example, **setup_external_storage.sh restore**) to retrieve and restore any media partitions that were previously configured on the disk so they can be used again. No new partitions are created using this restore option. Use this option only if the following previously occurred: • The script was previously run and the external storage partitions were successfully configured. • The Cisco VSM system software recovery procedure was executed (which removes the partitions from the Cisco VSM configuration). See the "Example Integration Script with Restore Option" section on page 6 for more information.
Help	Include the restore option (for example, **`setup_external_storage -h`**) to view more information about the script options and version. See the "Integration Procedure" section on page 3 for more information.

Requirements

The `setup_external_storage.sh` script requires the following:

Table 1-2 Script Requirements

Requirements	Complete? (✓)
A Cisco Connected Safety and Security UCS Platform Series server running Cisco Video Surveillance release 7.2 or higher.	❑
The Cisco Video Surveillance Storage System must be configured with one or more RAID array to provide storage for video recording by a Cisco Video Surveillance server. • A Cisco VSM server or virtual machine will exclusively access the volumes for each RAID array, (even though a VSM server can access the volumes multiple RAID arrays). The Storage System must be configured with multiple RAID arrays so that it can support multiple Cisco VSM servers. • The RAID array should be configured with a single RAID volume. The `setup_external_storage.sh` script will create partitions on the RAID volume as video repositories for VSM.	❑

Table 1-2 Script Requirements (continued)

Requirements	Complete? (✓)
A Cisco Video Surveillance Storage System must be connected to the Cisco VSM server. **Note** If the Fibre Channel (FC) connection is not present when the script is run, the external storage will not be detected and not integrated into Cisco VSM. The script can be run again after the FC cable connection is established. The FC port LEDs indicate the connection status. **Note** Disconnecting the FC cable during normal operation removes the access by Cisco VSM to the external storage volumes. The `/media` mount points remain intact, however, and are not deleted form the server and Cisco VSM configuration. The script does not include a delete option for the external storage volumes.	❑
The `setup_external_storage.sh` script file. To download the script, go to the Cisco Video Surveillance software download page and select **Standalone Tools**. http://software.cisco.com/download/type.html?mdfid=282976740&i=rm	❑

Integration Procedure

Complete the following procedure to display the commands and output to view the server filesystem and partitions, display the script help, run the integration script and verify the results.

Note This example executes the integration script without options. If partitions were previously created, and the Cisco VSM system software was recovered (which deletes any partitions) use the recovery option as described in the "Example Integration Script with Restore Option" section on page 6.

Tip See the "Understanding the Integration Script" section on page 1 for more information.

Procedure

Step 1 Prepare for the external storage integration:

a. Verify the requirements are complete.

See the "Requirements" section on page 2.

b. Copy the integration script to the Cisco VSM server as the "localadmin" user.

c. Run the following command to copy the files to the /usr/BWhttpd/sbin/ directory.

localadmin@vsm-server ~]$ **sudo cp setup_external_storage.sh /usr/BWhttpd/sbin/**

d. Change the user to `root`.

```
localadmin@vsm-server ~]$ sudo su -
[root@vsm-server ~]#
```

e. Verify that the fiber channel controller module `lpfc` is installed in the system:

[root@vsm-server ~]# **modprobe -l -a lpfc**

For example:

```
[root@vsm-server ~]# modprobe -l  -a lpfc
kernel/drivers/scsi/lpfc/lpfc.ko
```

Note The `lpfc` module is included in Media Servers that were factory installed with Cisco VSM.

f. Connect the fiber channel cable from the external storage array to the Cisco VSM server.

g. Reboot the server so it boots with the storage attached.

Step 2 (Optional) Display the Cisco VSM release details (to verify support per the "Requirements") and the current filesystem disk space usage:

a. Display the Cisco VSM build details to verify the release is supported:

```
[root@vsm-server ~]# cat /etc/Cisco-release
PRODUCT="VSM"
RELEASE="7.2.0"
OSVER=""
GOLD_DISK="VSM 7.2.0-cd15"
BUILDDATE="Sun Aug 25 10:37:12 PDT 2013"
```

b. Display the filesystem disk space usage (in human readable format):

```
[root@vsm-server ~]# df -h
Filesystem            Size  Used Avail Use% Mounted on
/dev/sdb1             7.9G  2.2G  5.4G  29% /
/dev/sdb7              50G  570M   47G   2% /mysql/data
/dev/sdb5             7.9G  2.8G  4.7G  38% /usr/BWhttpd
/dev/sdb3              32G  173M   30G   1% /var
/dev/sda1             146M   17M  122M  12% /boot
tmpfs                 4.0G  4.0K  4.0G   1% /dev/shm
/dev/sdc1             5.4T  8.2M  5.4T   1% /media1
```

Step 3 (Optional) Display the **help** output for command options and other information:

```
[root@vsm-server ~]# /usr/BWhttpd/sbin/setup_external_storage.sh help

setup_external_storage  will configure external storage volumes for
    use by  VSM 7.x.   It is currently optimized for RAID volumes
    configure in 10 drive, RAID 5 arrays (9+1).
    All other configurations are not supported and would cause
    performance impacts.

usage:
   setup_external_storage [noprompt|restore|help|]
     where
        noprompt    will destroy all partitioning and data on external
                    volumes without any prompting

            without argument it will look for existing partition
            and prompt the user if and only if partitioning info
            exists.

            version: 1.0     date: 11/06/2013
```

Step 4 Execute the **setup_external_storage.sh** integration script from the `/usr/BWhttpd/sbin/` directory to discover any connected fibre channel devices and create the new media partitions for use by Cisco VSM.

The command syntax is:

[root@vsm-server ~]# /*usr*/**BWhttpd/sbin/setup_external_storage.sh**

Note After running the script, the newly created `/media` partitions are available for recording in Cisco VSM, without needing to reboot the server.

Note In the following example, the script is run without options, which creates new partitions. See the "Example Integration Script with Restore Option" section on page 6 if previously configured partitions need to be restored.

For example:

```
[root@vsm-server ~]# /usr/BWhttpd/sbin/setup_external_storage.sh
user friendly !!!

get_external_storage_devices
using the next  MEDIA_PART_NUMBER = 1
WARNING:  /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000 has partitioning and
or data
WARNING:  It appears the external storage has existing partitioning and
          possibly video data.  Continuing will erase any data on external
          partitions.
Are you sure you want to proceed? [yes/no]
yes
====== Creating Partition Tables ======================
DEVICE /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000

create_partition_table /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000
parted /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000 mklabel gpt
Warning: The existing disk label on /dev/sdd will be destroyed and all data on this
disk will be
lost. Do you want to continue?
parted: invalid token: gpt
Yes/No? Yes
New disk label type?  [gpt]?
Information: Don't forget to update /etc/fstab, if necessary.

======= Creating Partitions ==========================
create_partitions_on_device /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000
stripe size = 18432
START_S=34  SIZE_S=10
number of partitions: 2
stripe size = 18432
START_S=36864  SIZE_S=13502366MB
parted /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000 mkpart primary xfs
36864s 27652884479s
Information: Don't forget to update /etc/fstab, if necessary.

stripe size = 18432
START_S=27652884480  SIZE_S=13502366MB
parted /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000 mkpart primary xfs
27652884480s 100%
Information: Don't forget to update /etc/fstab, if necessary.

======= Formating Partitions and ====================
======= Creating fstab entries, mount pts =======

format_partitions_on_device /dev/disk/by-id/scsi-36000402006d812907fbf9a1d00000000
format partition: /dev/sdd1
log stripe unit specified, using v2 logs
format partition: /dev/sdd2
log stripe unit specified, using v2 logs
```

```
update_fstab_device_mount_log UUID=d7844df6-eda7-4acc-b317-36c0412b90fe /media2
update_device_name /dev/sdd 1 /media2
parted /dev/sdd name 1 /media2
Information: Don't forget to update /etc/fstab, if necessary.

update_fstab_device_mount_log UUID=6e68759b-8b6f-4036-a859-36571460b753 /media3
update_device_name /dev/sdd 2 /media3
parted /dev/sdd name 2 /media3
Information: Don't forget to update /etc/fstab, if necessary.

Configuring VSMS
cisco           0:off   1:off   2:on    3:on    4:on    5:on    6:off
cisco_kernelTweaks      0:off   1:off   2:on    3:on    4:on    5:on    6:off
```

Step 5 Verify that the filesystem disk space usage and external storage partitions are correct.

a. Display the filesystem disk space usage (the **-h** option displays the results in human readable format):

```
[root@vsm-server ~]# df -h
Filesystem            Size  Used Avail Use% Mounted on
/dev/sdb1             7.9G  2.2G  5.4G  29% /
/dev/sdb7              50G  570M   47G   2% /mysql/data
/dev/sdb5             7.9G  2.8G  4.7G  38% /usr/BWhttpd
/dev/sdb3              32G  171M   30G   1% /var
/dev/sda1             146M   17M  122M  12% /boot
tmpfs                 4.0G  4.0K  4.0G   1% /dev/shm
/dev/sdc1             5.4T  8.2M  5.4T   1% /media1
/dev/sdd1              13T  8.2M   13T   1% /media2
/dev/sdd2              12T  8.2M   12T   1% /media3
```

b. Display the available disks and disk partitions. The file system unique ID and its mount point are displayed from the list of configured partitions:

```
[root@vsm-server ~]# diff /etc/fstab /etc/fstab.orig
12,13d11
< UUID=d7844df6-eda7-4acc-b317-36c0412b90fe /media2         xfs
rw,noatime,nodiratime,logbufs=2  1 2
< UUID=6e68759b-8b6f-4036-a859-36571460b753 /media3         xfs
rw,noatime,nodiratime,logbufs=2  1 2
```

Example Integration Script with Restore Option

The **restore** option retrieves and restores any media partitions that were previously configured on the disk so they can be used again.

This option is used after the Cisco VSM system software is recovered, since the recovery process deletes any Cisco VSM storage partitions from the Cisco VSM configuration.

Tip See the "Understanding the Integration Script" section on page 1 for more information.

Procedure

Step 1 Restore the Cisco VSM system software.

See the Cisco Video Surveillance Manager Recovery Guide (UCS Platform) for more information.

Step 2 Complete the procedure to "Integration Procedure" section on page 3, except use the **restore** option to the integration script.

Tip See the "Understanding the Integration Script" section on page 1 for more information.

For example:

```
[root@vsm-server /]# /root/BWhttpd/sbin/setup_external_storage restore
restore

get_external_storage_devices
======= Creating fstab entries, mount pts =======
update_fstab_device_mount_log UUID=d7844df6-eda7-4acc-b317-36c0412b90fe /media2
update_device_name /dev/sdd 1 /media2
parted /dev/sdd name 1 /media2
Information: Don't forget to update /etc/fstab, if necessary.

update_fstab_device_mount_log UUID=6e68759b-8b6f-4036-a859-36571460b753 /media3
update_device_name /dev/sdd 2 /media3
parted /dev/sdd name 2 /media3
Information: Don't forget to update /etc/fstab, if necessary.

Configuring VSMS
cisco           0:off   1:off   2:on    3:on    4:on    5:on    6:off
cisco_kernelTweaks      0:off   1:off   2:on    3:on    4:on    5:on    6:off
```

Step 3 Verify the results by listing the contents of each partition.

The following examples uses the **-al** option to list all results in long format.:

```
[root@vsm-server /]# ls -al /media2
total 8
drwxr-xr-x  6 root   root    103 Nov 26 17:29 .
drwxr-xr-x 27 nobody nobody 4096 Nov 26 18:00 ..
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10000
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10001
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10004
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10008
-rw-rw-rw-  1 root   root      0 Nov 26 17:14 getstoragestatus
-rw-rw-rw-  1 root   root      0 Nov 26 12:25 systemstoragestatus

[root@vsm-server /]# ls -al /media3
total 8
drwxr-xr-x  6 root   root    103 Nov 26 17:29 .
drwxr-xr-x 27 nobody nobody 4096 Nov 26 18:00 ..
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10002
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10003
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10005
drwxrwxr-x  3 root   root     21 Nov 26 17:29 10009
-rw-rw-rw-  1 root   root      0 Nov 26 17:14 getstoragestatus
-rw-rw-rw-  1 root   root      0 Nov 26 12:25 systemstoragestatus
```

Related Documentation

Use one of the following methods to access the Cisco Video Surveillance (Cisco VSM) documentation:

- Refer to the following documents for instructions to install and administer the Cisco Video Surveillance Storage System (CPS-SS-4RU and CPS-SS-4RU-EX).
  - Cisco Video Surveillance Storage System (main documentation page)
  - Data Sheet
  - Installation Guide
  - Administration Guide
- Go to the Cisco Video Surveillance documentation web site.
- See the Cisco Video Surveillance 7 Documentation Roadmap for descriptions and links to Cisco Video Surveillance documentation, server and storage platform documentation, and other related documentation.

Cisco Video Surveillance Storage System Administration Guide