Backing Up and Restoring Cisco StadiumVision Director Servers

Release 2.3

April 2011

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Cisco StadiumVision Backing and Up and Restoring SV Director

Table of Contents

Document History

Table 1. Revision History

Date	Comments
May 2, 2011	First release for Cisco StadiumVision Director Release 2.3

Backing Up the Primary Server

There are several components to SV Director that need to be backed up. The backup process backs up the:

- SV Director database
- System configuration files
- Content repository
- Ad Insertion Manager database

Each backup operation results in a tar file that contains separate compressed files for each of the above. When complete, the backup file will be located in /var/sv/BACKUP on the primary and /var/sv/RESTORE on the secondary server if there is a secondary server and the steps for Configuring Automatic Copying of Backup Files to the Secondary Server were completed. The name will be in the following format:

```
sv-VER-YYYYMMDDHHMMSSTZOFFSET.tar
```

where:

- Ver is the StadiumVision version the backup was created from.
- YYYYMMDDHHMISS is the time of the backup in year, month, day, hour, minute, second, of backup.
- TZOFFSET is the time zone offset of the server in relation to GMT. An example would be a file called “sv-2.2.55-20110202121212-0800.tar”.

To list the contents of a backup file, replace the “sv-2.2.55-20110202121212-0800.tar” with the backup file you would like to list and run the following:

```
tar tvf sv-2.2.55-20110202121212-0800.tar
```

StadiumVision Director does not automatically delete backups from the /var/sv/BACKUP or /var/sv/RESTORE directory. Disk space should be monitored accordingly and un-needed backup files should be erased accordingly. As an option, you can add a daily cron job to remove old files from the /var/sv/BACKUP or /var/sv/RESTORE directories. For example, to remove all files from the backup directory that are more than 30 days old run a command like:

```
/usr/bin/find /var/sv/BACKUP -mtime +30 -exec rm  {} \;
```

Be sure to note that when running or scheduling a backup, it cannot be run while an event script is running. When the backup starts, it first checks to see if an event script is running. If a running script is detected it aborts the backup. This situation can be identified by looking for the following message in the “sv_dev_debug.log”:

```
"Backup is aborting, as a script is currently running"
```

Performing an Immediate Backup

To initiate an immediate backup of the system:

1. Open SV Director by entering the following at your browser

   http://*SV_Director_IP_addr*:8080/

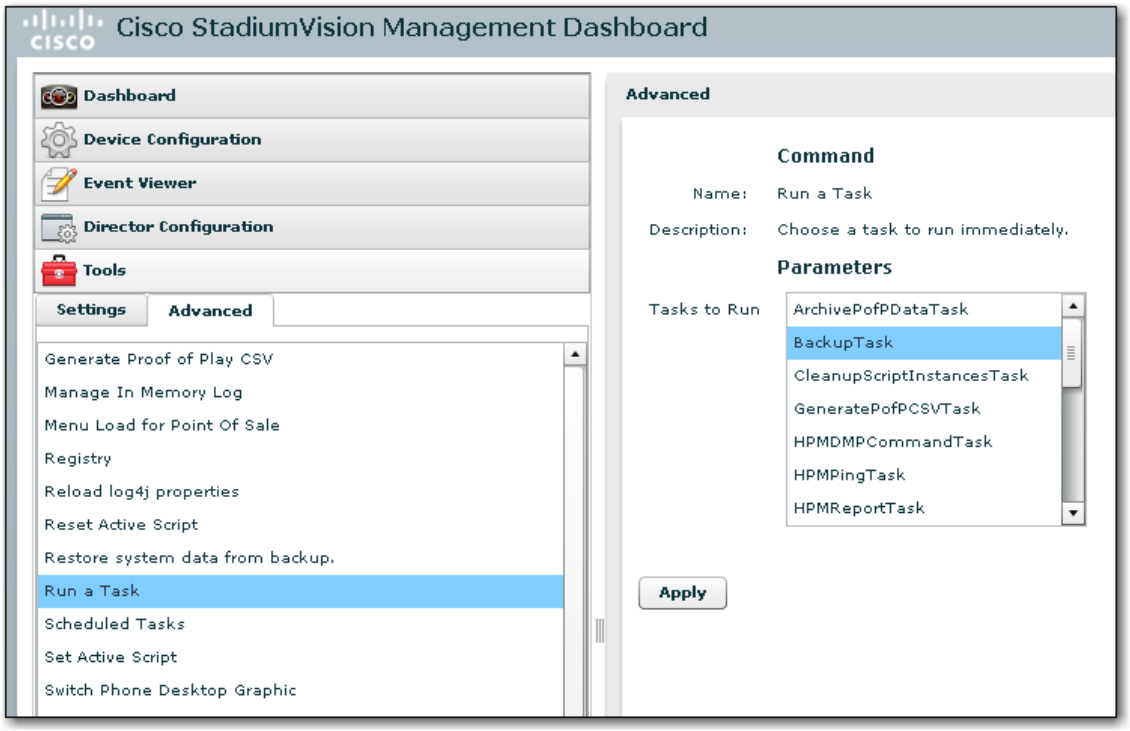
   where *SV Director IP addr* is the IP address of the SV Director server.

   The StadiumVision Director login page displays.

2. Login with administrator privileges. The StadiumVision Director Main page displays:

3. Click **Management Dashboard**.
4. Select **Tools > Advanced**.
5. Select **Run a Task > BackupTask**. Refer to Figure 1.
6. Click **Apply**.

Figure 1. Running the Backup Task



The backup will begin immediately. When complete, the backup tar file will be created in /var/sv/BACKUP on the primary server or /var/sv/RESTORE on the secondary server if there is a secondary server and the steps for Configuring Automatic Copying of Backup Files to the Secondary Server.

The reply “success” means the backup task has started. It does not mean the backup process is completed.

7. Verify the backup process is complete before moving to the next step:
   a. Check the output messages from the backup:

      /opt/sv/servers/control/logs/sv_dev_debug.log

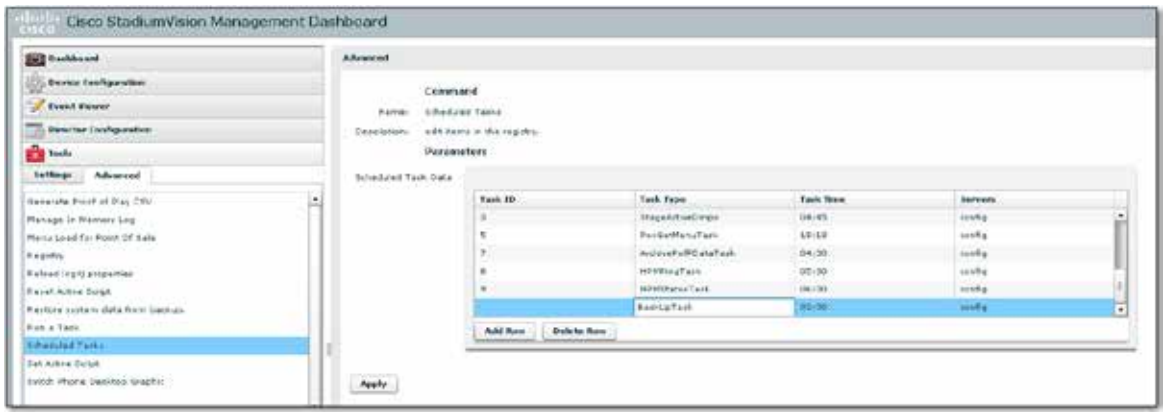
   b. Check the /var/sv/BACKUP directory for two recent files, one of which ends in .chksum, the other in .tar. The .chksum file contains an md5 checksum for the .tar file.

Scheduling a Backup

To schedule a backup to run at regular intervals:

1. Open the **Management Dashboard**.
2. Select **Tools > Advanced**.
3. Select **Scheduled Tasks**.
4. Click **Add Row** and scroll to the new blank line. Refer to Figure 2.
5. Click in the Task Type column and type **BackUpTask**.
6. Click in the Task Time column and specify the time at which you would like the backup to run.
7. Click **Apply**.

Figure 2. Adding the BackUpTask



Managing the Backup Directory

StadiumVision Director does not currently attempt to manage disk space on the backup directory. You should ensure that the disk does not fill up. All files output from the backup on the primary server are placed into /var/sv/BACKUP.

To manage disk space in the backup directory, add a daily cron job in the Unix cron scheduler to remove old files from that directory. For example to remove all files from the backup directory more than 30 days old run the following command:

```
/usr/bin/find /var/sv/BACKUP -mtime +30 -exec rm {} \;
```

Manually Copying Backup Files from the Primary to the Secondary

1. On the primary server cd to the backup directory using “cd /var/sv/BACKUP” and perform a “ls -lt" to locate the backup file you want to copy

```
[username@svd1 ~]$ cd /var/sv/BACKUP


[username@svd1 BACKUP]$ ls –lt
total 9395340
-rw-r--r-- 1           root root       85 Nov 11 05:36 sv-2.2.0.55-20101111053000+0000.chksum
-rw-r--r-- 1 root root 508692480 Nov 11 05:36 sv-2.2.0.55-20101111053000+0000.tar
```

2. Use “scp” to copy the “.tar” and “.chksum” file of the backup you want to copy from the primary server to the secondary server:

```
[username@svd1 BACKUP]$ scp sv-2.2.0.55-20101030053134+0100.tar
username@172.16.52.10:/var/sv/RESTORE
sv-2.2.0.55-20101030053134+0100.tar                                  100%  452MB  11.3MB/s   00:40

[username@svd1 BACKUP]$ scp sv-2.2.0.55-20101030053134+0100.chksum
username@172.16.52.10:/var/sv/RESTORE
sv-2.2.0.55-20101030053134+0100.chksum                               100%   85     0.1KB/s   00:00
```

In the above example replace ‘username’ with the username you will use for the copy, sv-2.2.0.55-20101030053134+0100.tar and sv-2.2.0.55-20101030053134+0100.chksum with the values pulled from step 1 and 172.16.52.10 with the IP address of the secondary server.

3. SSH into the secondary server and verify if the data is correctly copied with the md5sum command on the .tar file copied and compare the results with the .chksum file copied over:

```
[username@svd2 ~]$ cat /var/sv/RESTORE/sv-2.2.0.55-20101030053134+0100.chksum

77eab49b132ffd2a08644df3125768af  /var/sv/BACKUP/sv-2.2.0.55-20101030053134+0100.tar

[username@svd2 ~]$md5sum /var/sv/RESTORE/sv-2.2.0.55-20101030053134+0100.tar

77eab49b132ffd2a08644df3125768af  /var/sv/RESTORE/sv-2.2.0.55-20101030053134+0100.tar
```

Configuring Automatic Copying of Backup Files to the Secondary Server

The SV Director backup program has the ability to copy the backup to a secondary server at the completion of the backup process.

The automatic backup copy process to the secondary server is not supported in release 2.3 and therefore needs to be done manually as described here.

Creating a Backup User

In this step we're assuming the username that will be created is 'backUpUser' ; however any non-existing username will work. Be sure to a unique username and not an existing account or anyone's username for the backup user. To configure the backup user do the following:

1. Log into the Secondary server via SSH.
2. Run the command 'sudo adduser backupUser'.
3. Select a **secure password** (12 characters with at least 1 of special character, upper-case, lower-case and number).
4. Run the command 'sudo passwd backupUser' and specify the **secure password** from step 3.

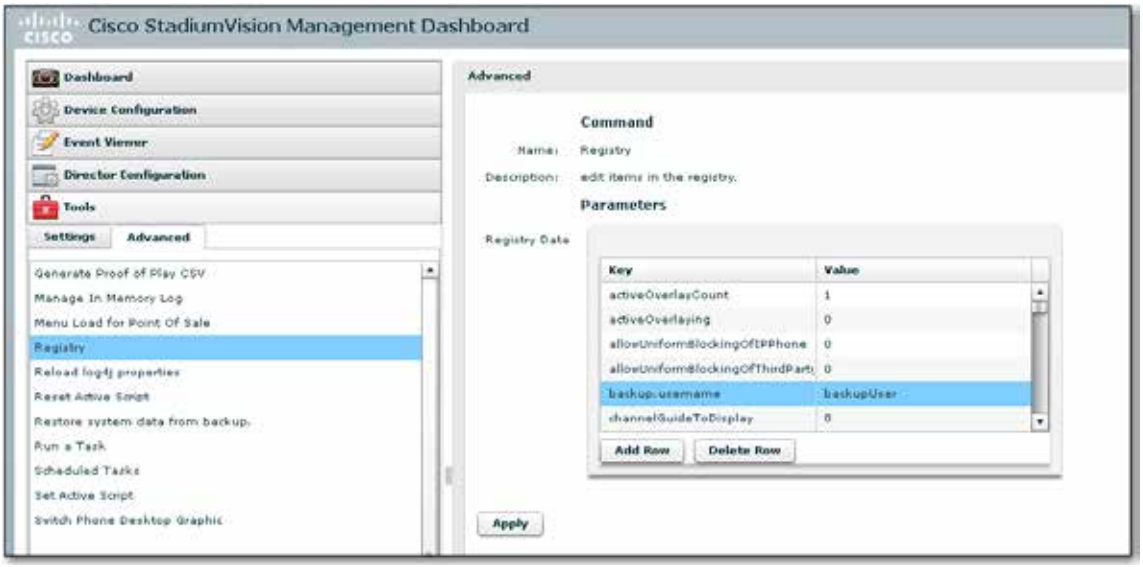
Defining 'backup.username' and 'backup.secondaryIp'

1. Open the Management Dashboard on the primary server
2. Select **Tools > Advanced > Registry**.
3. In the Registry Data window, select **backup.username**

If 'backup.username' does not exist click **Add Row** and specify 'backup.username' as the registry key.

4. Click in the Value field and type the backup user created on the Secondary server (See section Creating Backup User if this user has not been created).
5. Click **Apply**.

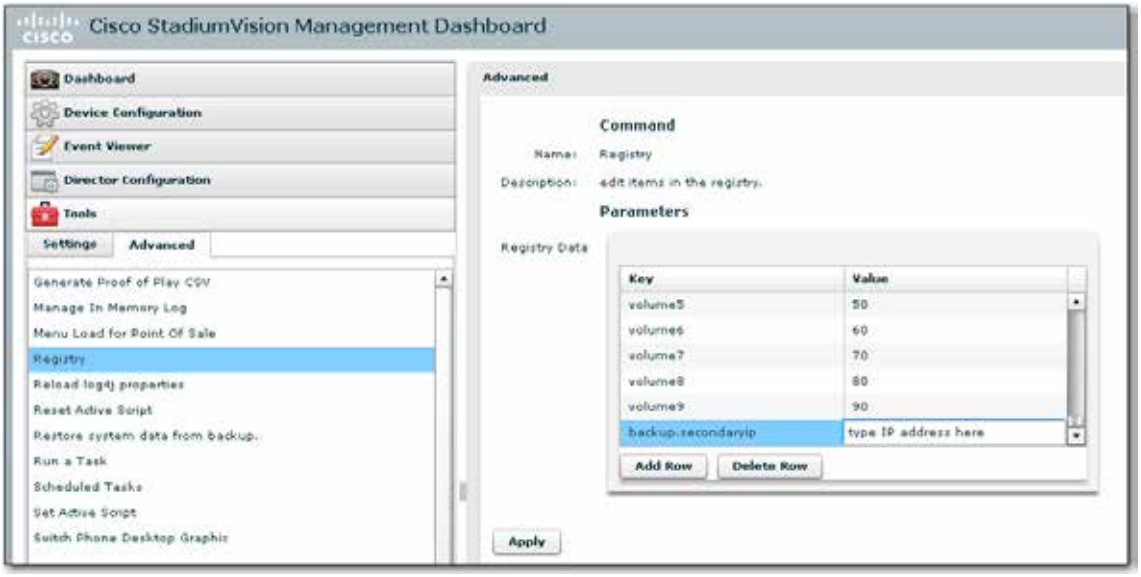
Figure 3. Creating a Backup Username



6. Click **Add Row**
7. Specify **backup.secondaryIp** for the Key
8. In the Registry Data window, select **backup.secondaryIp** .
9. Click in the Value field and type the IP address of the Secondary server.
10. Click **Apply.**

Refer to Figure 4.

Figure 4. Assigning a Backup Secondary Server IP Address



Setting Up Public and Private Keys for the Backup and Restore Task

Follow these steps to set up the ssh keys to allow the primary server to copy files into the secondary server.

1. On the primary server, run **sudo ssh-keygen** and when prompted to 'Enter passphrase' and 'Enter same passphrase again' press Enter.

If prompted for a password with the prompt 'Password:', it is relational to the sudo action so specify your user's password

```
[jdoe@ primary-sv ~] $ sudo ssh-keygen
Password:
Generating public/private rsa1 key pair. Enter file in which to save the key (/root/.ssh/identity): /root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase): Enter same passphrase again: Your identification has been saved in
/root/.ssh/id_rsa. Your public key has been saved in /root/.ssh/id_rsa.pub. The key fingerprint is:
22:bc:0b:fe:f5:06:1d:c0:05:ea:59:09:e3:07:8a:8c
```

2. Enter the following commands, replacing 10.10.10.10 with the IP address of the secondary SV server, and replacing 'backupUser' with the backup user created in the Creating Backup User step.

The password prompt in this section is relational to what was set for the user in the Creating Backup User section. Also, you may be prompted to save the RSA key fingerprint of the server. It is safe to say yes if this occurs.

```
[jdoe@ primary-sv ~] $ sudo  ssh-copy-id -i /root/.ssh/id_rsa backupUser@10.10.10.10
0
manufac@10.10.10.10's password:
```

3. Now try logging into the machine, with "ssh ' backupUser@10.10.10.10', and check in:

```
.ssh/authorized_keys
```

to make sure you haven't added extra keys that you weren't expecting.

4. To verify that this is now working correctly, try to have root log in to the secondary server by entering the following commands:

```
[jdoe@ primary-sv ~] $ sudo scp /etc/hosts backupUser@10.10.10.21:/tmp
hosts 100%   43     0.0KB/s   00:00
```

If the transfer completes with no errors, the setup successfully completed.

Setting Up the Restore Directory

1. SSH into the secondary server
2. If the directory '/var/sv/RESTORE' doesn't exist create it with the following command:

   [jdoe@ primary-sv ~] $ sudo mkdir /var/sv/RESTORE

If prompted for a password use your users password

3. Issue the following command to adjust the owner of the directory /var/sv/RESTORE to the username created in the Creating Backup User step. In the following example, 'backupUser' is used as the user name.

   [jdoe@ primary-sv ~] $ sudo chown backupUser /var/sv/RESTORE

If prompted for a password use your users password

Verifying Automatic Copying of Backup Files

After completing all steps in the Configuring Automatic Copying of Backup Files to the Secondary Server section, verify that it is functioning correctly with the following steps.

1. SSH into the secondary server and list all current restore items available using the ls -lt /var/sv/RESTORE command.
2. Perform the steps in the section Performing an Immediate Backup.
3. SSH into the primary server and "tail" the file /opt/sv/servers/config/logs/sv_dev_debug.log until you see 'completed backup task'.

   [jkobinsk@sande-iapps-b29-5 ~]$ tail /opt/sv/servers/config/logs/sv_dev_debug.log
   2011-04-28 15:41:12,332 [DefaultQuartzScheduler_Worker-7] DEBUG com.cisco.sv.backup.BackupManager - BackupManager Completed md5sum process.
   2011-04-28 15:41:12,336 [DefaultQuartzScheduler_Worker-7] DEBUG com.cisco.sv.backup.BackupManager - BackupManager getMd5Sum computed checksum of 19718340e1b630544f64def42e58311c /var/sv/BACKUP/sv-2.3.0.70-20110428154000-0700.tar

   2011-04-28 15:41:12,336 [DefaultQuartzScheduler_Worker-7] DEBUG com.cisco.sv.backup.BackupManager - BackupManager writeChksumFile: writing to file /var/sv/BACKUP/sv-2.3.0.70-20110428154000-0700.chksum message 19718340e1b630544f64def42e5
   8311c /var/sv/BACKUP/sv-2.3.0.70-20110428154000-0700.tar

2011-04-28 15:41:12,338 [DefaultQuartzScheduler_Worker-7] INFO com.cisco.sv.backup.BackupManager - BackupManager backup not copying to secondary server, as none is configured in registry backup.secondaryIp
2011-04-28 15:41:12,338 [DefaultQuartzScheduler_Worker-7] INFO com.cisco.sv.backup.BackupManager - BackupManager Backup completed.
2011-04-28 15:41:12,338 [DefaultQuartzScheduler_Worker-7] INFO com.cisco.sv.schedule.BackupTask - completed backup task.

4. SSH back into the secondary server and perform another ls -lt /var/sv/RESTORE.

```
[jkobinsk@sande-iapps-b29-5 ~]$ ls –lt /var/sv/RESTORE
total 11009588
-rw-r--r-- 1 root root       85 Apr 28 15:41 sv-2.3.0.70-20110428154000-0700.chksum
-rw-r--r-- 1 root root 1159065600 Apr 28 15:41 sv-2.3.0.70-20110428154000-0700.tar
-rw-r--r-- 1 root root       85 Apr 27 15:41 sv-2.3.0.70-20110427154000-0700.chksum
-rw-r--r-- 1 root root 1158625280 Apr 27 15:41 sv-2.3.0.70-20110427154000-0700.tar
-rw-r--r-- 1 root root       85 Apr 26 15:41 sv-2.3.0.67-20110426154000-0700.chksum
-rw-r--r-- 1 root root 1158625280 Apr 26 15:41 sv-2.3.0.67-20110426154000-0700.tar
-rw-r--r-- 1 root root       85 Apr 25 15:41 sv-2.3.0.67-20110425154000-0700.chksum
-rw-r--r-- 1 root root 1157355520 Apr 25 15:41 sv-2.3.0.67-20110425154000-0700.tar
-rw-r--r-- 1 root root       85 Apr 24 15:41 sv-2.3.0.67-20110424154000-0700.chksum
-rw-r--r-- 1 root root 1107640320 Apr 24 15:41 sv-2.3.0.67-20110424154000-0700.tar
-rw-r--r-- 1 root root       85 Apr 23 15:41 sv-2.3.0.67-20110423154000-0700.chksum
-rw-r--r-- 1 root root 1107650560 Apr 23 15:41 sv-2.3.0.67-20110423154000-0700.tar
-rw-r--r-- 1 root root       85 Apr 22 15:41 sv-2.3.0.67-20110422154000-0700.chksum
-rw-r--r-- 1 root root 1107650560 Apr 22 15:41 sv-2.3.0.67-20110422154000-0700.tar
-rw-r--r-- 1 root root       85 Apr 21 15:41 sv-2.3.0.67-20110421154001-0700.chksum
-rw-r--r-- 1 root root 1107650560 Apr 21 15:41 sv-2.3.0.67-20110421154001-0700.tar
-rw-r--r-- 1 root root       85 Apr 19 15:41 sv-2.3.0.65-20110419154002-0700.chksum
-rw-r--r-- 1 root root 1099212800 Apr 19 15:41 sv-2.3.0.65-20110419154002-0700.tar
-rw-r--r-- 1 root root       85 Apr 18 15:41 sv-2.3.0.65-20110418154000-0700.chksum
-rw-r--r-- 1 root root 1099212800 Apr 18 15:41 sv-2.3.0.65-20110418154000-0700.tar
```

5. If there are new files, perform a md5sum on the new .tar file and compare it to the .chksum file. If the values match, everything is working as intended.

```
[jkobinsk@sande-iapps-b29-5 ~]$ cat /var/sv/RESTORE/sv-2.3.0.70-20110428154000-0700.chksum
19718340e1b630544f64def42e58311c  /var/sv/BACKUP/sv-2.3.0.70-20110428154000-0700.tar

[jkobinsk@sande-iapps-b29-5 ~]$ md5sum /var/sv/RESTORE/sv-2.3.0.70-20110428154000-0700.tar
19718340e1b630544f64def42e58311c  /var/sv/RESTORE/sv-2.3.0.70-20110428154000-0700.tar
```

Restoring the Primary Server

After a backup is done on the primary server, you can do a restore on the primary system right away. Assuming the secondary server is configured, you can do an automated or manual restore on the secondary server as well. This restore will be able to use the files that the backup task will place on the secondary server at completion of the backup step. The backup files will be on both systems.

In the event a disaster occurs, you can manually copy a backup. For example if the primary server loses a backup set that exists on the secondary server, you can copy the backup from the secondary to the primary, and then do a restore. One item to note is that the backup is really comprised of two files with the same name but different suffices. The file sv-2.2*.**tar** is a tar file with all the data of the backup. The file sv-2.2*.**chksum** is a checksum file containing the md5 signature of the tar file. You must copy both files. The restore script will verify the md5 signature.

The backups on the primary server are stored in a directory /var/sv/BACKUP. On the secondary server, the backups are copied to /var/sv/RESTORE. When the manual restore screen is displayed, it lists backups in either directory, concatenated together. This allows you to run manual restore on either the primary or the secondary. An automated restore only looks for files in the RESTORE directory.

Two components warrant special explanation. The backup system assumes that StadiumVision will run with an automated High Available configuration. In this configuration, some of the Unix level files are different between the primary and secondary servers. Therefore, the Unix files are not automatically restored in the RestoreTask on the Dashboard.

Likewise, the schedule of tasks to run in the primary database and the secondary database will be different, due to the existence of the backup and restore tasks. Therefore, the schedule itself is not automatically restored. To restore the schedule from a backup file, specify that component as described in the Running a Manual Restore procedure.

Running a ‘Restore system data from backup’

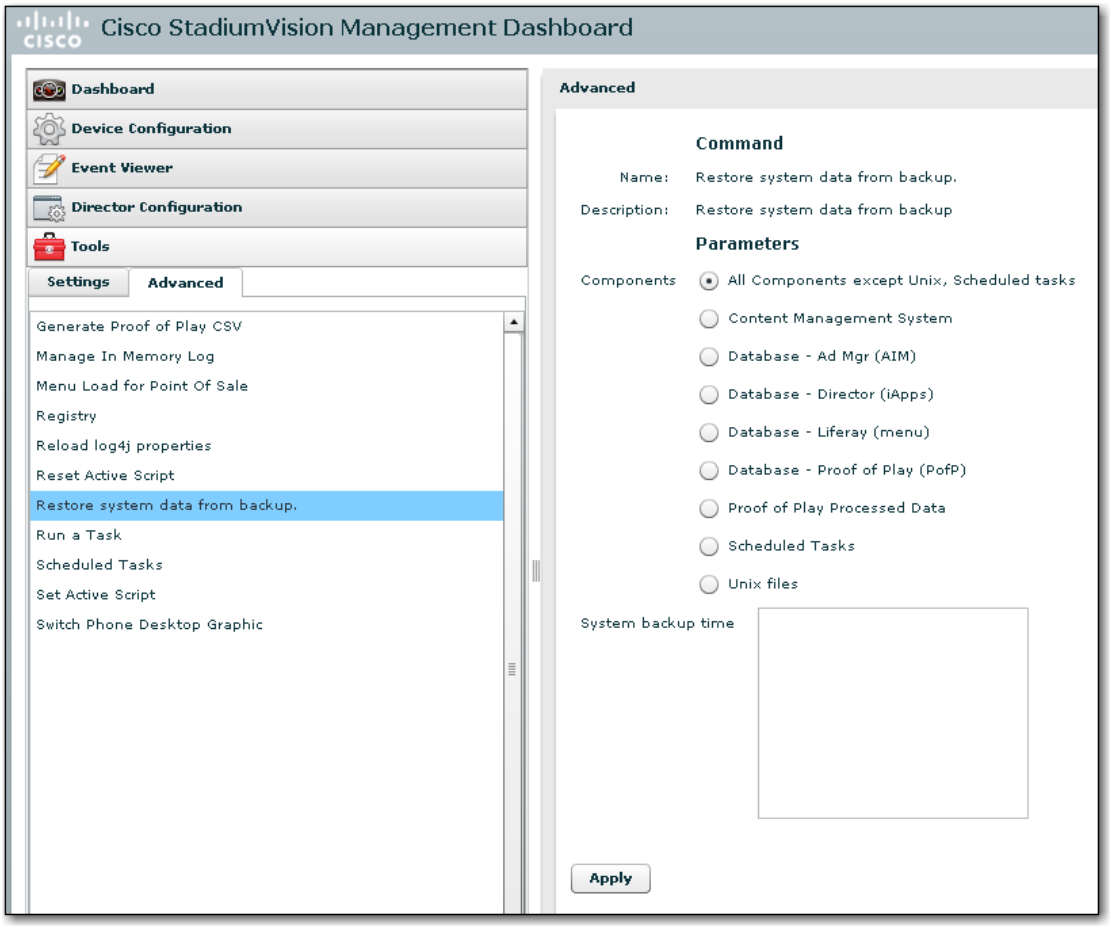
The automatic restore process is appropriate when setting up a High Availability backup server to automatically get the state from the primary server. However, there may be cases when you need to restore a backup on demand as described here:

1. Open SV Director and click **Management Dashboard**.
2. Select **Tools > Advanced > Restore system data from backup**.
3. Select the desired components to restore and select the date of the backup file to use for the restore.
4. Click **Apply**. The restore will run.

5. Examine the logs in the primary server /opt/sv/servers/control/catalina.out to see if there were any errors during backup.

If you run a manual restore right after a backup, the Dashboard does not properly refresh its list of available backups when you navigate from the backup to the restore section of the **Advanced >Tools** sections. To refresh the backups listed in the restore screen, exit the Dashboard (e.g. close your browser) and then log back in.

Figure 5. Running a Manual Restore



Managing the Restore Directory

As with the backup directory, SV Director does not automatically manage space in the restore directory. To manage disk space in the restore directory, add a daily cron job in Unix cron scheduler to remove old files from that directory. For example to remove all files from the restore directory more than 30 days old run the following command:

```
/usr/bin/find /var/sv/RESTORE -mtime +30 -exec rm  {} \;
```

Renaming Backup and Restore Files

By default, the files in the backup and restore directories use the following naming convention:

sv-<*software version*>-<*date time*>-<time zone>.chksum

where:

software version = current software version (with a dash) and build number. For example: 2-2.0.30

date time = YYYY/MMDDHHMMSS. For example: the entry 20100731152417 is July 31 2010 at 15:24:17

Time zone = the assigned value for the time zone.

For example:

If <version> = “2.2.0.25”

If <date time > = “20100721105831

If <time zone> = “0700”

then the format would be:

```
sv-2.2.0.25-20100721105831-0700.chksum
sv-2.2.0.25-20100721105831-0700.tar
```

You can change the directory name to add a meaningful description, and change the date, time, and time zone. However, this needs to be done in a very specific location in order for restore to work.

Below is an example of how to add the description ‘AfterGiantsGame’ to the default restore file name:

```
mv sv-2.2.0.30-20100721152417-0400.chksum sv-2.2.0.30AfterGiantsGame-20100721152417-004.chksum
mv sv-2.2.0.30-20100721152417-0400.tar sv-2.2.0.30AfterGiantsGame-20100721152417-004.tar
```

You must reload the Dashboard to make the rename take effect.

Important! If you add a description after the version, you must remove the dash.

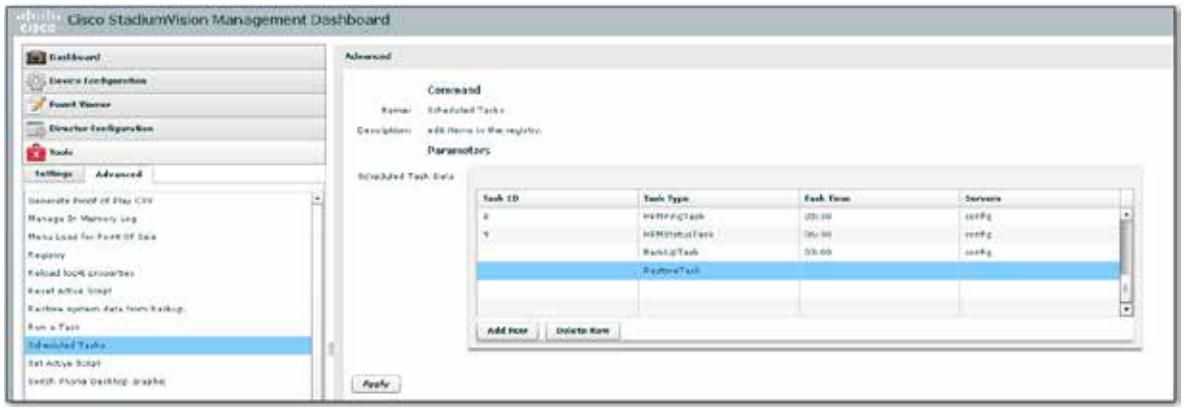
Scheduling a RestoreTask to Run Ad-Hoc

You can configure the secondary server to periodically restore the backup copied into its /var/sv/RESTORE directory as follows:

1. On the secondary server, open the Dashboard and select **Tools > Advanced > Scheduled Tasks**.
2. Select Add Row and enter **RestoreTask** for the Task Type.
3. Click **Apply**.

4. To run the restore task on demand, select **Tools > Advanced > Scheduled Tasks**.

Figure 6. Adding a Restore Task

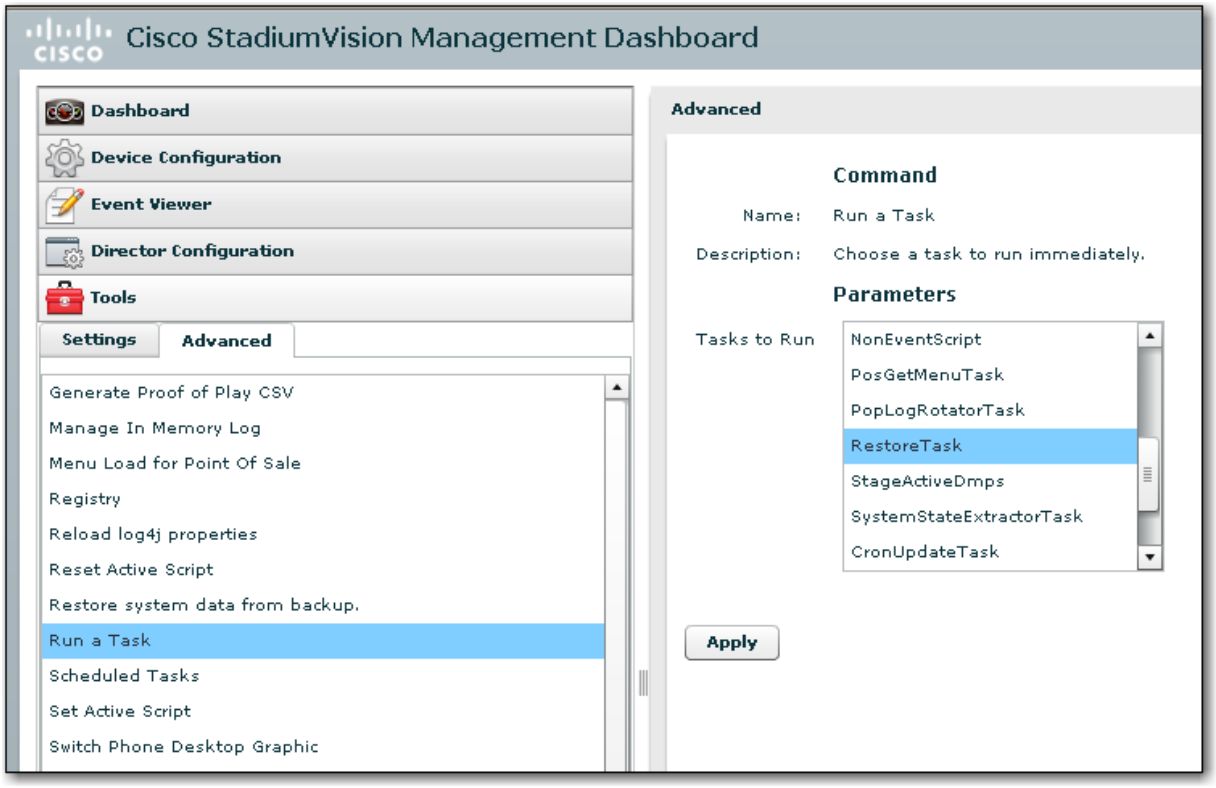


Running an Immediate “RestoreTask”

To initiate an immediate restore of the system:

1. Open SV Director and click **Management Dashboard**.
2. Select **Tools > Advanced > Run a Task**.
3. Select **RestoreTask**. Refer to Figure 9.
4. Click **Apply**.

Figure 7. Running an Immediate Restore

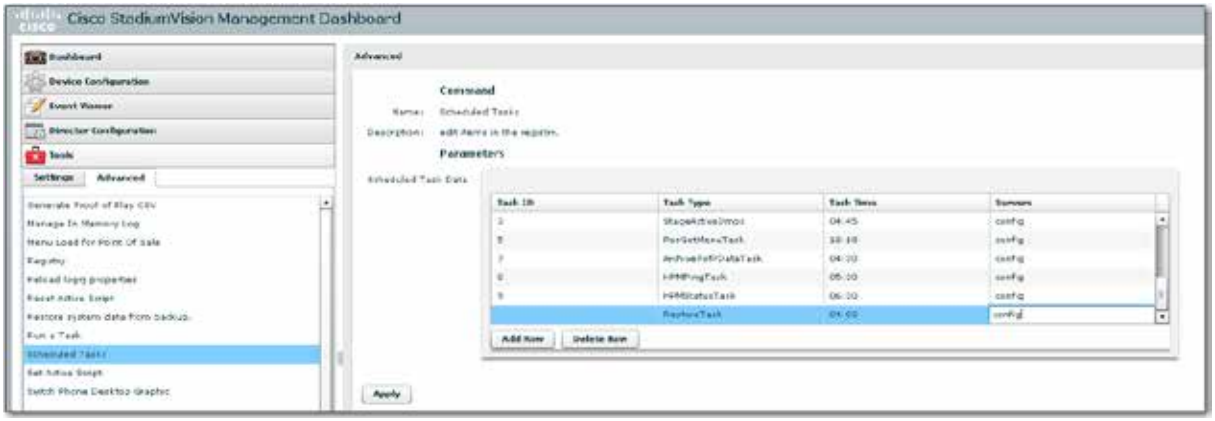


Running a Scheduled Restore

The secondary server can be configured to mirror the primary server by periodically restoring to the secondary server, the backup of the primary server that is periodically automatically copied to the secondary server's /var/sv/RESTORE directory. To schedule an automatic restore of the primary server's data on the secondary server, to run at regular intervals, do the following on the secondary server:

1. Log in to the Management Dashboard.
2. Select **Tools> Advanced > Scheduled Tasks**.
3. Click **Add Row** and scroll to the new blank line. Refer to Figure 11.
4. Type an ID.
5. Click in the Task Type column and type **RestoreTask**.
6. Click in the Task Time column and type the time at which you would like the backup to run.
7. Click **Apply**.

Figure 8. Running a Scheduled (Automated) Restore



Restoring System Data from a Scheduled Backup File

The automated restore assumes that SV Director is running in an automated, highly-available configuration. In this configuration, some of the Unix files differ between the primary and secondary servers. Therefore, the Unix files are not automatically restored through the RestoreTask.

Also, the schedule of tasks to run in the primary database and the secondary database will be different, due to the existence of the backup and restore tasks. Therefore, the schedule itself is not automatically restored.

To restore the schedule from a backup file:

1. Open SV Director and click **Management Dashboard**.
2. Select **Tools> Advanced > Restore system data from backup**.
3. Enable the **Scheduled Tasks** radio button. Refer to Restoring System Data from a Scheduled Backup File.
4. Click **Apply**.

Figure 9. Restoring System Data from a Scheduled Backup File