Technical Support White Paper

Date: **August 3, 2007**

Title: **Control4 USB Recovery documentation – using the Recovery utility to restore a Control4 device to factory default condition**

Product(s) affected:
- Control4 Media Controller, Home Theater Controller, Home Controller HC-300, Mini Touch Screen v1 & v2, Speaker Point

Topic(s):
- How to restore a Control4 device to its factory default condition.

Summary:
The Control4 Recovery utility will enable Control4 dealers and installers to minimize the time, paperwork, inconvenience, and other costs associated with devices that fail during the update process or at some other time. It will quickly become a valuable tool in your Control4 arsenal.

Occasionally, and most likely during an update process, a Control4 device will become inoperable. At this point the Dealer / Installer calls Tech Support and troubleshoots the device. If unable to restore the device using Telnet or other measures indicated by Tech Support, an RMA will be issued. An RMA is inconvenient and costly both for Control4 and for the Dealer / Installer due to increased time on the job, shipping charges, and a probable return trip to the customer site.

Most of the devices which are returned via RMA can be restored to a fully functional condition. In order to enable Tech Support and the Dealer / Installer to have the ability to restore devices in the field, Control4 has developed the Control4 Recovery utility. Now, if a device doesn't update correctly or in some other way becomes inoperable, the Dealer / Installer can recover that device immediately. This reduces the time, expense, and inconvenience for both parties incurred through the RMA process.

This document provides important information about how to use the Control4 Recovery program. While this is a very beneficial tool, it should be used as directed for best results and to not cause other problems. The Control4 Recovery utility is intended as a last effort before returning the device. The operations to re-flash the device are dangerous, and unplugging the power during the re-flash has a high likelihood of making the software on the device unrecoverable without returning it.

1   Usage Scenario

- When the dealer encounters a device that for whatever reason fails to operate, they will insert the USB stick containing the Control4 Recovery utility into the USB port on the device and power cycle the device.

- As the device boots, the early-boot-process will detect the existence of the USB stick containing the Control4 Recovery utility. A 30 second delay will give the dealer an opportunity to remove the stick prior to restoring the device to factory default. After the recovery process has started, it is very important that the USB stick containing the Recovery utility not be removed until the recovery is complete!

- If the Control4 Recovery utility is recovering a Controller device, it will backup the existing project data so that the project can be manually restored at the conclusion of the recovery. The media database file will be backed up as well. However, no cover art is backed up and no stored mp3 or other media files will be backed up.

- If the device to be recovered is a Media Controller the Control4 Recovery utility does not make any modifications to the hard disk location which stores media. In most cases, this isn't necessary as the problem with the device is generally limited to the system partition. Any media stored on the Media Controller will remain intact after the recovery has completed as long as there wasn't a problem with the Media Controller hard drive.

- The USB Recover utility will take between 10 – 20 minute to recover the device – and potentially as much as 30 minutes.

- After the device has been restored to factory default state, it will automatically be rebooted.

- The Control4 Recovery utility has now restored the device to a factory default flash image of a specific version. If the project is at a different version level, the Dealer will now need to use Update Manager to update it to the correct version for the system.

2   Requirements

2.1   Recoverable Devices

The Control4 Recovery utility will eventually work for all Linux-based Control4 devices. In the 1.3.2.230 release, the 10.5″ Touch Screens are not supported. These will be added in a future release of the USB Recovery program. Recoverable devices include the Media Controller, Home Theater Controller, Home Controller HC-300, Mini Touch Screens (v1 & v2), and Speaker Point.

2.2   Prerequisites for Recovery

The device to be recovered has to be at version 1.3.2 or later.

In some cases a device which failed during the update to 1.3.2 may be recoverable using the Control4 Recovery Utility.

Some devices at prior versions can use the Control4 Recovery program if you can telnet into the device (see instructions).

The device to be recovered must be able to power up; the kernel has to boot; and, the root File System has to be mountable.

2.3   USB Stick

The USB stick used for the Control4 Recovery utility must be formatted FAT32 and at least 512 MB in size. It cannot have any other files installed on it. Other files will be deleted when the Control4 Recovery program is installed.

2.4   .Net 2.0

The Control4 Recovery utility requires that .Net 2.0 be installed on your Windows PC which will be creating the Control4 Recovery USB stick. .Net 2.0 can be downloaded from Microsoft or from the Control4 dealer download site.

3   Installing the Control4 Recovery utility

3.1   Download and save the Control4 Recovery utility from the Dealer download site at **www.control4.com/dealer/support/software.htm** to your Windows computer. You cannot run this program from the web.

3.2   Insert a FAT32 formatted USB stick with at least 512 MB capacity into your Windows computer's USB port. Make sure there are not any files on that stick that you need to save.

3.3   Run the downloaded program (C4RestoreStickCreator.exe) and follow the prompts to create your Control4 Recovery utility.

3.4   Control4 recommends that you clearly mark on this USB stick that it contains the Control4 Recovery utility. You do not want to get it confused with a USB Install stick.

4   Starting the Control4 Recovery utility

4.1   Unplug any and all USB devices from the Control4 device which will be recovered using the Control4 Recovery utility.

4.2   Plug in the USB stick containing the Control4 Recovery utility and then power cycle the device.

    4.2.1 The USB port on the Mini Touch Screen is located just above the encoder knob and touch screen. To access it, remove the face plate. If it is a WiFi device, remove the USB WiFi dongle and replace it after the recovery process has completed.

4.3   If the device to be recovered was previously on 1.3.2, the Recovery process will begin automatically. Skip to section 5. If not, continue with the following steps. Mini Touch Screens can not be recovered if they have not previously been updated to 1.3.2.

4.4   Telnet to the Control4 device, login as root with password "t0talc0ntr0l4!" (zeroes in place of o's, end with exclamation point, don't enter the quotes) and enter the commands, specific to the platform, as follows:

4.5 Media Controller

```
cd /mnt

mkdir usbrestore

mount /dev/sda1 /mnt/usbrestore

cd /mnt/usbrestore

./mc
```

You will get a few messages about updating the ramdisk, then the MC will reboot and the Recovery process will begin.

4.6 Home Theater Controller

```
cd /mnt/jffs2

mkdir usbrestore

mount /dev/sdb1 /mnt/jffs2/usbrestore

cd /mnt/jffs2/usbrestore

./htc
```

You will get a few messages then the HTC will reboot and the Recovery process will begin.

4.7 Speaker Point

```
cd /mnt/jffs2

mkdir usbrestore

mount /dev/sda1 /mnt/jffs2/usbrestore

cd /mnt/jffs2/usbrestore

./sp
```

You will get a few messages then the Speaker Point will reboot and the Recovery process will begin.

5 Feedback during recovery process

5.1 The recovery process can take up to 30 minutes. During that time the only feedback is that a recovery is underway. Please be patient. The device must remain powered throughout the recovery process. You must not remove the USB stick containing the Control4 Recovery utility until prompted or until the device has been rebooted.

5.2 Media Controller

5.2.1 The Media Controller utilizes the LCD front panel and the on screen display for feedback. The on screen and LCD will display a warning that recovery media was detected and recovery will begin in 30 seconds.

5.2.2 After 30 seconds the on screen image will indicate the recovery is underway. The LCD will update with the status of the recovery.

5.2.3 After the recovery is complete the Media Controller will reboot. A last onscreen message will indicate the recovery is complete and instruct you to remove the

Control4 Recovery stick. The device will continue to boot and navigator will take over the splash screen.

5.3   Home Theater Controller

5.3.1 The Home Theater Controller utilizes the LEDs and the on screen display for feedback. The on screen will display a warning that recovery media was detected and recovery will begin in 30 seconds. The LEDs will blink slowly back and forth.

5.3.2 After 30 seconds the on screen image will indicate the recovery is underway. The LEDs will begin to blink back and forth more rapidly.

5.3.3 After the recovery is complete the Home Theater Controller will reboot. A last onscreen message will indicate the recovery is complete and instruct you to remove the Control4 Recovery stick. The device will continue to boot and navigator will take over the splash screen.

5.4   Home Controller HC-300

5.4.1 The Home Controller HC-300 utilizes the LEDs and the on screen display for feedback. The on screen will display a warning that recovery media was detected and recovery will begin in 30 seconds. The LEDs will blink slowly back and forth.

5.4.2 After 30 seconds the on screen image will indicate the recovery is underway. The LEDs will begin to blink back and forth more rapidly.

5.4.3 After the recovery is complete the Home Controller HC-300 will reboot. A last onscreen message will indicate the recovery is complete and instruct you to remove the Control4 Recovery stick. The device will continue to boot and navigator will take over the splash screen.

5.5   Speaker Point

5.5.1 The Speaker Point has no video display. It utilizes the LEDs for feedback. When the USB containing the Control4 Recovery utility is detected, the LEDs will blink slowly back and forth.

5.5.2 After 30 seconds the LEDs will begin to blink back and forth more rapidly.

5.5.3 After the recovery is complete the LEDs will stop blinking and the Speaker Point will reboot. After the Speaker Point has rebooted you may remove the USB stick.

5.6   Mini Touch Screen – v1 & v2, POE and WiFi

5.6.1 The Mini Touch Screen utilizes the LCD display for feedback. The LCD screen will display a warning that recovery media was detected and recovery will begin in 30 seconds.

5.6.2 After 30 seconds the LCD screen image will indicate the recovery is underway.

5.6.3 After the recovery is complete the Mini Touch Screen will reboot. A last LCD screen message will indicate the recovery is complete and instruct you to remove the Control4 Recovery stick. The device will continue to boot and navigator will take over the splash screen.

6   Restoring projects from the recovered master controller

6.1   Because only the master controller maintains the Control4 system project, you do not need to worry about restoring a project if you have recovered a slave controller or any of the navigator devices or a Speaker Point.

6.2   If you have recovered a master controller and have a recent full backup of that Control4 system project, the easiest way to restore it is to connect to the controller and then load the backup project. Even if you don't have a recent backup, if you have any backup of that system, reloading it will be beneficial as the cover art is restored when the backup is loaded. You can then copy over the more current project file data and media database from the recovery stick. This will save you a significant amount of time if you don't have to rescan to get all cover art.

6.3   If you don't have a recent full backup, the Control4 Recovery utility has copied the project and media data to the USB stick on which it is installed. This project data is overwritten each time the Recovery utility is used.

6.4   Plug in the USB stick containing the Control4 Recovery utility

6.5   Telnet to the Control4 device, login as root with password "t0talc0ntr0l4!" (zeroes in place of o's, end with exclamation point, don't enter the quotes) and enter the commands, specific to the platform, as follows:

6.6   Media Controller only

```
mkdir -p /mnt/usbrestore
mount /dev/sda1 /mnt/usbrestore
```

6.7   Home Theater Controller only

```
mount /dev/sdb1 /mnt/usbrestore
```

6.8   Home Controller HC-300 only

```
mount /dev/sda1 /mnt/usbrestore
```

6.9   Continue with these commands on all controllers

```
cd /mnt/usbrestore/backups/_project
sysman disable director
killall -9 director
cp DirectorState.xml /etc/
cp mm.db /control4/db/
cp -a c4i/* /etc/c4i/
sysman enable director
```

7   Other Recovery Considerations

7.1   Any recovered device needs to be re-identified in the project in which it is used if it had previously been renamed. As a best practice we recommend that you simply disconnect and then re-identify any device that has been recovered.