How to Understand and Configure IPSO Boot Manager and Compact Flash

2 February 2011
Important Information

Latest Software
We recommend that you install the most recent software release to stay up-to-date with the latest functional improvements, stability fixes, security enhancements and protection against new and evolving attacks.

Latest Documentation
The latest version of this document is at: http://supportcontent.checkpoint.com/documentation_download?ID=11931
For additional technical information, visit the Check Point Support Center (http://supportcenter.checkpoint.com).

Revision History

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Feedback
Check Point is engaged in a continuous effort to improve its documentation.
Please help us by sending your comments (mailto:cp_techpub_feedback@checkpoint.com?subject=Feedback on How to Understand and Configure IPSO Boot Manager and Compact Flash).
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How To Understand and Configure IPSO Boot Manager and Compact Flash

Objective

This document explains the purpose of the IPSO Boot Manager and of the Compact Flash card on IP Appliances. It also shows you how to copy and repair any Compact Flash (CF), and how to convert your IP Appliance
- from Flash-based to disk-based
- from disk-based to Flash-based
- CF From IPSO LX to IPSO SB

Supported OS

- IPSO 4.2 Build 96 and above

Supported Appliances

The following Series of IP Appliances are supported:
- IP200
- IP300
- IP500
- IP600
- IP1200
- IP2200
- IP2400

Before You Start

Related Documentation and Assumed Knowledge

Before using this document, read the following:
- sk41399 (http://supportcontent.checkpoint.com/solutions?id=sk41399) How to upgrade Boot Manager on an IP Appliance
Impact on the Environment and Warnings

- n/a

Compact Flash Card Locations

The following photographs show where the Compact Flash is located inside the IP Appliance:

Inside the IP200 Series

- Location of the Compact Flash card

Inside the IP1200/2200/2400 Series

- Location of the Compact Flash card
Inside the IP300/500/600 Series

- Location of the Compact Flash card
What is Boot Manager?

The IPSO Boot Manager is used to manage boot process on Check Point IP Appliances.

The main purpose of boot manager is to do a "fresh" install, and reset the IP Appliance to its factory default settings. To do that, run the Install command in the boot manager.

The boot manager is installed on the Compact Flash card to create redundancy. If the hard drive fails you can install a new disk and install a fresh new image from the boot manager.

What You Can Do in Boot Manager

In the boot manager you can:

- Boot on a different IPSO Image
- Install a new versions of IPSO
- Override the admin password
- Apply and remove the boot manager password

**To boot on a different IPSO image:**

Run the command:

```
#boot [boot-device] [boot-file] [boot-flags]
```

<table>
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<td>[boot-device]</td>
<td>Location of the storage device where the Operating system loads at boot</td>
</tr>
<tr>
<td>[boot-file]</td>
<td>Location of the Operating system kernel</td>
</tr>
<tr>
<td>[boot-flags]</td>
<td>Control the operation of the command. Boot flags are usually used for debugging purposes. For a list of flags, see the IPSO Boot Manager Reference Guide (<a href="http://supportcontent.checkpoint.com/documentation_download?ID=10353">http://supportcontent.checkpoint.com/documentation_download?ID=10353</a>)</td>
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For example:

```
BOOTMGR[0]> boot wd0 /image/current/kernel <boot flags>
```

**To install a new version of IPSO:**

To override the admin password:
Boot in single user mode using the command

```
boot -s
```

Run the command:
```
/etc/overpw
```

Example:
```
# /etc/overpw

This program is used to set a temporary admin password when you have lost the configured password. You must have booted the machine into single user mode to run it. The configured password will be changed. Please change the temporary password as soon as you log on to your system through voyager.

Please enter password for user admin:
Please re-enter password for confirmation:
Continue? [n] y
```

After this it will ask you to it Ctrl D to boot to IPSO

To apply and remove the boot manager password:

To apply a boot manager password:
At the boot manager prompt type the command
```
passwd
```

1. Enter the new bootmanager password.

To remove a boot manager password:

1. Log in to IPSO

Copy the boot manager file to override the current boot manager image:

```
dd if=/image/current/bootmgr/<boot_manager_file> of=/dev/[rwd0 | rwd1]
```

where `<boot_manager_file>` is the name of the boot manager file on your system. These are the nkipflashX.bin files

Managing Boot Manager Files Using bmtool

Boot manager files can be managed with the `bmtool` command in IPSO

To make a backup of the current boot manager environment settings:

The following command saves your current boot manager settings to the file `mybackup`. The backup file is not human readable.

```
[admin]# bmtool -f /dev/rwd1 -G mybackup
```

Some appliances may not use the device `/dev/rwd1` to hold the boot manager. If `bmtool` reports an error, use `/dev/rwd0` instead.
To view the current boot manager environment settings:
The following is the command and a sample output. The settings on your appliance may vary.

```
[admin]# bmtool -f /dev/rwd1 -d
autoboot: YES
testboot: NO
bootwait: 0
boot-file: 
boot-flags: 
boot-device: 
vendor: Nokia
model: IP
bmslice: 4
```

To change a boot manager variable:
Use the following command to change a boot manager variable. This example changes autoboot to NO.

```
[admin]# bmtool -f /dev/rwd1 -s autoboot -v NO
```

Make sure you verify your changes. It is strongly recommended to backup the boot manager settings before making any changes.

To restore previously backed up settings:
```
[admin]# bmtool -f /dev/rwd1 -R mybackup
```
Upgrading Boot Manager

To upgrade boot manager:

Use the command:

```
/etc/upgrade_bootmgr bootflash_image
```

For example:

```
/etc/upgrade_bootmgr /tmp/nkipflash
```

```
IP290B[admin]# ls
.clish_history .login  nkipflash-4.2.bin
.cshrc     .profile
.history    modzap.gz

IP290B[admin]# upgrade_bootmgr nkipflash-4.2.bin
This program is used to upgrade the boot manager on this system.
You must be using a terminal connected to the console serial port to run this program.
Continue? [n] y
new bootmgr size is 2097152
old bootmgr size is 4194304
Installing new boot manager... please wait a minute or two
Boot manager upgrade completed.
IP290B[admin]# reboot
```
Repairing, Converting, and Copying the Compact Flash

In this section:

- Copying and Repairing Disk-based Units
- Copying and Repairing Flash-based Units
- Converting IPSO LX to IPSO SB Operating System (Disk-based)
- Converting IPSO LX to IPSO SB Operating System (Flash-based)

Copying and Repairing Disk-based Units

Use the following procedure to copy and repair a Compact Flash card (CF) on a Disk-based IP Appliance.

**To prepare the CF card:**

1. Use a IPSO Hard drive base IP Appliance with IPSO 4.2 build 96 Boot Manager or higher.
2. Insert the CF card into the PCMCIA slot.
3. Wait for the CF card to be recognized.
   - When the card is recognized, you should see something like this:
     ```
     pcmcia_wd2: slot 2 channel 1, drv 0 (wd2): <STI Flash 8.0.0>, LBA
     wd2: 1024MB (2001888 sectors), LBA geometry: 993 cyls, 32 heads, 63 S/T, 512 B/S
     wd2: Physical geometry: 1986 cyls, 16 heads, 63 S/T
     Feb 10 15:35:15 Test [LOG_CRIT] kernel: pcmcia_wdc0: slot 2 channel 1, drv 0 (wd
     2): <STI Flash 8.0.0>, LBA
     Feb 10 15:35:15 Test [LOG_CRIT] kernel: wd2: 1024MB (2001888 sectors), LBA geome
     try: 993 cyls, 32 heads, 63 S/T, 512 B/S
     Feb 10 15:35:15 Test [LOG_CRIT] kernel: wd2: Physical geometry: 1986 cyls, 16 he
     ads, 63 S/T
     ```
4. Type:

   ```
   dd if=/image/current/bootmgr/bootflash of=/dev/rwd2
   ```

   Note that `rwd2 = wd2`, so if you insert the card and it shows `wd3` you must change it to `rwd3` when the copying has finished, you will see something like this:

   ```
   4096+0 records in
   4096+0 records out
   2097152 bytes transferred in 2.922460 secs (717598 bytes/sec)
   ```
5. Remove the CF card and put it into the IP Appliance.
6. Turn on the IP Appliance. The boot manager loads. You will see the prompt:

   ```
   BOOTMGR> Install
   ```
7. Follow the Fresh installation procedure ([http://supportcontent.checkpoint.com/solutions?id=sk39727](http://supportcontent.checkpoint.com/solutions?id=sk39727)).
Copying and Repairing Flash-based Units

Use the following procedure to copy and repair a Compact Flash card (CF) on a flash-based IP Appliance.

**To copy the CF card:**

Use an IP Appliance with 2 PCMCIA slots.

1. Insert the good CF.
2. Wait for the CF to be recognized.
3. When the CF has been recognized it should be labeled `wd2` if it is a hard drive base. If using Flash base it will be `wd1`.
4. Insert the corrupted Flash in the next slot. The label depends on whether you are using a disk-based unit or Flash-based unit.
5. Wait for the CF to be detected.
6. Copy the whole `rwd2` image by typing:
   ```
   dd if=/dev/rwd2 of=/dev/rwd3
   ```
7. Where `rwd2` is the good flash and `rwd3` is the bad Flash.

   **Note** - The CF card size of the good Flash has to be smaller or equal to the bad Flash.

This takes about 30 mins, depending on the contents of the Flash.

After the copy has finished, you can use this card for any Flash-based IP Appliance.

Converting IPSO LX to IPSO SB Operating System (Disk-based)

**Disk-based Conversion**

1. Purchase a disk-based Compact Flash (CF) card from an authorized reseller.
2. Replace the CF card that is on the IPSO LX machine with the new CF card.
3. Boot it up and you should see the boot manager, follow the Fresh installation procedure ([http://supportcontent.checkpoint.com/solutions?id=sk39727](http://supportcontent.checkpoint.com/solutions?id=sk39727)).

**Prerequisites:**

- IPSO appliance that is running IPSO 4.2 B96 and later
- PCMCIA CF card adapter
- CF card from the IPSO LX system
Procedure:
1. Prepare the CF card
   a) Use an IPSO appliance with IPSO 4.2 Build 96 Boot Manager or higher.
   b) Turn on the IPSO appliance.
   c) Put the IPSO LX CF card into the PCMICIA adapter.
   d) Insert the CF card in the PCMCIA slot.
   e) Wait for it to be recognized
   You should then see something like this:

   ```
   pcmcia_wdc0: slot 2 channel 1, drv 0 (wd2): <STI Flash 8.0.0>, LBA
   wd2: 1024MB (2001888 sectors), LBA geometry: 993 cyls, 32 heads, 63 S/T,
   512 B/S
   wd2: Physical geometry: 1986 cyls, 16 heads, 63 S/T
   Feb 10 15:35:15 Test [LOG_CRIT] kernel: pcmcia_wdc0: slot 2 channel 1, drv
   0 (wd2): <STI Flash 8.0.0>, LBA
   Feb 10 15:35:15 Test [LOG_CRIT] kernel: wd2: 1024MB (2001888 sectors), LBA
   geometry: 993 cyls, 32 heads, 63 S/T, 512 B/S
   Feb 10 15:35:15 Test [LOG_CRIT] kernel: wd2: Physical geometry: 1986 cyls,
   16 he
   ads, 63 S/T
   ```

   Type:

   ```
   dd if=/image/current/bootmgr/bootflash of=/dev/rwd2
   
   Note - rwd2 = wd2 , so if you insert the card and it showed wd3 you will need to change it to rwd3
   ```

   After the copy is complete, you will see something like:

   ```
   4096+0 records in
   4096+0 records out
   2097152 bytes transferred in 2.922460 secs (717598 bytes/sec)
   1. Remove the CF card and put it into the IPSO LX box.
   2. Reboot.
   3. Go to boot manager.
   ```

Converting IPSO LX to IPSO SB Operating System (Flash-based)

Flash-based Conversion
1. Purchase a Flash-based CF card from an authorized reseller.
2. Replace the CF card that is on the IPSO LX machine with the new CF card.
3. Boot it up and you should see the boot manager, follow the Fresh installation procedure

Prerequisites:
- IPSO appliance that is running IPSO 4.2 Build 96 and later
- 2 x PCMICIA CF card adapters
- CF card from the IPSO LX system
- CF card from a working IPSO 4.2 Build 96 or later
Procedure:
1. Insert the IPSO 4.2 Build 96 or later CF card,
2. Wait for it to be detected
3. When the card has been detected, it should be labeled at \texttt{wdX}
   The label \texttt{wdX} depends on the IP Appliance that you are using. If you are using a disk-based IP
   Appliance you will see it labeled as \texttt{wd2}. If it is a Flash-based IP Appliance, it will be labelled \texttt{wd1}.
4. Insert the IPSO LX Flash in the next slot the label depends if you’re using a disk-based unit or Flash-
   based unit.
5. Wait for the CF to be detected.
6. Copy the whole image of \texttt{rwd2}. Type:
   
   \texttt{dd if=/dev/rwd2 of=/dev/rwd3}
   \texttt{rwd2 = IPSO 4.2 B96 or later CF card}
   \texttt{rwd3 = IPSO LX}

   \textcolor{red}{Note} - The CF card size of the good Flash has to be smaller or equal to the bad Flash.
   This will take about 30 mins, depending on the contents of the Flash.
7. Reboot
8. Go to boot manager