

PICA8, INC.

Image Upgrade Guide

PicOS 1.6

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This document introduces the PicOS image upgrade steps on Pica8 series switch

CONTENT

Introduction	4
P-3290 Image Upgrade Steps	5
Download the Image	5
Upgrade with xorplus CLI.....	5
Upgrade with Flash Linux.....	5
setup IP address and download picos image.....	6
MOunt CF card and save running configuration file.....	6
Repartition CF card, build file system and mount	7
Install the picos image	7
Update the uboot boot command if needed.....	7
P-3295 Image Upgrade Steps	8
Download the Image	8
Upgrade with xorplus CLI.....	8
Upgrade with Flash Linux.....	8
setup IP address and download picos image.....	9
MOunt CF card and save running configuration file.....	9
Repartition CF card, build file system and mount	10
Install the picos image	10
Update the uboot boot command if needed.....	10
P-3780 Image Upgrade Steps	11
Download the Image	11
Upgrade with xorplus CLI.....	11
Upgrade with Flash Linux.....	11
setup IP address and download picos image.....	12
MOunt CF card and save running configuration file.....	12

Repartition CF card, build file system and mount	13
Install the picos image	13
Update the uboot boot command if needed.....	13
P-3920 Image Upgrade Steps	14
Download the Image	14
Upgrade with xorplus CLI.....	14
Upgrade with Flash Linux.....	14
setup IP address and download picos image.....	15
MOunt CF card and save running configuration file	15
Repartition CF card, build file system and mount	16
Install the picos image	16
Update the uboot boot command if needed.....	16
Configuration command changes.....	17

INTRODUCTION

PicOS supports P-3290, P-3295, P-3780 and P-3920 switches.

PICOS 1.5

PicOS 1.5 was released in Sep, 2012, with support of QinQ.

PICOS 1.4

PicOS 1.4/XorPlus 1.4 was released in Mar, 2012, with support of OVS 1.4, IPv6.

The rootfs is based on CF or SD cards.

XORPLUS 1.3

PicOS 1.3/XorPlus 1.3 was released in Sep, 2011, with support of ECMP.

The rootfs is based on CF card.

XORPLUS 1.2

PicOS 1.2/XorPlus 1.2 was released in Mar, 2011, with support of Open vSwitch 1.2.

The rootfs is based on CF card.

XORPLUS 1.1

PicOS1.1/XorPlus 1.1 was released in Dec, 2010, with support of L3 and Openflow 1.0.

The system rootfs is in ramdisk format.

XORPLUS 1.0

PicOS 1.0/XorPlus 1.0 was released in Sep, 2010, with support of LACP, LLDP, VLAN, and RSTP.

The system image is in ramdisk format.

P-3290 IMAGE UPGRADE STEPS

P-3290 has one flash and one CF card. The PicOS is installed on the CF card, while the diagnostic Linux system is installed on flash.

There are two types of image upgrade choice:

1. If previous PicOS version is 1.5 and above, it can be upgraded directly from the XorPlus CLI.
2. If your previous installed system version is lower than 1.5, the system upgrade under flash Linux is the only way.

Check the configuration file to make sure they can work properly with the new release.

DOWNLOAD THE IMAGE

Please download the image of PicOS 1.6 for P-3290 from Pica8 web site.

<http://pica8.com/download/images/3290/picos-1.6-3290-r9323.tar.gz>

If you need any old image, please send email to support@pica8.com.

UPGRADE WITH XORPLUS CLI

If the version of the running PicOS is 1.5, you can upgrade it to PicOS 1.6 directly under XorPlus CLI.

```
XorPlus> file tftp get remote-file <image-file-name> local-file rootfs.tar.gz ip-address <TFTP server IP address>
```

Of which the <image-file-name> is picos-1.6-3290-rxxx.tar.gz and the <TFTP server IP address> is the server IP of the TFTP server. The local-file should be always as 'rootfs.tar.gz'.

The image will be put under the local installation directory. It will get installed the next time the system restarted.

When reload your switch, you will see the following message on your console:

UPGRADE WITH FLASH LINUX

If the running version is lower than 1.5, you have to upgrade the image with flash Linux environment.

The uboot by default brings up the PicOS on CF card. You have to bring up flash Linux manually.

The uboot environment provides the different boot command to enter ether flash Linux or PicOS system on CF card. You can stop by the uboot by entering any key when the following display shown up:

```
Hit any key to stop autoboot: 5
```

And enter the following command to bootup into flash Linux:

```
=>run flash_bootcmd
```

Input Ctrl+D twice to quit the diagnostic menu to Linux command line. The default password of user root is 'root123'.

Diagnostic Test Main Menu v1.3 (LB9A - Linux)

- [1] File Management
- [2] Board Information
- [3] Diagnostic Test
- [4] Manufacturing Test Mode Set
- [5] Test Error Log File Management
- [6] PING
- [7] Reset
- [8] For Vibration Test

Enter your choice:

SETUP IP ADDRESS AND DOWNLOAD PICOS IMAGE

There are two ways to setup the IP address of the management port.

1. Get the IP address through DHCP
2. Setup static IP address

If the switch is connected with a DHCP server, enter the following command to get the DHCP assigned IP:

```
#udhcpc
```

If no DHCP server available, setup a static IP instead:

```
#ifconfig eth0 <IP address>
```

Make sure the switch could ping the server that the image is put on.

Tftp or ftpget could be used to get the image from remote server:

```
#tftp -g -l <local-image-name> -r <remote-image-name> <TFTP-server-IP>
```

Or get the image through ftp:

```
#ftpget -u <user-name> -p <password> <FTP-server-IP> <local-image-name> <remote-image-name>
```

The image could be put under /cf_card directory and install from there directly.

MOUNT CF CARD AND SAVE RUNNING CONFIGURATION FILE

The CF card is automatically mounted under /cf_card directory. The previous configuration file could be saved before upgrading the image.

The configuration file is located at /cf_card/pica/config/pica.conf.

REPARTITION CF CARD, BUILD FILE SYSTEM AND MOUNT

If the image partition on the CF card is broken, the repartition is needed. Here are the commands to do it:

```
#fdisk /dev/hda
```

The old partition can be removed with 'd' command and the new partition can be created with 'n' command. Save the information before quitting the fdisk tool.

The following command can make the ext3/ext2 file system over the created partition:

```
#mke2fs -j /dev/hda1
```

To mount the CF card partition:

```
#mount /dev/hda1 /cf_card
```

INSTALL THE PICOS IMAGE

The old files of the previous PicOS system have to be removed before installing the new image. It can be done as:

```
rm -rf /cf_card/*
```

If the new image is put under /cf_card directory, install the new image just as:

```
#cd /cf_card
```

```
#tar zxvf picos-1.6-3290-r9323.tar.gz .
```

```
#sync
```

Please run 'sync' before restart the system to make sure the data are written back to the CF card.

UPDATE THE UBOOT BOOT COMMAND IF NEEDED

If you upgrade the image from picos 1.2/xorplus 1.2 and above, you don't need to update the uboot environment string anymore.

The uboot bootcmd update should be set as:

```
=> set cfc_card_bootcmd2 'setenv bootargs root=/dev/hda1 rw noinitrd console=ttyS0,$baudrate;  
ext2load ide 0:1 0x1000000 boot/uImage;ext2load ide 0:1 0x400000 boot/LB9A.dtb;bootm  
1000000 - 400000'
```

```
=>set bootcmd 'run cfc_card_bootcmd2'
```

```
=>saveenv
```

```
=>reset
```

P-3295 IMAGE UPGRADE STEPS

P-3295 has one flash and one CF card. The PicOS is installed on the CF card, while the diagnostic Linux system is installed on flash.

There are two types of image upgrade choice:

3. If previous PicOS version is 1.5 and above, it can be upgraded directly from the XorPlus CLI.
4. If your previous installed system version is lower than 1.5, the system upgrade under flash Linux is the only way.

Check the configuration file to make sure they can work properly with the new release.

DOWNLOAD THE IMAGE

Please download the image of PicOS 1.6 for P-3295 from Pica8 web site.

<http://pica8.com/download/images/3295/picos-1.6-3295-r9323.tar.gz>

If you need any old image, please send email to support@pica8.com.

UPGRADE WITH XORPLUS CLI

If the version of the running PicOS is 1.5, you can upgrade it to PicOS 1.6 directly under XorPlus CLI.

```
XorPlus> file tftp get remote-file <image-file-name> local-file rootfs.tar.gz ip-address <TFTP server IP address>
```

Of which the <image-file-name> is picos-1.6-3295-rxxx.tar.gz and the <TFTP server IP address> is the server IP of the TFTP server. The local-file should be always as 'rootfs.tar.gz'.

The image will be put under the local installation directory. It will get installed the next time the system restarted.

When reload your switch, you will see the following message on your console:

UPGRADE WITH FLASH LINUX

If the running version is lower than 1.5, you have to upgrade the image with flash Linux environment.

The uboot by default brings up the PicOS on CF card. You have to bring up flash Linux manually.

The uboot environment provides the different boot command to enter ether flash Linux or PicOS system on CF card. You can stop by the uboot by entering any key when the following display shown up:

```
Hit any key to stop autoboot: 5
```

And enter the following command to bootup into flash Linux:

```
=>run flash_bootcmd
```

Input Ctrl+D twice to quit the diagnostic menu to Linux command line. The default password of user root is 'root123'.

Diagnostic Test Main Menu v1.3 (LB9 - Linux)

- [1] File Management
- [2] Board Information
- [3] Diagnostic Test
- [4] Manufacturing Test Mode Set
- [5] Test Error Log File Management
- [6] PING
- [7] Reset
- [8] For Vibration Test

Enter your choice:

SETUP IP ADDRESS AND DOWNLOAD PICOS IMAGE

There are two ways to setup the IP address of the management port.

3. Get the IP address through DHCP
4. Setup static IP address

If the switch is connected with a DHCP server, enter the following command to get the DHCP assigned IP:

```
#udhcpc
```

If no DHCP server available, setup a static IP instead:

```
#ifconfig eth0 <IP address>
```

Make sure the switch could ping the server that the image is put on.

Tftp or ftpget could be used to get the image from remote server:

```
#tftp -g -l <local-image-name> -r <remote-image-name> <TFTP-server-IP>
```

Or get the image through ftp:

```
#ftpget -u <user-name> -p <password> <FTP-server-IP> <local-image-name> <remote-image-name>
```

The image could be put under /cf_card directory and install from there directly.

MOUNT CF CARD AND SAVE RUNNING CONFIGURATION FILE

The CF card is automatically mounted under /cf_card directory. The previous configuration file could be saved before upgrading the image.

The configuration file is located at /cf_card/pica/config/pica.conf.

REPARTITION CF CARD, BUILD FILE SYSTEM AND MOUNT

If the image partition on the CF card is broken, the repartition is needed. Here are the commands to do it:

```
#fdisk /dev/hda
```

The old partition can be removed with 'd' command and the new partition can be created with 'n' command. Save the information before quitting the fdisk tool.

The following command can make the ext3/ext2 file system over the created partition:

```
#mke2fs -j /dev/hda1
```

To mount the CF card partition:

```
#mount /dev/hda1 /cf_card
```

INSTALL THE PICOS IMAGE

The old files of the previous PicOS system have to be removed before installing the new image. It can be done as:

```
rm -rf /cf_card/*
```

If the new image is put under /cf_card directory, install the new image just as:

```
#cd /cf_card
```

```
#tar zxvf picos-1.6-3295-r9323.tar.gz .
```

```
#sync
```

Please run 'sync' before restart the system to make sure the data are written back to the CF card.

UPDATE THE UBOOT BOOT COMMAND IF NEEDED

If you upgrade the image from picos 1.2/xorplus 1.2 and above, you don't need to update the uboot environment string anymore.

The uboot bootcmd update should be set as:

```
=> set cfcad_bootcmd2 'setenv bootargs root=/dev/hda1 rw noinitrd console=ttyS0,$baudrate;  
ext2load ide 0:1 0x1000000 boot/ulmage;ext2load ide 0:1 0x400000 boot/LB9.dtb;bootm  
1000000 - 400000'
```

```
=>set bootcmd 'run cfcad_bootcmd2'
```

```
=>saveenv
```

```
=>reset
```

P-3780 IMAGE UPGRADE STEPS

P-3780 has one flash and one CF card. The PicOS is installed on the CF card, while the diagnostic Linux system is installed on flash.

There are two types of image upgrade choice:

5. If previous PicOS version is 1.5 and above, it can be upgraded directly from the XorPlus CLI.
6. If your previous installed system version is lower than 1.5, the system upgrade under flash Linux is the only way.

Check the configuration file to make sure they can work properly with the new release.

DOWNLOAD THE IMAGE

Please download the image of PicOS 1.6 for P-3780 from Pica8 web site.

<http://pica8.com/download/images/3780/picos-1.6-3780-r9323.tar.gz>

If you need any old image, please send email to support@pica8.com.

UPGRADE WITH XORPLUS CLI

If the version of the running PicOS is 1.5, you can upgrade it to PicOS 1.6 directly under XorPlus CLI.

```
XorPlus> file tftp get remote-file <image-file-name> local-file rootfs.tar.gz ip-address <TFTP server IP address>
```

Of which the <image-file-name> is picos-1.6-3780-rxxx.tar.gz and the <TFTP server IP address> is the server IP of the TFTP server. The local-file should be always as 'rootfs.tar.gz'.

The image will be put under the local installation directory. It will get installed the next time the system restarted.

When reload your switch, you will see the following message on your console:

UPGRADE WITH FLASH LINUX

If the running version is lower than 1.5, you have to upgrade the image with flash Linux environment.

The uboot by default brings up the PicOS on CF card. You have to bring up flash Linux manually.

The uboot environment provides the different boot command to enter ether flash Linux or PicOS system on CF card. You can stop by the uboot by entering any key when the following display shown up:

```
Hit any key to stop autoboot: 5
```

And enter the following command to bootup into flash Linux:

```
=>run flash_bootcmd
```

Input Ctrl+D twice to quit the diagnostic menu to Linux command line. The default password of user root is 'root123'.

Diagnostic Test Main Menu v1.3 (LBB - Linux)

- [1] File Management
- [2] Board Information
- [3] Diagnostic Test
- [4] Manufacturing Test Mode Set
- [5] Test Error Log File Management
- [6] PING
- [7] Reset
- [8] For Vibration Test

Enter your choice:

SETUP IP ADDRESS AND DOWNLOAD PICOS IMAGE

There are two ways to setup the IP address of the management port.

5. Get the IP address through DHCP
6. Setup static IP address

If the switch is connected with a DHCP server, enter the following command to get the DHCP assigned IP:

```
#udhcpc
```

If no DHCP server available, setup a static IP instead:

```
#ifconfig eth0 <IP address>
```

Make sure the switch could ping the server that the image is put on.

Tftp or ftpget could be used to get the image from remote server:

```
#tftp -g -l <local-image-name> -r <remote-image-name> <TFTP-server-IP>
```

Or get the image through ftp:

```
#ftpget -u <user-name> -p <password> <FTP-server-IP> <local-image-name> <remote-image-name>
```

The image could be put under /cf_card directory and install from there directly.

MOUNT CF CARD AND SAVE RUNNING CONFIGURATION FILE

The CF card is automatically mounted under /cf_card directory. The previous configuration file could be saved before upgrading the image.

The configuration file is located at /cf_card/pica/config/pica.conf.

REPARTITION CF CARD, BUILD FILE SYSTEM AND MOUNT

If the image partition on the CF card is broken, the repartition is needed. Here are the commands to do it:

```
#fdisk /dev/hda
```

The old partition can be removed with 'd' command and the new partition can be created with 'n' command. Save the information before quitting the fdisk tool.

The following command can make the ext3/ext2 file system over the created partition:

```
#mke2fs -j /dev/hda1
```

To mount the CF card partition:

```
#mount /dev/hda1 /cf_card
```

INSTALL THE PICOS IMAGE

The old files of the previous PicOS system have to be removed before installing the new image. It can be done as:

```
rm -rf /cf_card/*
```

If the new image is put under /cf_card directory, install the new image just as:

```
#cd /cf_card
```

```
#tar zxvf picos-1.6-3780-r9323.tar.gz .
```

```
#sync
```

Please run 'sync' before restart the system to make sure the data are written back to the CF card.

UPDATE THE UBOOT BOOT COMMAND IF NEEDED

If you upgrade the image from picos 1.2/xorplus 1.2 and above, you don't need to update the uboot environment string anymore.

The uboot bootcmd update should be set as:

```
=> set cfcad_bootcmd2 'setenv bootargs root=/dev/hda1 rw noinitrd console=ttyS0,$baudrate;  
ext2load ide 0:1 0x1000000 boot/ulmage;ext2load ide 0:1 0x400000 boot/LB8.dtb;bootm  
1000000 - 400000'
```

```
=>set bootcmd 'run cfcad_bootcmd2'
```

```
=>saveenv
```

```
=>reset
```

P-3920 IMAGE UPGRADE STEPS

P-3920 has one flash and one SD card. The PicOS is installed on the SD card, while the diagnostic Linux system is installed on flash.

There are two types of image upgrade choice:

7. If previous PicOS version is 1.5 and above, it can be upgraded directly from the XorPlus CLI.
8. If your previous installed system version is lower than 1.5, the system upgrade under flash Linux is the only way.

Check the configuration file to make sure they can work properly with the new release.

DOWNLOAD THE IMAGE

Please download the image of PicOS 1.6 for P-3920 from Pica8 web site.

<http://pica8.com/download/images/3920/picos-1.6-3920-r9323.tar.gz>

If you need any old image, please send email to support@pica8.com.

UPGRADE WITH XORPLUS CLI

If the version of the running PicOS is 1.5, you can upgrade it to PicOS 1.6 directly under XorPlus CLI.

```
XorPlus> file tftp get remote-file <image-file-name> local-file rootfs.tar.gz ip-address <TFTP server IP address>
```

Of which the <image-file-name> is picos-1.6-3920-rxxx.tar.gz and the <TFTP server IP address> is the server IP of the TFTP server. The local-file should be always as 'rootfs.tar.gz'.

The image will be put under the local installation directory. It will get installed the next time the system restarted.

When reload your switch, you will see the following message on your console:

UPGRADE WITH FLASH LINUX

If the running version is lower than 1.5, you have to upgrade the image with flash Linux environment.

The uboot by default brings up the PicOS on CF card. You have to bring up flash Linux manually.

The uboot environment provides the different boot command to enter ether flash Linux or PicOS system on CF card. You can stop by the uboot by entering any key when the following display shown up:

```
Hit any key to stop autoboot: 5
```

And enter the following command to bootup into flash Linux:

```
=>run flash_bootcmd
```

Input Ctrl+D twice to quit the diagnostic menu to Linux command line. The default password of user root is 'root123'.

Diagnostic Test Main Menu v1.3 (LY2 - Linux)

- [1] File Management
- [2] Board Information
- [3] Diagnostic Test
- [4] Manufacturing Test Mode Set
- [5] Test Error Log File Management
- [6] PING
- [7] Reset
- [8] For Vibration Test

Enter your choice:

SETUP IP ADDRESS AND DOWNLOAD PICOS IMAGE

There are two ways to setup the IP address of the management port.

7. Get the IP address through DHCP
8. Setup static IP address

If the switch is connected with a DHCP server, enter the following command to get the DHCP assigned IP:

```
#udhcpc
```

If no DHCP server available, setup a static IP instead:

```
#ifconfig eth0 <IP address>
```

Make sure the switch could ping the server that the image is put on.

Tftp or ftpget could be used to get the image from remote server:

```
#tftp -g -l <local-image-name> -r <remote-image-name> <TFTP-server-IP>
```

Or get the image through ftp:

```
#ftpget -u <user-name> -p <password> <FTP-server-IP> <local-image-name> <remote-image-name>
```

The image could be put under /cf_card directory and install from there directly.

MOUNT CF CARD AND SAVE RUNNING CONFIGURATION FILE

The CF card is automatically mounted under /cf_card directory. The previous configuration file could be saved before upgrading the image.

The configuration file is located at /cf_card/pica/config/pica.conf.

REPARTITION CF CARD, BUILD FILE SYSTEM AND MOUNT

If the image partition on the CF card is broken, the repartition is needed. Here are the commands to do it:

```
#fdisk /dev/mmcbk0
```

The old partition can be removed with 'd' command and the new partition can be created with 'n' command. Save the information before quitting the fdisk tool.

The following command can make the ext3/ext2 file system over the created partition:

```
#mke2fs -j /dev/mmcbk0p1
```

To mount the CF card partition:

```
#mount /dev/mmcbk0p1 /mnt/cf_card
```

INSTALL THE PICOS IMAGE

The old files of the previous PicOS system have to be removed before installing the new image. It can be done as:

```
rm -rf /cf_card/*
```

If the new image is put under /cf_card directory, install the new image just as:

```
#cd /cf_card
```

```
#tar zxvf picos-1.6-3920-r9323.tar.gz .
```

```
#sync
```

Please run 'sync' before restart the system to make sure the data are written back to the SD card.

UPDATE THE UBOOT BOOT COMMAND IF NEEDED

If you upgrade the image from picos 1.2/xorplus 1.2 and above, you don't need to update the uboot environment string anymore.

The uboot bootcmd update should be set as:

```
=> set mmc_boot 'setenv bootargs root=/dev/mmcbk0p1 rw noinitrd console=ttyS0,$baudrate;  
ext2load mmc 0:1 $loadaddr boot/ulmage;ext2load mmc 0:1 $fdtaddr boot/LY2.dtb;bootm  
$loadaddr - $fdtaddr'  
=>set bootcmd 'run mmc_boot'  
=>saveenv  
=>reset
```

CONFIGURATION COMMAND CHANGES

The configuration commands are changed for the following commands:

```
set interface gigabit-ethernet te-1/1/1 family ethernet-switching dot1q-tunneling egress t1
set interface gigabit-ethernet te-1/1/1 family ethernet-switching dot1q-tunneling ingress t1
set interface gigabit-ethernet te-1/1/1 family ethernet-switching dot1q-tunneling ether-type 0x88a8
set vlans dot1q-tunneling egress t1 from customer-vlan 100
set vlans dot1q-tunneling egress t1 from service-vlan 200
set vlans dot1q-tunneling egress t1 then action <change/none/one/two>
set vlans dot1q-tunneling egress t1 then service-vlan 200
set vlans dot1q-tunneling ingress t1 from double-tag service-vlan 300
set vlans dot1q-tunneling ingress t1 from one-tag customer-vlan-list 3000
set vlans dot1q-tunneling ingress t1 from untag enabled
set vlans dot1q-tunneling ingress t1 then customer-vlan 400
set vlans dot1q-tunneling ingress t1 then service-vlan 500
show interface gigabit-ethernet te-1/1/1 dot1q-tunneling
```

And added the following new commands:

```
set interface bpdu-tunneling destination-mac xx:xx:xx:xx:xx:xx
set interface gigabit-ethernet te-1/1/1 family ethernet-switching bpdu-tunneling protocol stp
show interface bpdu-tunneling
```