

# How to install the brocade OS on an empty CF drive

## Introduction

If you open a Brocade SAN switch you'll see a standard CF (Compact Flash) drive. On this drive are stored all the specific information of your switch (licenses, configuration) and your Linux OS that keeps your switch working.

I not aware of a procedure how to install your OS and your specific configuration if this CF drive is replaced by a new one and you don't have a backup available.

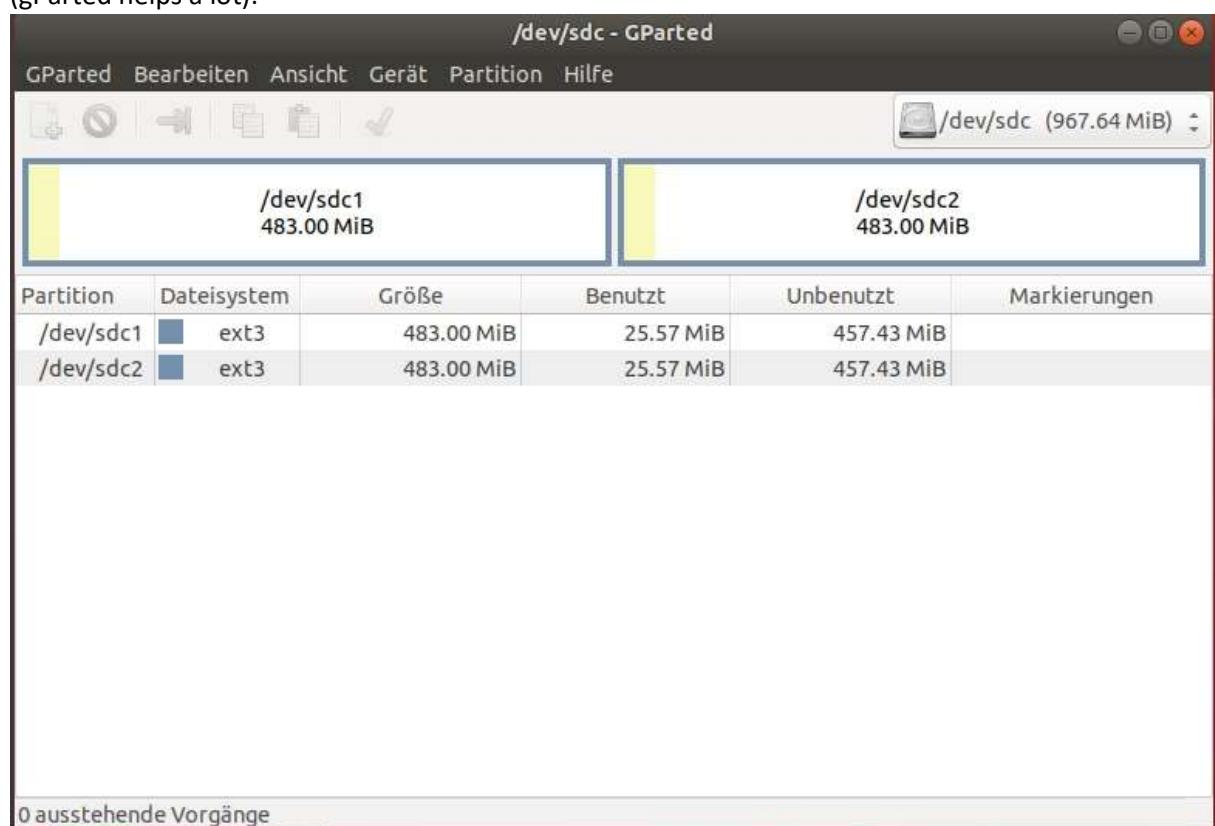
Brocade offers a program called **firmwareinstall**, that installs or upgrade the brocade OS on the second partition. After understanding the brocade boot process I had the idea to create a script similar to **firmwaredownload**, that to puts all OS-files on a empty CF-drive.

All steps needed are described here.

## Create two, empty partitions on your CF-drive

You need a USB card reader for CF.

Put the new CF drive into this reader. Create two primary partitions of the same size on this CF drive (gParted helps a lot):



The filesystem type should be the same as the original. In this case here it is **"ext3"**.

## Next Step: Create a fabos-bootable diskimage

You'll find in the appendix two scripts that are been tested under Ubuntu-Linux 18. The scripts need wget, rpm, rpm2cpio, cpio, hdparm, awk, xxd and ssh-keygen to work properly. Use apt-get to install these utilities on your machine.

Some OS messages are in German (sorry!).

```
./installer.sh
mke2fs 1.44.1 (24-Mar-2018)
Geräteblöcke werden verworfen: erledigt
Ein Dateisystem mit 128000 (4k) Blöcken und 128000 Inodes wird erzeugt.
UUID des Dateisystems: 4ab9ee6b-cac8-4df4-8bc1-e566a96be2b2
Superblock-Sicherungskopien gespeichert in den Blöcken:
    32768, 98304
```

```
beim Anfordern von Speicher für die Gruppentabellen: erledigt
Inode-Tabellen werden geschrieben: erledigt
Das Journal (4096 Blöcke) wird angelegt: fertig
Die Superblöcke und die Informationen über die Dateisystemnutzung werden
geschrieben: erledigt
```

```
Enter ipaddr: 192.168.50.57
Enter Username: admin
Enter Password:
Enter Sourcepath: admin/brocade/v6.2.2f9
ftp://USERNAME:PASSWORD@192.168.50.57/admin/brocade/v6.2.2f9
mount: /mnt: /home/a/install_ohne_switch/hda1_installer3.dsk ist bereits eingehängt.
filename: /SWBD34/release.plist
Extracting Fabric OS 6.2.2f9SWBD21/dir-1.0.4-5.ppc.rpm
Extracting SWBD21/ldconfig-2.16.1-4.ppc.rpm
Extracting SWBD21/glibc-2.3.6-8.ppc.rpm
Extracting SWBD21/glibc-linuxthreads-2.3.6-3.ppc.rpm
Extracting SWBD21/bash-2.04-8.ppc.rpm
Extracting SWBD21/readline-4.1-4.ppc.rpm
Extracting SWBD21/terminfo-11.2.0-6.ppc.rpm
Extracting SWBD21/termcap-1.3-5.ppc.rpm
Extracting SWBD21/fileutils-4.0-4.ppc.rpm
Extracting SWBD21/textutils-1.22-4.ppc.rpm
Extracting SWBD21/setup-6.2.2f9-27.ppc.rpm
Extracting SWBD21/swbd12-setup-1.3.4-4.ppc.rpm
Extracting SWBD21/which-2.12-4.ppc.rpm
Extracting SWBD21/findutils-4.1-4.ppc.rpm
Extracting SWBD21/bzip-1.0.1-4.ppc.rpm
Extracting SWBD21/zlib-1.1.4-5.ppc.rpm
Extracting SWBD21/chkconfig-1.0.0-7.ppc.rpm
Extracting SWBD21/sed-3.02-4.ppc.rpm
Extracting SWBD21/procps-3.3.0-3.ppc.rpm
Extracting SWBD21/psmisc-19.0.0-5.ppc.rpm
Extracting SWBD21/modutils-3.1-9.ppc.rpm
Extracting SWBD21/sin-1.1.0-6.ppc.rpm
Extracting SWBD21/rcinit-1.1.4-9.ppc.rpm
```

Extracting SWBD21/misc-1.0.0-5.ppc.rpm  
Extracting SWBD21/pam-0.74-28.ppc.rpm  
Extracting SWBD21/util-linux-2.12o-18.ppc.rpm  
Extracting SWBD21/sh-utils-2.0-10.ppc.rpm  
Extracting SWBD21/popt-1.3-4.ppc.rpm  
Extracting SWBD21/grep-2.4.2-4.ppc.rpm  
Extracting SWBD21/rpm-4.2-5.ppc.rpm  
Extracting SWBD21/sysvinit-2.78-9.ppc.rpm  
Extracting SWBD21/man-1.5g-7.ppc.rpm  
Extracting SWBD21/less-3.4.0-5.ppc.rpm  
Extracting SWBD21/gzip-1.2.4a-4.ppc.rpm  
Extracting SWBD21/tar-1.13.19-4.ppc.rpm  
Extracting SWBD21/rsync-2.6.9-2.ppc.rpm  
Extracting SWBD21/uuid-libs-1.22-4.ppc.rpm  
Extracting SWBD21/e2fsprogs-1.38-5.ppc.rpm  
Extracting SWBD21/cpio-2.4.2-4.ppc.rpm  
Extracting SWBD21/dev-1.4.0-2.ppc.rpm  
cpio: dev/initctl nicht erzeugt: Neuere oder gleich alte Version existiert schon  
Extracting SWBD21/bootenv-1.0.2-7.ppc.rpm  
Extracting SWBD21/wdtd-1.0.0-5.ppc.rpm  
Extracting SWBD21/fwdl-1.0.2-45.ppc.rpm  
Extracting SWBD21/telnet-server-0.17-7.ppc.rpm  
Extracting SWBD21/swbd23-prom-4.6.6-1.ppc.rpm  
Extracting SWBD21/kernel-2.6.14.2-4248702025.ppc.rpm  
cpio: Can't write over symlinks: ./lib/modules/2.6.14.2/modules.dep

Extracting SWBD21/swbd21-drivers-2.4.19-4.ppc.rpm  
Extracting SWBD21/sysklogd-1.4-9.ppc.rpm  
Extracting SWBD21/getty-2.0.7j-8.ppc.rpm  
Extracting SWBD21/net-tools-1.57-6.ppc.rpm  
Extracting SWBD21/vixie-cron-3.0.1-62\_4.ppc.rpm  
Extracting SWBD21/uucp-1.06-5.ppc.rpm  
Extracting SWBD21/portmap-4.0-4.ppc.rpm  
Extracting SWBD21/inetd-0.17-8.ppc.rpm  
Extracting SWBD21/iptables-1.3-1.ppc.rpm  
Extracting SWBD21/tcpd-7.6-4.ppc.rpm  
Extracting SWBD21/rsh-server-0.17-4.ppc.rpm  
Extracting SWBD21/rsh-0.17-4.ppc.rpm  
Extracting SWBD21/openssl-libs-0.9.8-2.ppc.rpm  
Extracting SWBD21/openssh-3.5p1-9.ppc.rpm  
Extracting SWBD21/openssh-server-3.5p1-9.ppc.rpm  
Extracting SWBD21/rusers-server-0.17-4.ppc.rpm  
Extracting SWBD21/rdate-990821.0.0-5.ppc.rpm  
Extracting SWBD21/logrotate-3.5.4-6.ppc.rpm  
Extracting SWBD21/ntp-5.93e-4.ppc.rpm  
Extracting SWBD21/pciutils-2.1.8-4.ppc.rpm  
Extracting SWBD21/strace-4.2-4.ppc.rpm  
Extracting SWBD21/sendmail-8.9-11.ppc.rpm  
Extracting SWBD21/iproute2-2.4-10.ppc.rpm  
Extracting SWBD21/libxml2-2.6.30-1.ppc.rpm  
Extracting SWBD21/fss-6.2.2f9-11.ppc.rpm  
Extracting SWBD21/fabos-setup-6.2.2f9-15.ppc.rpm  
Extracting SWBD21/fabos-drivers-gz-6.2.2f9-11.ppc.rpm

Extracting SWBD21/fabos-libs-6.2.2f9-11.ppc.rpm  
cpio: ./fabos/lib/libisc.so nicht erzeugt: Neuere oder gleich alte Version existiert schon  
cpio: ./fabos/lib/libisc.so.1.0 nicht erzeugt: Neuere oder gleich alte Version existiert schon  
Extracting SWBD21/fabos-diag-6.2.2f9-13.ppc.rpm  
Extracting SWBD21/fabos-6.2.2f9-10.ppc.rpm  
cpio: ./etc/fabos/calobject.xsd nicht erzeugt: Neuere oder gleich alte Version existiert schon  
Extracting SWBD21/fabos-zoning-6.2.2f9-10.ppc.rpm  
Extracting SWBD21/sqlite-3.2.1-4.ppc.rpm  
Extracting SWBD21/dhccpd-1.3-4.ppc.rpm  
Extracting SWBD21/fabos-hmon-6.2.2f9-10.ppc.rpm  
Extracting SWBD21/fabos-wwnhs-6.2.2f9-10.ppc.rpm  
Extracting SWBD21/fabos-man-6.2.2f9-13.ppc.rpm  
Extracting SWBD21/fabos-swbd34-6.2.2f9-4.ppc.rpm  
Extracting SWBD21/apache-1.3.31-10.ppc.rpm  
Extracting SWBD21/fastcgi-2.2-4.ppc.rpm  
Extracting SWBD21/fabos-webtools-6.2.2f9-11.ppc.rpm  
Extracting SWBD21/fabos-webtoolsez-6.2.2f9-3.ppc.rpm  
cpio: ./fabos/webtools/htdocs/wtcommon.jar nicht erzeugt: Neuere oder gleich alte Version existiert schon  
Extracting SWBD21/tz-7.11-6.ppc.rpm  
Extracting SWBD21/mtracer-tool-2.4.19-13.ppc.rpm  
Extracting SWBD21/sysstat-5.0.4-8.ppc.rpm  
Extracting SWBD21/ipv6-1.2-8.ppc.rpm  
Extracting SWBD21/ipsec-1.0-1.ppc.rpm  
Extracting SWBD21/kernel-module-ipsec-2.6.14.2-4248702025.ppc.rpm  
cpio: Can't write over symlinks: ./lib/modules/2.6.14.2/kernel

Updating the file system table...  
Fixing up pdm wrong directory for rcp  
Fixing up /etc/modules.conf...  
Fixing fabos/sbin/sname  
Add some important empty files  
ssh-keygen  
Removing temp files  
Unmounting hda1\_installer3.dsk; Please wait!

The script knows how to handle different brocade distributions (tested with v6.6.2f9 and V7.4.2f/v7.4.2d).

Now put the image files to the cf-drive:

```
./create_cf.sh
copy files from hda1_installer3.dsk to partition 1
copy files from hda1_installer3.dsk to partition 2
Checksum: 0x452601c1
Enter the following command on your switch console:
setenv OSLoader=ATA()0x00034018;ATA()0x000544f8
```

If the script is finished (take some time to close the filesystem!), put your cf-drive into your brocade switch.

Enable an access to the serial console and enter the command displayed in the create\_cf.sh output:  
"setenv OSLoader=ATA()0x00034018;ATA()0x000544f8" + "saveenv" + „reset“

Now boot the machine!

You'll see several error messages that are not of interest because a regular "firmwaredownload" is needed now!

Use the account „root“ password „fibranne“ to login and start a standard "firmwaredownload":

```
firmwaredownload
Server Name or IP Address: 192.168.50.57
User Name: admin
File Name: admin/brocade/v6.2.2f9
Network Protocol(1-auto-select, 2-FTP, 3-SCP, 4-SFTP) [1]: 2
Password:
Server IP: 192.168.50.57, Protocol IPv4
Checking system settings for firmwaredownload...
get release failed
get release failed
/sbin/preinst: [: -lt: unary operator expected
/sbin/preinst: [: too many arguments
System settings check passed.
```

You can run firmwaredownloadstatus to get the status of this command.

This command will cause a warm/non-disruptive boot on the switch, but will require that existing telnet, secure telnet or SSH sessions be restarted.

Do you want to continue [Y]:

```
Firmware is being downloaded to the switch. This step may take up to 30 minutes.
2000/01/01-00:07:42, [SULB-1001], 7, CHASSIS, WARNING, SilkWorm200E, Firmwaredownload
command has started.
Preparing for firmwaredownload...
2000/01/01-00:07:42, [SULB-1036], 8, CHASSIS, INFO, SilkWorm200E, The current Version: Fabric OS
vImproper Version String
Start to install packages...
... (download message removed here!)
All packages have been downloaded successfully.
Firmware has been downloaded to the secondary partition of the switch.
2000/01/01-00:23:15, [SULB-1002], 11, CHASSIS, INFO, SilkWorm200E, Firmwaredownload command
has completed successfully.
HA Rebooting ...
```

The machine now starts a clean OS. Install all configuration files and licenses in the usual manner.

Since Fabos v7 or V8 one commands is different. If the OS has booted as described above the firmwareupdate starts with the command "firmwarecleaninstall" instead of "firmwaredownload". The procedure has been successfully tested with a Brocade 300 und a Brocade 6510 switch and installs Fabos v7.x or v8.x correctly.

## Appendix:

### Installer.sh

---

```
#!/bin/bash
# fixed values: ftp-protocol to transfer the files
#      destination filename: hda1_installer3.dsk
#      PLATFORM=SWBD34
FS='ext3'
# PLATFORM=SWBD34 see: switch-types-blads-ids-product-names.pdf
# PLATFORM=SWBD71
# PLATFORM=SWBD34
PLATFORM=SWBD109
truncate -s 500M hda1_installer3.dsk
TARGET_DEV=hda1_installer3.dsk
mke2fs -F -g32768 -b4096 -j $TARGET_DEV
PROTOCOL=ftp
read -p "Enter ipaddr: " ipaddr
read -p "Enter Username: " user
read -s -p "Enter Password: " pw
echo
ACCOUNT=$user:$pw
read -p "Enter Sourcepath: " SOURCE_PATH
#
TMPMNT='/mnt'
TYPE=release
mount $TARGET_DEV $TMPMNT
/bin/mkdir -p /$PLATFORM
# SOURCE_PATH=192.168.50.57/admin/brocade/v7.4.2f
WGET_PATH=$PROTOCOL://$ACCOUNT@$ipaddr/$SOURCE_PATH
echo $WGET_PATH
wget -a /var/log/wget_clean.log -T 60 --tries=3 -N -nH -P /$PLATFORM
$WGET_PATH/platform_names
wget -a /var/log/wget_clean.log -T 60 --tries=3 -N -nH -P /$PLATFORM
$WGET_PATH/$PLATFORM/release.plist
mount -t $FS $TARGET_DEV /mnt
mkdir /mnt/proc
mkdir /mnt/mnt
mkdir /mnt/lib
mkdir /mnt/lib/modules
ln -sf default /mnt/lib/modules/2.6.14.2
mkdir /mnt/etc
wget -a /var/log/wget_clean.log -T 60 --tries=3 -N -nH -P /$PLATFORM
$WGET_PATH/$PLATFORM/group
mkdir -p /mnt/fabos/share
mkdir -p /mnt/fabos/lib
mkdir /mnt/dev
mkdir -p /mnt/var/lib/rpm
rpm --root /mnt --initdb

function putit()
```

```
{
# echo "complete Filename" $1
VALUE="$1"
fn=${VALUE##*/}
path=${VALUE%/*}
# echo $path und $fn
wget -a /var/log/wget_clean.log -T 60 --tries=3 -N -nH -P /mnt/$PLATFORM $WGET_PATH/$path/$fn
cw=`pwd`
cd /mnt
rpm2cpio /mnt/$PLATFORM/$fn | cpio -idm --make-directories --unconditional --extract-over-
symlinks
cd $cw
}
```

```
tail -c +289 /$PLATFORM/release.plist > /$PLATFORM/release.plist1
filename=/ $PLATFORM/release.plist1
echo filename: $filename
```

```
n=1
while read line
do
echo Extracting $line
putit $line
```

```
done < $filename
```

```
echo "Updating the file system table..."
```

```
case "$PLATFORM" in
"SWBD141" | "SWBD142" | "SWBD148" | "SWBD156" | "SWBD157" | "SWBD158")
cat > ${TMPMNT}/etc/fstab << EOF
/dev/root / $FS rw,noatime 0 0
none /proc proc defaults 0 0
none /sys sysfs defaults 0 0
none /dev/pts devpts mode=620 0 0
EOF
```

```
;;
*)
cat > ${TMPMNT}/etc/fstab << EOF
/dev/root / $FS rw,noatime 0 0
none /proc proc defaults 0 0
none /dev/pts devpts mode=620 0 0
EOF
```

```
;;
esac
```

```
echo "Fixing up pdm wrong directory for rcp"
ln -sf ../usr/bin/rcp /mnt/bin/rcp
```

```
echo "Fixing up /etc/modules.conf..."
```

```
cat > /mnt/etc/modules.conf << EOF
```

```
keep
path=/fabos/modules
alias eth1 eeepro100
EOF
```

```
echo "Fixing fabos/sbin/sname"
if [ ! -x /mnt/fabos/sbin/sname ] ; then
    ln -sf ../bin/sname /mnt/fabos/sbin/sname
fi
```

```
echo "Add some important empty files"
touch /mnt/etc/fabos/upgrade_status1
touch /mnt/etc/fabos/licenses
touch /mnt/fabos/share/release
ln -s default /mnt/lib/modules/preferred
mkdir /mnt/var/config
mkdir /mnt/var/tmp
```

```
echo "ssh-keygen"
ssh-keygen -q -b 1024 -t rsa -f /mnt/etc/ssh_host_rsa_key -N ""
chmod 600 /mnt/etc/ssh_host_rsa_key
chmod 600 /mnt/etc/ssh_host_rsa_key.pub
ssh-keygen -q -t dsa -f /mnt/etc/ssh_host_dsa_key -N ""
chmod 600 /mnt/etc/ssh_host_dsa_key
chmod 600 /mnt/etc/ssh_host_dsa_key.pub
ssh-keygen -q -t ecdsa -f /mnt/etc/ssh_host_ecdsa_key -N ""
chmod 600 /mnt/etc/ssh_host_ecdsa_key
chmod 600 /mnt/etc/ssh_host_ecdsa_key.pub
```

```
echo "Removing temp files"
rm -Rf /mnt/home/*
rm -Rf /mnt/home.??*
rmdir /mnt/home 2> /dev/null
rm -Rf /mnt/$PLATFORM/*
rmdir /mnt/$PLATFORM
```

```
echo Unmounting $TARGET_DEV\; Please wait!
umount /mnt
```

---

```
create_cf.sh
```

---

```
#!/bin/bash
mount /dev/sdb1 /mnt1
mount /dev/sdb2 /mnt2
mount hda1_installer3.dsk /mnt
echo copy files from hda1_installer3.dsk to partition 1
cd /mnt
tar cf - . | (cd /mnt1; tar xf -)
sync
echo copy files from hda1_installer3.dsk to partition 2
tar cf - . | (cd /mnt2; tar xf -)
```



```

sync
# create bindata.bin and fill it with fixed data
awk 'BEGIN {printf("babeface000000010000000000000000\n")}' | xxd -r -p > /home/a/bindata.bin
# get the number of hdparm entries
hdparm --fibmap /mnt1/boot/zImage.tree.initrd | awk 'FNR>4 {sum++} END {printf("%08x\n",sum)}'
| xxd -r -p >> /home/a/bindata.bin
# fill bindata.bin with additional fixed data
awk 'BEGIN {printf("000000000000000000000000\n")}' | xxd -r -p >> /home/a/bindata.bin
# put hdparm numbers into the bindata.bin file
hdparm --fibmap /mnt1/boot/zImage.tree.initrd | awk 'FNR>4 {printf("%08x %08x\n", $2, $4)}' | xxd -r
-p >> /home/a/bindata.bin
# fill bindata.bin with zeros until 1k
xxd -ps -c 1 /home/a/bindata.bin | awk '{sum++} END {for (i=sum; i<1024; i++) printf("00\n")}' | xxd -r
-p >> /home/a/bindata.bin
# produce the checksum
sum="0x" `xxd -g 4 /home/a/bindata.bin | awk '{ $2=strtonum("0x" $2); $3=strtonum("0x"
$3); $4=strtonum("0x" $4); $5=strtonum("0x" $5); sum=sum+$2+$3+$4+$5 } END {printf("sum:
%08x\n", and(-(sum), 0xffffffff))}' | awk '{ $2=strtonum("0x" $2); $3=strtonum("0x"
$3); $4=strtonum("0x" $4); $5=strtonum("0x" $5); sum=sum+$2+$3+$4+$5 } END
{printf("%08x\n", sum)}'`
echo Checksum: $sum
# put the checksum number at the right position into file bindata1.bin
xxd -ps -c 4 /home/a/bindata.bin | awk s=$sum '{i++; out="$1"; if(i==3){printf("%08x\n", s)} else {print
$out}}' | xxd -r -p > /home/a/bindata1.bin
# put bindata1.bin to the cf-drive
cp /home/a/bindata1.bin /mnt1/boot/zImage.tree.initrd.map
cp /home/a/bindata1.bin /mnt2/boot/zImage.tree.initrd.map
# read the environment numbers
addr1=`hdparm --fibmap /mnt1/boot/zImage.tree.initrd.map | awk 'FNR>4
{printf("ATA()0x%08x\n", $2)}'`
addr2=`hdparm --fibmap /mnt2/boot/zImage.tree.initrd.map | awk 'FNR>4
{printf("ATA()0x%08x\n", $2)}'`
echo "Enter the following command on your switch console:"
echo "setenv OSLoader \"$addr1;$addr2\""
echo "setenv OSRootPartition \"hda1:hda2\""
echo "saveenv"
echo "reset"
umount /dev/sdb1
umount /dev/sdb2

```

=====