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## EdgeMax rescue kit (now you can reinstall EdgeOS from scratch)

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EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-15-2013 04:39 AM - edited 08-25-2013 11:11 PM

After two weekend nighths of work I'm happy to present a preview of EdgeMax rescue kit. Those who managed to break their EdgeOS should have a tool to get it back to life after all. (:

Basically it's an EdgeOS kernel recompiled and stripped down with embedded initramfs with recovery tools. You connect to your router via serial, boot it via TFTP and get into a minimal rescue system.

The following scripts for automated recovery procedures are included:

1. emrk-factory-reset — removes the config.boot, optionally making a backup copy inside the config dir so you can access it easily after reboot.
2. emrk-remove-user-data — removes any data from writable dirs, getting the system back to clean EdgeOS (all config data, user installed packages on so on are removed). It also removes copies of user data left after resets, as pressing reset button doesn't really remove the data but renames the old writable dir to some random name and creates a new one. Useful if you are going to give away your ERL to an untrusted third party.
3. emrk-reinstall — downloads release tarball from URL and reinstalls EdgeOS from scratch .

**NOTE:** emrk-remove-user-data and emrk-reinstall are highly disruptive! The former will remove everything but the stock EdgeOS image. The latter will remove and re-create all the partitions so all your data, if you still have any, will be lost irrecoverably. Use it only if there is no hope to recover your installation in a less disruptive way.

I did my best to get it to work, but I can't guarantee there are no bugs, so use at your own risk.

### How to use

Download the image: [baturin.org/files/edgeos/emrk/emrk-0.9c.bin](http://baturin.org/files/edgeos/emrk/emrk-0.9c.bin) (MD5 sum: 3545d69a8912fd967c7301031c47960e)  
Install a TFTP server. On UNIX systems some is always available from ports/repos, Windows users may use this one: <http://tftpd32.jounin.net/> Copy the image to your TFTP directory.

It's better to set up a DHCP server. On ISC DHCPD, specify

```
option tftp-server-name "x.x.x.x"; # Your TFTP server address
next-server x.x.x.x; # Your TFTP server address
option bootfile-name "emrk-0.9c.bin";
filename "emrk-0.9c.bin"
```

Connect to your router via serial. Power on or reboot and before EdgeOS kernel loads, press any key (I usually press any key repeatedly since it starts booting). This will get you to the bootloader console where you can boot your router manually.

Connect router erh0 to your network.

If you use a DHCP server, issue the following command in U-Boot CLI:

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```
set bootfile emrk-0.9c.bin

Optionally,
set gatewayip z.z.z.z (where z.z.z.z is your default gateway)

tftpboot
bootoctlinux $loadaddr
```

If everything goes right, after bootoctlinux command you will see the kernel booting and will be asked if you want to continue after a scary disclaimer. Answer "yes" (case insensitive) or "no", then asked to configure network. You may choose DHCP or configure it statically.

To reinstall EdgeOS from scratch, you will need to download the tarball and put it on your HTTP/FTP/SSH server.

Here is an example of session with reinstall (kernel boot messages omitted).

```
Loading EMRK 0.9a
Mounting filesystems
Bringing up eth0

Checking boot partition
Boot partition looks intact
Attempting to mount boot partition
Boot partition successfully mounted
Looking for kernel file
Found a kernel
Checking kernel MD5 sum file
Found kernel MD5 sum file
Checking kernel MD5 sum
Kernel MD5 sum is correct

Checking root partition
Root partition looks intact
Attempting to mount root partition
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda2, internal journal
EXT3-fs: mounted filesystem with writeback data mode.
Root partition successfully mounted
Looking for system image file
Found a system image file
Checking system image MD5 sum file
Found system image MD5 sum file
Checking system image MD5 sum
System image MD5 sum is correct

*****
Welcome to EdgeMax Rescue Kit!

This tool is distributed under the terms of
GNU General Public License and other licenses

Brought to you by SO3 Group

WARNING: This tool is not developed, officially
supported or endorsed by Ubiquiti Networks!

Using it may lead to destroying your router
configuration or operating system

Ubiquiti Networks support will not help you
with using it or fixing consequences of
using it.

This tool itself is distributed without any
warranty and authors are not liable for
any damage it may cause

By using this tool you agree you are doing
it at your own risk and understand what
```

```
you are doing

*****

Enter 'Yes' to proceed, 'No' to reboot
yes or no: yes

Do you want to configure network via DHCP?
yes or no: yes
udhcpd (v1.17.1) started
Sending discover...
Sending select for 10.91.19.175...
Lease of 10.91.19.175 obtained, lease time 86400
/usr/share/udhcpd/default.script: Resetting default routes
route: SIOCDELRT: No such process
/usr/share/udhcpd/default.script: Adding DNS 10.91.19.1

EMRK provides some scripts for automated
recovery procedures:

emrk-factory-reset -- reset config to factory default
emrk-remove-user-data -- remove all the user data including
    config and everything
emrk-reinstall -- reinstall EdgeOS from scratch
    (wipes any user data too)

Enter 'reboot' to reboot your router

BusyBox v1.17.1 (Debian 1:1.17.1-8) built-in shell (ash)
Enter 'help' for a list of built-in commands.

/bin/ash: can't access tty; job control turned off
EMRK>
EMRK>emrk-reinstall
WARNING: This script will reinstall EdgeOS from scratch
If you have any usable data on your router storage,
it will be irrecoverably destroyed!
Do you want to continue?
yes or no: yes
Unmounting boot partition
Unmounting root partition
Re-creating partition table
Creating boot partition
Formatting boot partition
mkfs.vfat 3.0.9 (31 Jan 2010)
Creating root partition
Formatting root partition
Mounting boot partition
Mounting root partition
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda2, internal journal
EXT3-fs: mounted filesystem with writeback data mode.
Enter EdgeOS image url: ftp://10.91.19.5/pub/ER-e100.v1.2.0.4574253.tar
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left    Speed
100 68.3M  100 68.3M    0     0  8319k      0  0:00:08  0:00:08 --:--:-- 6318k
Unpacking EdgeOS release image
Verifying EdgeOS kernel
Copying EdgeOS kernel to boot partition
Verifying EdgeOS system image
Copying EdgeOS system image to root partition
Creating EdgeOS writable data directory
Cleaning up
Installation finished
Please reboot your router
```

If you want to do things manually, there are busybox with symlinks to its applets (cat/grep/rm/cp/mv/tar/etc., ping, traceroute, nc etc.), curl, parted, and mkfs.ext3/mkfs.vfat.

I used it on my on ERL when I replaced the USB stick with a 8GB one yesterday. Hope you find it useful, any bug reports or suggestions are welcome.

Here are the scripts it uses: <https://github.com/SO3Group/emrk>

1 of 131

**UBNT-ancheng**  
Ubiquiti Employee



Posts: 8003  
Kudos: 2587  
Solutions: 977  
Contributions: 2  
Registered: 06-10-2011

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36 Kudos

REPLY

Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-15-2013 09:14 AM

Thanks for the effort and for including the warning! 😊

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REPLY

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**UBNT-stig**  
Ubiquiti Employee



Posts: 6264  
Kudos: 1734  
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Registered: 06-09-2011

Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-15-2013 02:37 PM - edited 07-15-2013 06:28 PM

This is pretty cool. One of my test ERL's has been bricked for a while I hadn't gotten around to running our factory install script, so I gave your build a try instead. It worked and rebooted fine.

One thing you may want to add is the version file since the normal upgrade script looks for that. Without that the next upgrade failed for me:

```
ubnt@ubnt:~$ add system image upgrade-v1.2.0dev.4578432.130715.0102.tar
Checking upgrade image... Done
Preparing to upgrade... Done
Copying upgrade image... /usr/bin/ubnt-upgrade: line 449: [: ==: unary operator expected
Done
Removing old image... Done
Checking upgrade image... Done
cp: can't stat '/root.dev/version': No such file or directory
Finishing upgrade... Failed to move current image
ubnt@ubnt:~$
```

After the failed upgrade, I was left with an upbootable system. So I used the rescue image again to recover and then did a "sudo touch /root.dev/version" so that the next upgrade would work. I suppose we should be the upgrade script more robust so that it doesn't leave you with an unbootable system if the upgrade goes sideways.

EdgeMAX Router Software Development

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**linuxwarz**  
New Member



Posts: 17  
Kudos: 7  
Registered: 07-06-2013

Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-15-2013 06:18 PM - edited 07-15-2013 10:46 PM

I might have to try this. My 8GB upgrade is not going so well. After the first dd the router booted, then after a reboot the router refused to boot from the drive ever again. Even after zeroing it out and starting dd over...

[EDIT]

This script didnt work for my 8GB drive. I'm starting to think either something is corrupted on it or the router just doesnt like the drive. I'm going to RMA the drive.

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**dmbaturin**  
Member



Posts: 204

Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-16-2013 07:40 AM

Yeah, good point, I overlooked it. Just copy the version file to the root partition?

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**dmbaturin**  
Member



Posts: 204  
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Contributions: 3  
Registered: 05-21-2013

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**linuxwarz**  
New Member



Posts: 17  
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Member



Posts: 204  
Kudos: 224  
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Registered: 05-21-2013

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**dragon2611**  
Regular Member



Posts: 603  
Kudos: 99  
Solutions: 6  
Registered: 05-28-2012

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Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-16-2013 07:43 AM

linuxwarz: Hhm, interesting. What messages do you get from U-Boot when you connect via serial after running the reinstall script?

Could you also boot to the rescue image once more and post "ls /mnt/root" and "ls /mnt/boot"?

Some say there are incompatible USB sticks and it may be the case, but I want to make sure if it was not a bug in the script.

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0 Kudos

REPLY

Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-16-2013 10:43 AM

All of your answers are in the attached file. I wonder why I have DHCP issues in the bootloader too... your script works fine. I use the DHCP in the tftpd32 application.

Attachments:  
 [out.txt 16 KB](#)

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Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-16-2013 01:20 PM

Interesting. To me it looks like the ERL doesn't like the flash drive, but the fact that parted and mkfs didn't throw any errors confuses me. You may look at the bin/emrk-reinstall script from the github link above and reproduce the steps manually, maybe it will give some useful information.

Also I updated the image, fixed the bug with missing version file. <http://baturin.org/files/edgeos/emrk-0.9b.bin>

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REPLY

Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

[Options](#)

07-16-2013 01:51 PM

Thanks for this it looks like it's unbricked my ERL 🙌

I also ran the command to fix the missing file, so hopefully an update won't re-brick it.

[Add Tag...](#)

0 Kudos

REPLY

Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]

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07-16-2013 11:51 PM





With 0.9b the version file should get copied correctly already, so in the future it should not be a trouble. Would be nice if someone tried to install 1.1.0 and upgrade to 1.2.0 for verification. (:

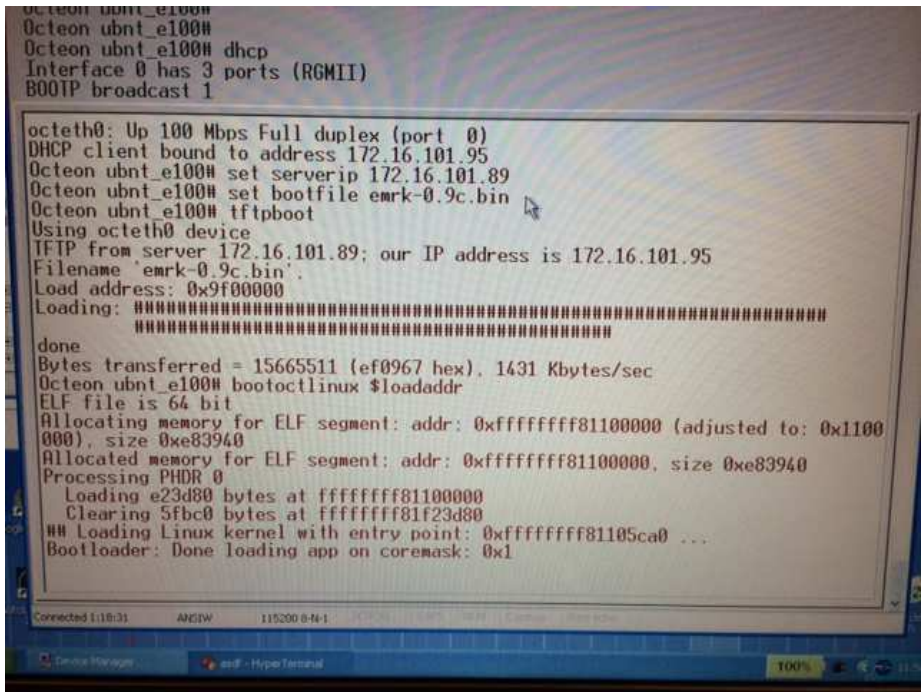
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<div><b>Magician</b> SuperUser</div> <div></div> <div>Posts: 2878 Kudos: 1282 Solutions: 11 Registered: 10-12-2010</div> <div>12 of 131</div>	<div>Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ] 07-17-2013 06:05 PM</div> <div>This makes me want to brick one of mine to test!!! I have been lucky with 80+ in the network and none failed yet minus the one that found lightning and let its smoke out 🙄</div> <div>UBRSS, UBWA, UEWA - Ubiquiti Certified Trainer</div> <div><a href="#">Add Tag...</a> 1 Kudo <a href="#">REPLY</a></div>
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<div><b>hilo90mhz</b> New Member</div> <div></div> <div>Posts: 23 Kudos: 1 Registered: 09-22-2013</div> <div>14 of 131</div>	<div>Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ] 10-01-2013 01:10 PM</div> <div>Thanks for the great tutorial! Just wanted to say that I had no luck with TFTPd on windows 8 x64, it would start the connection but then never transfer any data and time out. But Open TFTP server worked first try to serve the file: <a href="http://sourceforge.net/projects/tftp-server/">http://sourceforge.net/projects/tftp-server/</a> Because I didn't want to setup my own FTP/HTTP server for the final upload of tarball I just used the direct link to the current beta image: <a href="http://dl.ubnt.com/firmwares/edgemax/v1.3.0/ER-e100.v1.3.0beta1.4599951.tar">http://dl.ubnt.com/firmwares/edgemax/v1.3.0/ER-e100.v1.3.0beta1.4599951.tar</a></div> <div>Now it works again 🙄</div> <div><a href="#">Add Tag...</a> 0 Kudos <a href="#">REPLY</a></div>
<div><b>dmbaturin</b> Member</div> <div></div> <div>Posts: 204 Kudos: 224 Solutions: 8 Contributions: 3 Registered: 05-21-2013</div>	<div>Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ] 10-01-2013 01:20 PM</div> <div>Hey guys, I've heard from Stig yesterday some folks couldn't download the image. We were having multiple problems with hardware, L3 switch, and DoS attacks yesterday. Now we resolved that, EMRK images and other stuff we host should be available again. Sorry for the inconvenience.</div>

15 of 131	<div>Add Tag...</div> <div>3 Kudos</div> <div>REPLY</div>
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<div><div><div>dmbaturin</div><div>Member</div><div></div><div>Posts: 204 Kudos: 224 Solutions: 8 Contributions: 3 Registered: 05-21-2013</div></div></div>	<div><div>Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]</div><div>Options</div><div>10-01-2013 02:00 PM</div><div>0.9c has some more tools built-in, and some random bugfixes/enhancements to the scripts. Generally I'd recommend it over 0.9b as some bugs were easy to hit, AFAIR.  I should start keeping proper changelogs I guess.</div><div><div>Add Tag...</div><div>0 Kudos</div><div>REPLY</div></div></div>
<div><div><div>kt4vt</div><div>New Member</div><div></div><div>Posts: 13 Registered: 07-02-2013</div></div></div>	<div><div>Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]</div><div>Options</div><div>02-18-2014 08:57 AM</div><div>I have a ER-Lite that failed the firmware upgrade from 1.3 to 1.4. From the console port, it appears to boot but there are a ton on SQUASHFS errors that fly by about read failures. These errors even occur after defaulting the unit. So I've tried running the rescue kit to reinstall the image but I'm running into an issue at the final boot step. The emrk-0.9c.bin transfers fine from my TFTP server. But when I type <b>bootctlinux \$loadaddr</b>, the boot process hangs at a point. The attached pic shows where it hangs. Any thoughts? Will  Attachments:</div></div>



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**UBNT-ancheng**  
Ubiquiti Employee



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**Re: EdgeMax rescue kit (now you can reinstall EdgeOS from scratch) [ New ]**

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02-18-2014 11:56 AM

If it's stopping there, it could be a hardware issue, so please contact [support@ubnt.com](mailto:support@ubnt.com) for help with verification and RMA if necessary.

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