**How to backup/replace/update your [R7000](https://amzn.to/32SEjYr" \t "https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/_blank) Bootloader (CFE.BIN) the easy way!**​

After finding out that I know nothing about WinSCP and PuTTY etc, I decided to turn my learning experience into an easy step-by-step guide that anyone without deep networking/hardware knowledge can follow.  
  
So why would you want to do this??? Well, it turns out that due to a change in the latest versions of this firmware, the network client list no longer populates correctly, or at all. From what I have found in my research, this could be down to an earlier version of this firmware corrupting/changing part of the routers Bootloader. Use this guide if you experience this problem and want to fix it, but **bear in mind that there are always risks to flashing Bootloaders, which are vital to the operation of your router, and *could* result in an expensive brick!** Saying this, I managed to do it multiple times, with absolutely no issues whatsoever. My [R7000](http://www.amazon.com/gp/product/B00F0DD0I6/ref=as_li_qf_sp_asin_il_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=B00F0DD0I6&linkCode=as2&tag=linksysinfo-20&linkId=OIRW2GVDC2V6JETL" \t "https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/_blank) had the original v1.0.0.1 Bootloader (CFE.BIN), and has never been modified before now.  
  
**Thanks**go to**[@Makaveli](https://www.linksysinfo.org/index.php?members/56640/)**for your help and sanity checks!

**\*\*\* XVortex is now advising that in order to maintain compatibility with his latest firmware releases (v384.12\_0 and beyond), and to ensure that all features work as intended, you should seriously consider updating your CFE to v1.3.0.7 \*\*\***  
  
  
  
**\*\*\* You MUST perform a Full Factory Reset via the routers GUI after doing this - You WILL lose ALL your router settings \*\*\***​

Still here? OK, then here we go...  
  
**\*\*\* UPDATE \*\*\*[Please read this info on how to correctly setup your MAC Addresses, and why, before you go any further...](https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/post-306214) Thanks Digimon!**  
  
1.) Download the Custom CFE Toolkit file from the **[Custom CFE](https://mega.nz/" \l "!8sd0TCaY!ELDWZeQWgKzMAyWc-4Jg8vln0sSbPfGbrYXl1XqD_BM" \t "https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/_blank)**[(v1.3.0.7) link provided by xVortex](https://mega.nz/" \l "!8sd0TCaY!ELDWZeQWgKzMAyWc-4Jg8vln0sSbPfGbrYXl1XqD_BM" \t "https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/_blank), and decompress it. Customise the included cfe.bin file using the **CFEEdit.exe** tool by adding ~~your~~**~~WAN MAC address~~**~~from the sticker under your [R7000](http://www.amazon.com/gp/product/B00F0DD0I6/ref=as_li_qf_sp_asin_il_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=B00F0DD0I6&linkCode=as2&tag=linksysinfo-20&linkId=OIRW2GVDC2V6JETL" \t "https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/_blank)~~. **UPDATE: ASUS has blacklisted the Netgear MAC address which is on the label under the router, you now have to use a MAC address which starts with 74 : D0 : 2B : XX : XX : XX - XX:XX:XX should be replaced with the last 6 alpha-numeric characters from your own MAC address on the sticker under your router.** To do this, run CFEEdit.exe, click **File**, select **Open CFE**, select **cfe\_r7000.bin**, then just type or paste your **WAN MAC** into the **Dumb Mode MAC Address box**. Now select **Save CFE As** and save your customised as **cfe.bin**, and close CFEEdit.

**\*\*\* If you do not change the MAC address to start with 74 : D0 : 2B or another non-blacklisted MAC, then you will run into issues with AiMesh, AiProtection, Parental Controls and Adaptive QoS, and maybe other random things too! \*\*\*  
  
\*\*\* [Click HERE to view the list of blacklisted MAC addresses](https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/post-325001) \*\*\* Thanks to [@Harry Ho](https://www.linksysinfo.org/index.php?members/65520/) & Paldier**​

2.) Download **[WinSCP](https://winscp.net/eng/index.php" \t "https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/_blank)**, and **[PuTTY](https://putty.org/" \t "https://www.linksysinfo.org/index.php?threads/asuswrt-merlin-on-netgear-r7000.71108/_blank)** and install them on your computer.  
  
3.) Use your browser to log into your router, then go to Administration > System > then click **Enable SSH**, select **LAN Only** from the drop down menu, then click **Apply**.  
  
4.) Now open WinSCP, select **SCP** as the file protocol then type your routers IP address, use port 22, enter your routers username and password, then press **Login** to connect to your router. Select Yes on the warning screen, if one appears.  
  
5.) To get ready to backup your existing CFE, first, on the right hand side of the WinSCP screen, navigate to the **/tmp/home/root/** directory of your router. This is where all your work will be done on the router itself.  
  
6.) Now on WinSCPs toolbar in the top left of the screen, press the Open Terminal button and type "**cat /dev/mtd0 > original\_cfe.bin**" without quotes in to the **Enter Command** box, press **Execute**, then press **close**. The file **original\_cfe.bin** should appear in the right hand side window of WinSCP. You may have to press the green refresh button in the toolbar above the top right directory list. This will make the file appear. Drag the **original\_cfe.bin** file from the right window, to the left, (you can also just drag the file to your desktop) so that you have a copy of your stock cfe.bin on your computer for safekeeping.  
  
Now lets copy your customised cfe.bin (bootloader) and it's support file to your router...  
  
7.) In the left window of WinSCP, hold down the **Ctrl key** on your keyboard, and select both **cfe.bin**, and **mtd-write** files and drag them to the right hand side of the window, this will copy the files to the **/tmp/home/root/** directory of your router. You're now finished with WinSCP, and you can close it.  
  
8.) Now we use PuTTY. In the Session/Basic Options screen, type your routers IP address in to the Host Name box, use the default Port 22, and select SSH as the Connection Type then press **Open** to connect, click Yes on the warning screen that will popup. Putty will then open a Terminal Window, asking you to input your routers username and password, after entering those, type or paste "**chmod +x ./mtd-write**" without quotes, press Enter on your keyboard, then type or paste "**./mtd-write -i cfe.bin -d boot**" without quotes and press Enter on your keyboard. You may now close PuTTY.  
  
**\*\*\* UPDATE - 16/08/21 \*\*\***  
If you encounter problems flashing your new CFE in step 8, try using the command **"dd if=cfe.bin of=/dev/mtd0"**without quotes, instead of**"./mtd-write -i cfe.bin -d boot" - Thanks [@ringlord](https://www.linksysinfo.org/index.php?members/63978/)  
  
9.)** **Go to back to your routers GUI and perform a** **Full Factory Reset.**  
  
Thats it, You're done! After setting up your router, the client list will now work perfectly, as well as giving you full compatibility with XVortex's latest firmware v384.12\_0 and beyond.  
  
**Tip:** If you encounter problems booting the router after a firmware update, then remember that this new CFE comes with an emergency MiniWeb Server built in to it. You can access it by holding down the Reset Button for 30 seconds.