Asus x99 Clover EFI Install Guide

My personal setup
Motherboard: Asus X99-E WS
CPU: Intel 5960X
RAM: 64MB DDR4 GSkill 2800 RAM
GPU: Titan X GPU
Harddrive (NVME): Intel 750 NVME 1.2TB PCIE SSD
Harddrive (SATA): 3x Samsung 850 Pro 1TB SSD
Harddrive (M.2): SM951 m.2 SSD 512gb **<- my install drive**

Guide works on all x99 ASUS boards.

Other boards may work, but have not been verified to me.

Files are meant for 8 core processors such as 5960x or Xeon processor.

A VoodooTSCSync.kext modification method for other core processors is mentioned in the guide.

Never assume you are reading the codes correctly as you could have mistakes from wrapping.

Always copy into Word and make the smallest text size that allows you to see the full code on a single line.

When in doubt, use REPAIR DISK PERMISSIONS. Never skip. Its #1 cause of problems, from people skipping this easy step.

KextWizard is the best tool for this.

Programs Needed

Program 1: UNIBEAST

Program 2: MULTIBEAST

Program 3: Clover

Program 4: KextWizard

Program 5: KextBeast

Program 6: EFImounter-v2

Program 7: OSx Yosemite Install downloaded from AppleStore into your apps folder

4 USB's are Needed

USB 1: UNIBEAST Installer USB named "USB" <- Used in Section 2

USB 2: Kext Copy Folder named "COPY" <- Used in Section 4

USB 3: Clover Installer USB named "Clover" <- Used in Section 5

USB 4: EFI folder for clover-post-install USB named "EFI-post-install" <- Used in Section 6 (If OS X says too long make it something shorter you like, its not important). You will notice I made an additional config.plist file available for download.

Note on USB 4: If you are using a system other than 5960x and Titan X you may need to adjust things like nvda_drv=1 in the config.plist to fit your respective graphics card. You might also want to change your resolution to your name resolution, since the file is set for mine. For other than 5960x you need to edit all "VoodooTSCSync.kext" files to match your processor number... ie 4 core = 7 and 8 core = 15 Its core # x 2 - 1 . You do this by...

Step 1: Right click on VoodooTSCSync.kext

Step 2: Select Show Package Contents

Step 3: Go to Contents folder and Right Click on Info.plist and open with Xcode

Step 4: Go to…

> IOKitPersonalities
  > VoodooTSCSync
    > IOPropertyMatch
      > IPCPUNumber (Make value that corresponds to your core number below)

       16 core = *31*
       12 core = *23*
        8 core = *15*
        6 core = *11*
        4 core = *7*

Section 1: Set your Bios in X99-E WS

Step 1: Set a Default Configuration

Step 2: Turn off Sataport Express

     Advanced > Onboard Devices Configuration > Sataport Express = Disable

Step 3: Change USB Settings

     Advanced > USB Configuration > …

          Intel xHCI Mode = Auto
          xHCI Legacy Support = Enabled
          EHCI Legacy Support = Enabled
          xHCI Hand-off = Enabled
          EHCI Hand-off = Enabled

Step 4: Disable I/O (VT-d)…

     Advanced > Advanced/System Agent Configuration

Step 5: Change BOOT Settings

     BOOT > …

          Fast Boot = Disabled
          Secure Boot = Other OS
          Key Management = Clear Secure Boot Keys

Section 2: Prepare USB drive for UNIBEAST

Step 1: Open…

        /Applications/Utilities/Disk Utility

Step 2: Highlight the USB drive in left column

Step 3: Click on the Partition tab

Step 4: Click Current and choose 1 Partition

Step 5: Click Options…

Step 6: Choose MBR Master boot loader

Step 7: Under Name: type "*USB*"

Step 8: Under Format: choose Mac OS Extended (Journaled)

Step 9: Click Apply then Partition

Step 10: Open UNIBEAST to create the bootable drive on "*USB*"

Step 11: Click change install directory to "USB". Do not select legacy support or laptop mode.

Step 12: Run UNIBEAST to create bootable USB

Section 3: Copy kexts to UNIBEAST and Patch Kernel

Step 1: Download the attached kext files (UNIBEAST-Kext-5960x.zip). These are pre-configured kext files for the 8 cores of 5960x.

1) AppleACPIPlatform.kext
2) fakesmc.kext
3)IOPCIFamily.kext
4) VoodooTSCSync.kext <- requires modification if your processor is not 8 core

Step 2: In terminal command make all hidden folders visible on "USB".

defaults write com.apple.finder AppleShowAllFiles YES

then

killall Finder

Note- to navigate inside to folders you need to right click and select "*open as new tab*"

Step 3: Navigate to…

/USB/extras/extensions folder

Step 4: Paste the 4 kext files. Select "*yes*" to overwrite if necessary. If you can't overwrite them, right click to delete.

Step 5: Navigate to /USB/System/Library/Extensions folder and paste the 4 kext files. Select "*yes*" to overwrite if necessary. If you can't overwrite them, right click to delete.

Step 6: Open terminal and Patch kernel.

sudo perl -pi -
e 's|\x74\x11\x83\xF8\x3C|\x74\x11\x83\xF8\x3F|g' /Volumes/USB/System/Library/Kernels/kernel

Step 7: Open KextWizard. Select your USB drive. Checkmark the 4 boxes and hit execute to "verify disk permissions".

Step 8: In terminal command hide all hidden folders on USB.

```
defaults write com.apple.finder AppleShowAllFiles NO
```

then

```
killall Finder
```

Section 4: Create USB named "COPY" with 4 kext files

Step 1: Open /Applications/Utilities/Disk Utility

Step 2: Highlight the USB drive

Step 3: Click on the Partition tab

Step 4: Click Current and choose 1 Partition

Step 5: Click Options...

Step 6: Choose GUID Partition Table

Step 7: Under Name: type "COPY"

Step 8: Under Format: choose Mac OS Extended (Journaled)

Step 9: Click Apply then Partition

Step 10: Exit Disk Utility

Step 11: In "*COPY*" USB add new folder and title it "*kexts*"

Step 12: Copy and paste the 4 kext files from UNIBEAST-Kext-5960x.zip

    1) AppleACPIPlatform.kext
    2) fakesmc.kext
    3) IOPCIFamily.kext
    4) VoodooTSCSync.kext <- requires modification if your processor is not 8 core

Section 5: Create CLOVER boot USB

Step 1: Open…

       /Applications/Utilities/Disk Utility

Step 2: Highlight the USB drive in left column

Step 3: Click on the Partition tab

Step 4: Click Current and choose 1 Partition

Step 5: Click Options...

Step 6: Choose GUID Partition Table

Step 7: Under Name: type USB (You can rename it later)

Step 8: Under Format: choose Mac OS Extended (Journaled)

Step 9: Click Apply then Partition

Step 10: Open /Applications/Utilities/Terminal

Step 11: Type the following, enter password and hit enter. This command completely erases the USB, then creates native OS X installer media from the Install OS X Yosemite Application.

```
sudo /Applications/Install\ OS\ X\ Yosemite.app/Contents/Resources/createinstallmedia --volume /Volumes/USB --applicationpath /Applications/Install\ OS\ X\ Yosemite.app --no interaction
```

Step 12: Open Clover

Step 13: In Clover, Change Install Location to your USB - USB should automatically be named "*Install OS X Yosemite*" from previous step

Step 14: Click on Customize Button

Step 15: Select the Following

       (A) Install for UEFI booting only
       (B) Install Clover in the ESP
       (C) Themes
       - BootCamp
       (D) Drivers64UEFI
       - DataHubDxe-64
       - EmuVariableUefi-64
       - OsxAptioFixDrv-64

Step 16: Click "*Install*", You have now made your Clover Bootloader drive

Step 17: Copy "EFI" folder from EFI-clover-bootloader.zip and paste into EFI partition of Clover USB you just created that is named "*Install OS X Yosemite*"

- Select yes to overwrite previous EFI folder
- **Note:** If you did not see EFI partition above, use EFI Mounter-v2 as an easy tool to mount it.
- If you are unsure of which UEFI partition to mount go into terminal and type…

diskutil list

- Press enter and identify the EFI under your USB, you are completely done making the Clover boot USB

Section 6: Create USB named "EFI-post-install"

Step 1: Open…

    /Applications/Utilities/Disk Utility

Step 2: Highlight the USB drive in left column

Step 3: Click on the Partition tab

Step 4: Click Current and choose 1 Partition

Step 5: Click Options…

Step 6: Choose GUID Partition Table

Step 7: Under Name: type "*EFI-post-install*"

Step 8: Under Format: choose Mac OS Extended (Journaled)

Step 9: Click Apply then Partition

Step 10: Unzip "*EFI-post-install.zip*" and put its EFI folder on this USB

Section 7: Install Yosemite with UNIBEAST

Step 1: Insert the UNIBEAST USB into the PC you will install to and go to BIOS

Step 2: Boot to the USB

Step 3: Immediately type in this Bootflags code when Chimera screen comes up

`-x -f -v npci=0x3000 nv_disable=1 kext-dev-mode=1`

Step 4: Press Enter

Step 5: It will go through Verbose screen and load to MacOSx installer

Step 6: Select Language

Step 7: Open…

   /Applications/Utilities/Disk Utility

Step 8: Highlight the preferred install drive in left column

Step 9: Click on the Partition tab

Step 10: Click Current and choose 1 Partition

Step 11: Click Options...

Step 12: Choose GUID Partition Table

Step 13: Under Name: type "*Yosemite*"

Step 14: Under Format: choose Mac OS Extended (Journaled)

Step 15: Click Apply then Partition

Step 16: Exit Disk Utility and Complete the Installation of Yosemite

Step 17: Restart the PC reboot into your USB. The chimera program will show only USB if you installed on an m.2 or NVME drive that requires UEFI support. If you installed on a normal SSD or HDD it will also show "*Yosemite*". Select "*USB*".

Step 18: You will boot back to the setup configuration screen of Yosemite by clicking on "USB"

```
-x -f -v npci=0x3000 nv_disable=1 kext-dev-mode=1
```

Step 19: At OSx installer screen go to Open /Applications/Utilities/Terminal

Step 20: Run the following commands in terminal command to check that they are present

```
rmdir /Volumes/Yosemite/System/Library/Extensions/AppleACPIPlatform.kext
```

then

```
rmdir /Volumes/Yosemite/System/Library/Extensions/IOPCIFamily.kext
```

Step 21: Copy your kexts to the Yosemite hard drive

```
cp -R /Volumes/COPY/kexts/. /Volumes/Yosemite/System/Library/Extensions/
```

Step 22: Copy your patched kernel to the Yosemite hard drive.

```
cp -R /Volumes/USB/System/Library/Kernels/kernel /Volumes/Yosemite/System/Library/Kernels/kernel
```

Step 23: Exit Terminal.

Step 24: Go to Disk Utility and select the Yosemite hard drive and click "*Repair Disk Permissions*"

Step 25: Restart the Computer.

Boot into the USB drive and in chimera click on "*Yosemite*".

```
-x -f -v npci=0x3000 nv_disable=1 kext-dev-mode=1
```

If you're one of the cool kids you are looking for UEFI support on an m.2 or PCI-E drive and can't see the "Yosemite" install selection, only USB.

Section 8: UEFI Support and Booting with CLOVER

Step 1: Insert the Clover boot USB and open bios in the install PC

Step 2: Boot to UEFI:(name of your USB)

Step 3: At Bootloader screen look for option like "Open OS X on Yosemite". Hit enter

- **Note** I preloaded "-v npci=0x2000 kext-dev-mode=1 nv_disable=1" for you so you don't need to type. If it fails (it shouldn't) try adding "-x -f" in the bootflags

Step 4: It will boot into Yosemite

Step 5: Download proper web driver for your NVIDIA card

Step 6: Install web driver for your NVIDIA card

Step 7: Restart the computer

Step 8: Boot to UEFI:(name of your USB)

Step 9: At Bootloader screen look for option like "Open OS X on Yosemite". Hit enter

Step 10: It will boot into Yosemite

Step 11: Under System Preferences is NVIDIA drivers

    - Change options to "*Nvidia Webdriver*" from "*Native OS X Graphics Driver*"

Step 12: It may ask you to restart, if so… do so… and boot as you did previously two times

Section 9: Permanent Clover Install / Post-Install

Step 1: Download Clover on OS X from Internet

Step 2: Open Clover and this time do Install location to Yosemite. It will automatically create an EFI partition to install to

Step 3: Select Custom Install

Step 4: Choose the following settings

> **(A)** Install for UEFI booting only
> **(B)** Install Clover in the ESP
> **(C)** Themes
> - BootCamp
> **(D)** Drivers64UEFI
> - DataHubDxe-64
> - EmuVariableUefi-64
> - OsxAptioFixDrv-64
> **(E)** Install RC scripts on target volume

Step 5: Click Install

Step 6: Go to newly created EFI partition

Step 7: Copy EFI folder from "EFI-post-install" USB to EFI partition. Click Yes to Overwrite.

Step 8: Restart

Step 9: Boot to UEFI:(should now be your bootable partition and not a USB anymore)

Step 10: At Bootloader screen look for option like "*Open OS X on Yosemite*". Hit enter.

Step 11: If your screen goes black, reset your PC and reboot into EFI partition

> **1)** Go to options...
> **2)** Change nvda_drv=1 to nv_disable=1
> **3)** Go back to boot loader screen and do "*Open OS X on Yosemite*"

Step 12: Your good to go. If you needed step 11, play around with your reboot a few times until your NVIDIA driver is recognized

If you want to play with config.plist, download clover configurator. Make changes, based on your needs. I have included snapshots of my most recent personal config.plist that gets rid of all of the un-necessary settings (varies from that in EFI-post-install). You will need to remount your EFI partition where the files are located. I do this by simply re-running clover with the same options I specified earlier, it automatically remounts it. You can also do other techniques such as using terminal command...

sudo mount -t msdos /dev/diskXs1 /Volumes/efi

...or use EFI mounter-v2 on the correct disk.

Section 10: Enable Trim on SSD

Necessary for full support and speed of SSD as well as for future system updates.

Step 1: In terminal…

sudo trimforce enable

Section 11: Enable MacPro 6,1 Bios

Step 1: Go to…

   System/Library/Extensions

Step 2: Delete AppleGraphicsControl.kext

Step 3: In KextWizard click on *Installation* tab

-   Browse for patched AppleGraphicsControl.kext and select it
-   **Destination** = System/Library/Extensions
-   **Target disk** = Yosemite

Step 4: Hit install

Step 5: Change Bios to MacPro 6,1

Step 6: In KextWizard under maintenance tab repair your permissions and rebuild cache.

Audio Fix
(Not Necessary if starting from 08/19/2015 update)

Step 1: Copy SSDT.aml and paste into…

     EFI/Clover/ACPI/patched

Step 2: Go to…

     System/Library/Extensions

Step 3: If present delete…

- AppleHDA.kext
- HDAEnabler1.kext

Step 4: In KextWizard click on *Installation* tab

- Browse for patched AppleHDA.kext and HDAEnabler1.kext and select them
- **Destination** = System/Library/Extensions
- **Target disk** = Yosemite

Step 4: Hit install

Step 5: In KextWizard under maintenance tab repair your permissions and rebuild cache.

Overclocking

Step 1: In Bios, disable…

      Enhanced Intel Speedstep Technology = Disable

Step 2: Overclock as normal

ThunderboltexII Support

Step 1: Install newest Intel Thunderbolt drivers in Windows. Shutdown

Step 2: Plug in thunderbolt drive to correct PCI-E slot. #2 on X99E-WS

Step 3: Enter into Windows and recognize/activate your thunderbolt harddrive or display

Step 4: Restart into bios

Bios settings

Step 1: Go to…

- **Boot**

    Fast Boot = Disabled
    Secure Boot > See Options Below
    > **Secure Boot state** = Disabled ie. delete secure keys under key management
    > **OS Type** = Other Os

- **Thunderbolt**

    Security Level = '*Legacy Mode*'
    Wake from Thunderbolt Devices = '*Off*'
    AIC Support = '*On*'
    Thunderbolt PCIe Cache-line Size = '*128*' <- choose down to 32 if necessary
    SMI/Notify Support = '*On*'
    SwSMI Support = '*On*'
    Ignore Thunderbolt Option Rom = '*On*'
    Thunderbolt SwSMI Delay = '*0*'
    TBT Device IO resource Support = '*Off*'
    Reserved Mem per phy slot = '*32*'
    Reserved PMem per phy slot = '*32*'

- **Advanced\Onboard Devices Configuration**

    PCIEX16_2Slot(black Bandwith = '*x4 Mode*'

    - **Note:** you'll lose 1 or 2 USB 3.0 ports, but no biggy for full Thunderbolt 2.0 speed

    Serial Port Configuration = '*Disabled*'

Step 2: Make sure thunderbolt SSD or Display is plugged in and boot into MacOSx. There is no hotplug support so device must always be plugged in prior to booting into MacOSx.

Hardware/System Temperature Monitoring Support

Step 1: Go to…

   System/Library/Extensions

Step 2: Delete…

-   fakeSMC.kext

Step 3: Run MultiBeast and install…

-   Drivers > Misc > FakeSMC v6.16.1372
-   Drivers > Misc > FakeSMC Plugins v6.16.1372
-   Drivers > Misc > FakeSMC HWMonitor Application v6.16.1372

Step 4: In KextWizard under maintenance tab repair your permissions and rebuild cache.

Step 5: Reboot into MacOsx