FAQ / Application Note

Subject : How to enable Video/Audio function on Redhat 7.X Linux with NS GX1 platform	
FAQ Document No:S08016	**Date: 2002/09/11**
Model No. ECM-3410,ECM-3412	**Rev. A1**
Category: ☐General ☐H/W ■S/W ☐Others, Display & I/O Interface	
Purpose : ECM-3410/3412 VGA/Audio driver configuration under Linux Redhat 7.X with Kernel 2.2.X	

When you finish to install Redhat 7.3 on NS GX1 platform, you have to enable audio function with Sound Blaster 16 emulation instead of CS5530[Kahlua].

Please follow following procedure to enable GX1 audio function :

1) Disable “MPU-401” in CMOS setting
2) Login linux system in console mode, then keyin follow command :
   [root@localhost root]# sndconfig --noprobe
3) Then system will come out a Sound Configuration Utility introduction window. Please press “OK” for next step.
4) In “Card Type” Window, please select “Sound Blaster 16”, then press “OK” for next step.
5) In “Card Settings” Window, please adjust settings to match the System’s CMOS setting. Normally the default settings are as follow :
   I/O Port：0X220
   IRQ：5
   DMA 1：1
   DMA 2：5
   MPU I/O：0X330
6) Then the system will start “Sound Card Test”. If you can hear the test sound from the speaker, then the audio setting is OK.

There is a bug in the CS5530 which can make the SVGA server extremely unstable. You can work around this bug by specifying an odd virtual screen size using the Virtual x y keyword (If you are using a screen resolution like 640x480 ,800x600 or 1024x768 and want to conserve video memory requirements, use an appropriately odd-sized virtual buffer such as 640x481, 800x601 or 1024x769). The cause of this bug appears to be a combination of XF86_SVGA's behavior and a quirk of the

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CS5530. The Geode system relies heavily on I/O traps and "faked" hardware emulation for some of its functionality, particularly video. In the "standard" resolutions, XF86_SVGA attempts to enable some kind of compressed display feature which causes problems. In the best case, you will get some garbage on the display; in the worst case, the system will lock hard. Using the strange virtual resolution implicitly disables the compressed display feature and works around the problem.

You have to add “odd virtual screen size” setting in “XF86Config-4”. This is a text file for Xwindow setting and you can find in “/etc/X11”

A sample XF86Config-4 file for GX1 Xwindow is below :

```
# XFree86 4.2.0 configuration generated by Xconfigurator 4.10.7

Section "ServerLayout"
      Identifier "XFree86 Configured"
      Screen          0    "Screen0" 0 0
      InputDevice     "Mouse0" "CorePointer"
      InputDevice     "Keyboard0" "CoreKeyboard"
EndSection

# Red Hat Linux 6.0 and later use the xfs font server for improved
# interactive performance

Section "Files"
      FontPath "unix/:7100"
EndSection

# Module loading section

Section "Module"
      Load    "dbe"         # Double-buffering
      Load    "GLcore"          # OpenGL support
      Load    "dri"         # Direct rendering infrastructure
      Load    "glx"         # OpenGL X protocol interface
      Load    "extmod"          # Misc. required extensions
      Load    "v4l"         # Video4Linux
      # Load    "record"    # X event recorder
      # You only need the following two modules if you do not use xfs.
      # Load    "freetype"    # TrueType font handler
```


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```
        # Load    "type1"           # Adobe Type 1 font handler
EndSection

Section "InputDevice"
        Identifier    "Keyboard0"
        Driver          "keyboard"
        Option          "XkbLayout"      "us"
EndSection

Section "InputDevice"
        Identifier    "Mouse0"
        Driver          "mouse"
        Option          "Device" "/dev/mouse"
        Option          "Protocol" "PS/2"
        Option          "Emulate3Buttons" "off"
        Option          "ZAxisMapping" "4 5"
EndSection

Section "Monitor"
        Identifier "My Monitor"
        VendorName "Unknown"
        ModelName    "Unknown"
        HorizSync 31.5 - 48.5
        VertRefresh 50-90
        Option "dpms"
EndSection

Section "Device"
        Identifier "Cyrix MediaGX"
        Driver "vesa"
        BoardName "Unknown"
EndSection

Section "Device"
        Identifier "Linux Frame Buffer"
        Driver "fbdev"
        BoardName "Unknown"
EndSection
```


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```
Section "Screen"
    Identifier "Screen0"
    Device "Cyrix MediaGX"
    Monitor "My Monitor"
    DefaultDepth 16
    Subsection "Display"
        Depth 16
        Modes "800x600"
            Virtual 800 601
    EndSubSection
    Subsection "Display"
        Depth 8
        Modes "800x600"
            Virtual 800 601
    EndSubSection
EndSection

Section "DRI"
    Mode 0666
EndSection
```

With these notes in mind, Linux runs very nicely on the NS GX1 SBC, with full functionality of all the major hardware components.

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