Testing environment

System: Rocky Linux (CentOS 8)
Dahdi-3.2.0
Asterisk-20

DOWNLOAD

Download the DAHDI source code package from the OpenVox official website
https://www.openvoxtech.com/pub/drivers/dahdi-linux-complete/openvox_dahdi-linux-complete-current.tar.gz
Get Asterisk from Digium website:
https://downloads.asterisk.org/pub/telephony/asterisk/asterisk-20-current.tar.gz
Usually run the following command in the directory/etc/src/to download and decompress DAHDI, Asterisk, and Libpri:
#wget https://www.openvoxtech.com/pub/drivers/dahdi-linux-complete/openvox_dahdi-linux-complete-current.tar.gz
#wget https://downloads.asterisk.org/pub/telephony/asterisk/asterisk-20-current.tar.gz
tar -xvzf openvox_dahdi-linux-complete-current.tar.gz
tar –xvzf asterisk-20-current.tar.gz

INSTALL

Dependency package installation
Before installing DAHDI, please check if all dependency packages have been successfully installed. If the dependency packages have not been installed, it will result in subsequent software installations being unable to proceed smoothly
#dnf -y install epel-release
#dnf group -y install "Development Tools"
#dnf -y install git wget vim net-tools sqlite-devel psmisc bison ncurses ncurses-devel libtermcap-devel newt-devel libxml2-devel libtiff-devel gtk2-devel libtool libuuid-devel subversion initscripts kernel-devel kernel-devel-$(uname -r) crontabs cronie-anacron libedit libedit-devel zlib zlib-devel openssl openssl-devel gnutls-devel gcc gcc-c++
If no matching kernel level is found in the update source, it is necessary to download the matching RPM package for manual installation, or perform the following specified upgrade to the latest stable kernel version:
yum install kernel kernel-devel
After installation, restart the system and apply the new kernel to continue the subsequent operations on the new kernel.
In the above dependency package detection process, if the dependency package has already been installed, the system will prompt that it has been installed and will not continue to install this package. The user can run the next command to install other packages;
If not installed, it will be automatically installed until the system prompts for successful installation.

Dahdi installation

Convert the path to the directory of the dahdi linux-comple-XX source code package (XX represents the DAHDI version), and run the following command to install DAHDI:

cd /usr/src/dahdi-linux-complete-XX
make
make install
make config
#systemctl enable dahdi

Asterisk installation

Convert the path to the Asterisk source code package directory (XX represents Asterisk version), and run the following command to install Asterisk:

cd asterisk-20.xx
#contrib/scripts/install_prereq install
. /configure --libdir=/usr/lib64 --with-jansson-bundled=yes
make
make install
make samples
#systemctl enable asterisk

CONFIGURATION

Load Driver

After compilation, please run the following instructions to load the driver according to the corresponding board model:

modprobe dahdi
modprobe wctdm opermode=CHINA（A400）
modprobe opvxa24xx opermode=CHINA (A810,A1610,A2410)
dahdi_genconf -vvv

'opermode' only applies to FXO ports, which means it does not work for FXS. Users can also replace "CHINA" with other national standards, please refer to the document ./dahdi-linux-XX/linux/drivers/dahdi/fxo_modules.h， Obtain other communication standards

Under normal circumstances, after executing the command "dahdi_gengconf", the system will automatically generate two files:/etc/dahdi/system.exe and/etc/asterisk/dahdi-channels.exe. Check if the generated configuration file meets your requirements, or you can manually modify the relevant parameters. It is worth noting that it is confirmed that dahdi-channels.conf is included in chan_dahdi.conf. If not, please run the command:

echo "#include dahdi-channels.conf" >>/etc/asterisk/chan_dahdi.conf

Edit/etc/modprobe. d/dahdi. conf to automatically load opermode parameters upon startup

```
# You should place any module parameters for your DAHDI
# Example:
#
# options wctdm24xxp latency=6

# B100 in NT mode
options modprobe zaphfc modes=1 force_l1_up=0

#The default value of parameter te_nt_override=0xFF set
#ports as TE mode. "1" stands for TE,"0" stands for NT.
#example, if user wants to set port 1-2 to TE mode, port
#te_nt_override should be 0x03 (it is 0000 0011 in binar
#The system runs "modprobe wcb4xxp" with value 0xFF in d
#it will set all ports as TE mode , so it is necessary t
#wcb4xxp te_nt_override=0x03" for NT mode when the machi

#B800 port 1-2 to TE mode, port 3-8 to NT mode
options modprobe wcb4xxp te_nt_override=0x03


#A400 use in China
options wctdm opermode=CHINA
#A810 A1610 A2410  use in China
options opvxa24xx opermode=CHINA


~
~
```

Add the corresponding board driver to the/etc/dahdi/modules file to achieve automatic loading of board drivers during startup

#vi /etc/dahdi/modules

```
# Contains the list of modules to be loaded / unloaded
#
# NOTE:  Please add/edit /etc/modprobe.d/dahdi or /etc/
#        would like to add any module parameters.
#
# Format of this file: list of modules, each in its own
# Anything after a '#' is ignore, likewise trailing and
# whitespaces and empty lines.

# Digium TE205P/TE207P/TE210P/TE212P: PCI dual-port T1/
# Digium TE405P/TE407P/TE410P/TE412P: PCI quad-port T1/
# Digium TE220: PCI-Express dual-port T1/E1/J1
# Digium TE420: PCI-Express quad-port T1/E1/J1


#OpenVox D130
opvxd115

#OpenVox D230
#OpenVox D430
#OpenVox D830
#OpenVox D1630
wct4xxp


#OpenVox B100
zaphfc

#OpenVox B200
#OpenVox B400
#OpenVox B800
wcb4xxp

#OpenVox A400
wctdm

#OpenVox A810
#OpenVox A1610
#OpenVox A2410
opvxa24xx
```

Using the A400 board as an example to configure
The FXO port uses fxsks signaling, while the FXS port uses fxoks signaling.
In this example, ports 1 and 2 of A400 are fxs modules, while ports 3 and 4 are fxo modules
The following shows a portion of the basic channel configuration file/etc/dahdi/systemconf:

```
# Span 1: WCTDM/4 "Wildcard TDM400P REV E/F Board 5" (M
fxoks=1
fxoks=2
fxsks=3
fxsks=4

# Global data

loadzone         = us
defaultzone      = us
```

To match the national communication standard, some parameters need to be modified. For example, in China, please modify the parameters loadzone and defaultzone as follows:
loadzone = cn
defaultzone = cn
Users can access the file Search for the country parameter in/dahdi-XX/tools/zonedata. c. In addition, there is another parameter that needs to be modified in/etc/asterisk/identifications. conf:
country=cn

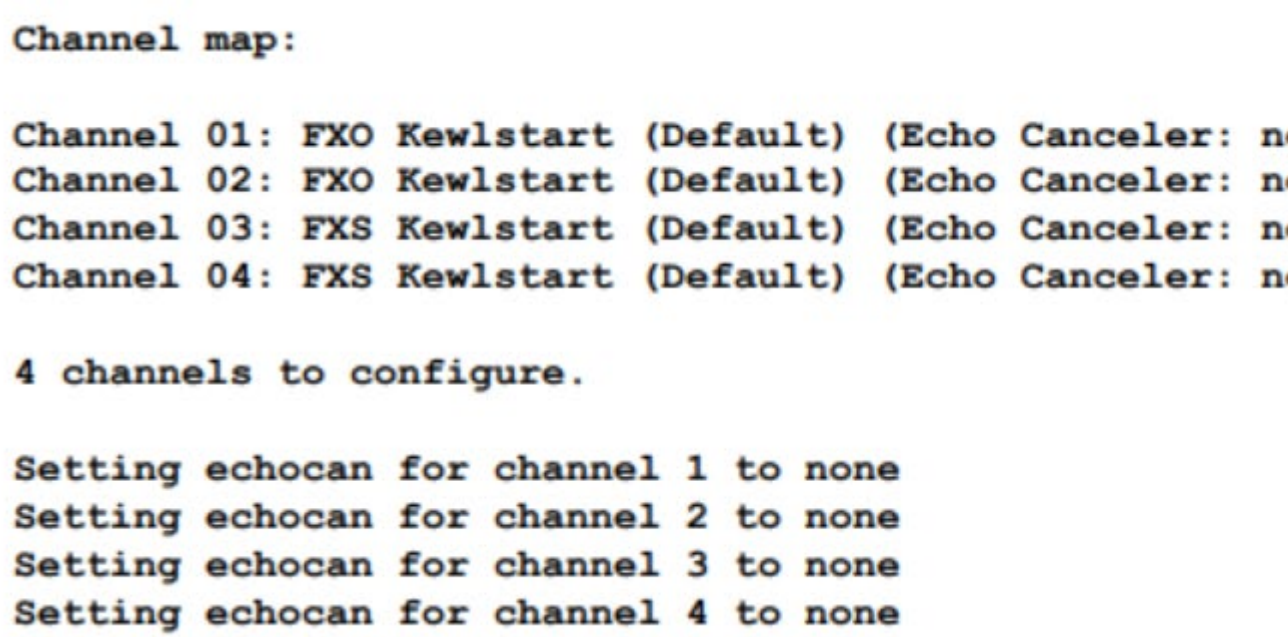
A part of the file/etc/asterisk/dahdi-channels.exe is shown in the figure:

```
span 1: WCTDM/4 "Wildcard TDM400P REV E/F Board 5"
(MASTER)
;;; line="1 WCTDM/4/0 FXOKS"
signalling=fxo_ks
callerid="Channel 1" <4001>
mailbox=4001
group=5
context=from-internal
channel => 1
callerid=
mailbox=
group=
context=default

;;; line="2 WCTDM/4/1 FXOKS"
signalling=fxo_ks
callerid="Channel 2" <4002>
mailbox=4002
group=5
context=from-internal
channel => 2
callerid=
mailbox=
group=
context=default

;;; line="3 WCTDM/4/2 FXSKS"
signalling=fxs_ks
callerid=asreceived
group=0
context=from-pstn
channel => 3
callerid=
group=
context=default

;;; line="4 WCTDM/4/3 FXSKS"
signalling=fxs_ks
callerid=asreceived
group=0
context=from-pstn
channel => 4
```

After confirming the system. conf and dahdi channels. conf files, execute the following command:

dahdi_cfg –vvvvv

This command will read and load parameters from the file system.exe into the hardware. Part of the output result of the instruction execution is displayed as shown below.



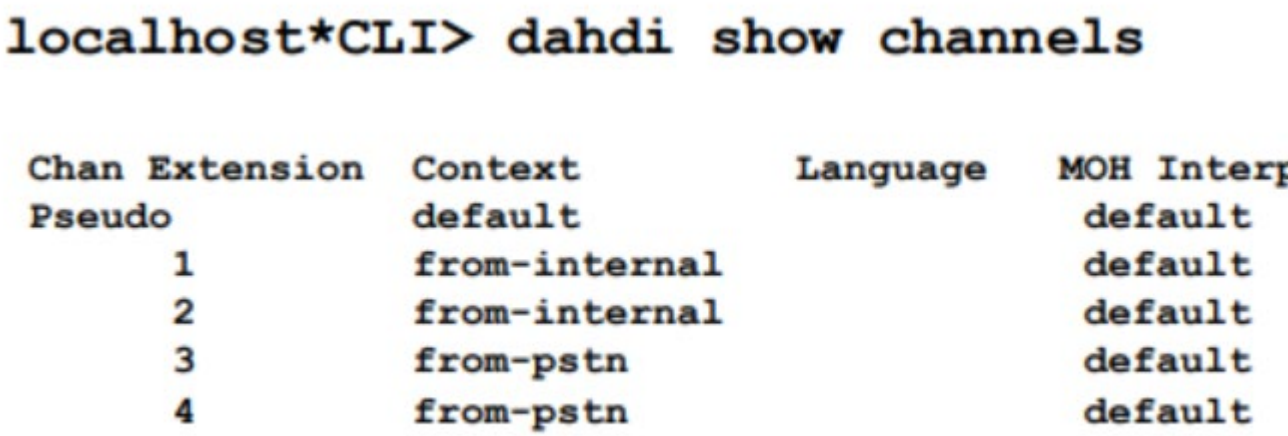
Start Asterisk

asterisk -vvvvvgc

If Asterisk is already running, run 'asterisk-r' instead. In the CLI interface, please run:

If all channels display correctly, it means that DAHDI has been successfully loaded into Asterisk.

Next, please set the dialing plan.



Write a dialing plan

Please write a dial plan in the extensions.onf file. The following diagram illustrates a simple inbound and outbound plan:

vim /etc/asterisk/extensions.conf

In this example, analog cards 1 and 2 are connected to analog phones via FXS ports, while ports 3 and 4 are connected to PSTN lines via FXO ports

When a call comes in from the PSTN line, the analog phone connected to HDMI/1 (the first port of the board) rings

```
[from-pstn]
exten => s,1,Answer()
exten => s,n,Dial(dahdi/1,,r)
exten => s,n,Hangup()
```

When the analog phone is called out, it will be sent out through the third port of the board (dahdi/3)

```
[from-internal]
exten => _X.,1,Dial(dahdi/3/outgoing_number)
exten => _X.,2,Hangup()
```

After setting up the dial plan, please run "asterisk-r" and execute the command "dialplan reload" in the CLI interface, and then you can dial