

## IP/Telephony TDM over Ethernet

SANOG XXV

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# TDM Over Ethernet

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- What is TDMoE
  - May be used when you need TDM reliability without traditional TDM hardware
  - Modern people prefer but TDM people, because
    - Latency
    - No guarantee when virtual circuit being used
    - Packet can be out of order
    - More space for data wasted by the header (ethernet header)
  - May be useful because it allows familiarity, flexibility and reliability of TDM over inexpensive Ethernet over T1 or E1.
  - It can be used in conjunction with normal network traffic, but try to avoid that. Either connect two directly or use a dedicated network
  - TDMoE does not go over anything other than **local Ethernet** (not through any routed network)
  - TDMoE should at least be useful to practices TDM with actual TDM hardware

# TDMoE on Asterisk

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- You must have *zaptel* interface configured somewhere on the network to clock synchronization
- Otherwise you may run a dummy TDM interface on the network
- ZAPTEL has now been replaced by DAHDI
- Need to install following packages
  - *dahdi* – utilities for using the DAHDI kernel modules
  - *dahdi-dkms* – kernel modules
  - *dahdi-linux* – userspace parts
  - *asterisk-dahdi* – device support for Asterisk PBX
  - *libpri* -PRI library

*# apt-get install dahdi*

*# apt-get install asterisk-dahdi*

*# lsmod – to see loaded kernel modules*

# TDMoE on Asterisk

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- DAHDI configurations

- Configuration files can be found at `/etc/dahdi`
  - You are going to create TDMoE link between two computers (your pc and your friend's pc)
  - Select one as PRI network/server and the other as PRI customer side
  - PRI network/server side configuration
    - Edit `/etc/dahdi/system.conf` add following

*dynamic=eth,eth0/[mac address of customer side]/0,31,0*

*echocanceller=mg2,1-15,17-31*

*bchan=1-15,17-31*

*dchan=16*

*alaw=1-15,17-31*

# TDMoE on Asterisk

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- Asterisk DAHDI server side configurations
  - Edit */etc/asterisk/chan\_dahdi.conf*

```
[channels]
context=default
usecallerid=yes
hidecallerid=no
callwaiting=yes
usecallingpres=yes
callwaitingcallerid=yes
threewaycalling=yes
transfer=yes
facilityenable=yes
canpark=yes
cancallforward=yes
callreturn=yes
echocancel=yes
echocancelwhenbridged=yes
relaxdtmf=yes
immediate=no
```

# TDMoE on Asterisk

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- DAHDI configurations

- Edit /etc/asterisk/chan\_dahdi.conf cont.....

```
switchtype=euroisdn  
context=pbx2_incomming  
group=0  
echocancel=yes  
signaling=pri_net  
channel =>1-15,17-31
```

Do the same configuration for the PRI customer side with the following changes

```
dynamic=eth,eth0/00:00:01:00:00:01/0,31,1 ← note 1 here instead of 0 (use the other side interface  
as the timing source)
```

```
signaling=pri_cpe
```

# TDMoE on Asterisk

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- DAHDI Testing
  - To compare timing
    - *dahdi\_test -v* on both PCs
  - Outgoing call over TDMoE
    - Dial rule to dial DAHDI/g0/number
      - exten => [2]xxx,1,Dial(DAHDI/g0/\${EXTEN})*
    - Define outgoing trunk
      - edit extension.conf to add following under the contest *[globals]*
        - TRUNK=DAHDI/g0*
    - Define the channel group
      - edit chan\_dahdi.conf to set *group* to *0* under the contest *[trunkgroups]*
        - *group = 0*

# TDMoE

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- Incoming calls
  - Edit extension.conf for add the incoming contest

*[pbx2\_incoming]*

*exten => 101,1,Dial(SIP/101)*

- To check DAHDI in asterisk
  - dahdi show status
  - dahdi show channels
  - dahdi show channel 24



# Lanka Education and Research Network

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Thank You

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