### OCTOI - Osmocom Community TDM over IP - Feature #5667

**Test different PM3 for ZModem throughput**

08/29/2022 06:22 PM - laforge

<table>
<thead>
<tr>
<th>Status:</th>
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<tr>
<td>Priority:</td>
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</tr>
<tr>
<td>Assignee:</td>
<td>laforge</td>
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<tr>
<td>Category:</td>
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<td>Target version:</td>
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<td>Start date:</td>
<td>08/29/2022</td>
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<td>Due date:</td>
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<td>% Done:</td>
<td>40%</td>
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**Description**

We've observed very strange low ZModem throughput on the PM3 currently used in the OCTOI setup (with any of the tcp/telnet forwarding). *jolly* had observed good throughput with a PM4 and as far as I remember somebody else also has shown proper throughput on their PM3.

As I have 3 PM3 currently at my home: Compare and see if there's any difference; if there is, make sure that a unit with good throughput ends up in the co-location (see #5542)

**Related issues:**

- Related to OCTOI - Osmocom Community TDM over IP - Bug #5542: Move hub to datacenter colocation added
  
- Related issues:
  
<table>
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**History**

**#1 - 08/29/2022 06:22 PM - laforge**

- Related to Bug #5542: Move hub to datacenter colocation added

**#2 - 09/01/2022 06:35 AM - laforge**

- Status changed from New to In Progress
- % Done changed from 0 to 10

**did the [hopefully sufficient] configuration of PM3-2 (my third PM3, from monaco telecom) last night.**

Some of the original config, out of curiosity:

```
Livingston Enterprises, Inc. Boot Prom Rev P

Testing Low Memory....
Checking Boot Rom....
Testing System Clock....
Sizing System Memory... 4MB
CPU Type.... 486DE2-66
Starting FLASH Boot......
Booter From Flash Type Am29F040
16384 flash copy complete
Verifying Loader Module Checksum...
Starting Loader ...
Scheduler Process:
Loading kernel... 1280840 bytes
Testing High Memory ... 4096K
munich_init_device: NO DEVICE 1
Found 31 ports....
ether0 active ... 64K burst-IO
Running ComOS...

PortMaster Console login: !root
Password:

CHALLENGE: 3F7=F8PDWYQFABA
Invalid Login
PortMaster Console login: <KVS3>O>CM2WM7A:
Password:
Invalid Login
PortMaster Console login: !root
Password:
titan4a> version
```
Lucent PortMaster PM-3 ComOS 3.9.1c1
System uptime is 1 minutes
!root password changed from zee9 to foobar

titan4a> set password foobar
!root password changed from zee9 to foobar
titan4a> show glo
  System Name: titan4a
  Default Host: 0.0.0.0
  Alternate Hosts:
    IP Gateway: 194.51.26.254
  Gateway Metric: 1
  Default Routing: Quiet (Off)
  Name Service: DNS
  Name Server: 194.51.26.1, 194.51.26.2
  Domain: monaco.mc
  Telnet Access Port: 23
  Loghost: 212.234.168.7
  Maximum PMconsole: 1
  Assigned Address: 194.51.26.225 (Pool Size 20)
  RADIUS Server: 212.234.168.7* 1645
  Alternate Server: 194.51.26.6 1645
  Accounting Server: 212.234.168.7 1646
  Alt. Acct. Server: 194.51.26.6 1646
  Acct Retry Interval: 30 Sec
  Acct Retry Count: 6
  Auth Retry Interval: 0 Sec
  Auth Failover: off
  ChoiceNet Server: 0.0.0.0
  Alt. ChNet Server: 0.0.0.0
  PPP Authentication: PAP: on CHAP: on
  ISDN Switch Type: etsi
  End Point Disc: None
  Disabled Modules: SNMP OSPF L2TP BGP

titan4a> show netco
  Hnd Recv-Q Send-Q  Local Address          Foreign Address          (state)
   8   0   0  194.51.26.224.67               0.0.0.0.0               UDP
   7   0   0  194.51.26.224.23               0.0.0.0.0               LISTEN
   6   0   0  194.51.26.224.1643             0.0.0.0.0               LISTEN
   5   0   0  194.51.26.224.1026             194.51.26.6.1646       UDP
   4   0   0  194.51.26.224.1023             212.234.168.7.514      UDP
   3   0   44 194.51.26.224.1025             194.51.26.1.53          UDP
   1   0   0  194.51.26.224.520             0.0.0.0.0               UDP

titan4a> show files
  File Name       Length
  --------------  -------
  confdata        15713
  config          218
  snmp            21
  hfile           47275
  m2d_2.2         86810 (262144 uncompressed)
  m2c_2.2         22749 (74070 uncompressed)
  wanctl.0        9951 (40746 uncompressed)
  mipaboot        23363 (65988 uncompressed)

  Total          206100

titan4a> show ospf
  OSPF is not active

titan4a> show syslog
  Syslog Configuration Settings
    admin-logins: auth.info
    user-logins: auth.info
    packet-filters: auth.notice
    commands: disabled
    termination: disabled
    nat: disabled
    ipsec: disabled

titan4a> show modems
  Mdm Port Status  Speed  Compression Protocol  Calls  Retrain  Disconnect
  ---------------  ------  -----------------  -----  --------  ----------
  M20 READY UNKNWN NONE   NONE       0     0        NORMAL
  M21 READY UNKNWN NONE   NONE       0     0        NORMAL
  M22 READY UNKNWN NONE   NONE       0     0        NORMAL
  M23 READY UNKNWN NONE   NONE       0     0        NORMAL
  M24 READY UNKNWN NONE   NONE       0     0        NORMAL
Configuration is to allow it to be placed in the same IP network as the pm3-lnw34a currently used by OCTOI:

pm3-2> show global
  System Name: pm3-2
  Default Host: 0.0.0.0
  Alternate Hosts:
    IP Gateway: 192.168.7.254
    Gateway Metric: 1
  Default Routing: Quiet (Off)
  Name Service: DNS
    Name Server: 192.168.7.2
    Domain: retronetworking.org
  Telnet Access Port: 23
  Loghost: 192.168.7.2
  Maximum PMconsole: 1
  Assigned Address: 0.0.0.0
    RADIUS Server: 192.168.7.2* 1813
    Alternate Server: 0.0.0.0
  Accounting Server: 192.168.7.2 1812
  Alt. Acct. Server: 0.0.0.0
  Acct Retry Interval: 30 Sec
  Acct Retry Count: 6
  Auth Retry Interval: 0 Sec
  Auth Failover: off
  ChoiceNet Server: 0.0.0.0
  Alt. ChNet Server: 0.0.0.0
  PPP Authentication: PAP: on  CHAP: on
  ISDN Switch Type: etsi  (Call Check Enabled)
  L2TP LAC
  ISDN numberplan: ISDN E.164
  ISDN numbertype: Local
  End Point Disc: None
  Disabled Modules: SNMP IPX OSPF BGP

Ok, so I now have the following setup:

- client side:
  - minicom
  - USB-RS232 converter
US Robotics Sportster ISDN TA Ext

- Network side:
  - Auerswald COMmander Basic 2 (to go from BRI to PRI)
  - TE820 with yate as softswitch
- Server side:
  - 2x Livingston Portmaster3 attached via E1
  - Using tcp-clear forwarding to a remote telnet server, serving random bytes

The old random ZModem number is 030-1234-3005, the new PM3 random ZModem number is 030-1234-5005

When I make a data call with X.75 or V.120 to either of the two PM3, I'm getting about 2200 cps, which is abysmal. It should be around 7000.

The good news is that both PM3 behave identical, so it's not a hardware issue with either of them.

The question remains: why is it so slow?

Maybe it's something on the client side? Guess I need to bring on more ISDN TA.

#4 - 09/01/2022 06:29 PM - manawyrm

Maybe it's something on the client side? Guess I need to bring on more ISDN TA.

Hm, I don't think so. I've seen this with both my AVM ISDN Stack on Windows and ELSA MicroLink isdn TA.

As L2TP is fast -- could we somehow isolate if maybe the network stack / TCP implementation in the PM3 is bad? Are there some other ways to input data, like an RS232 port or something?

#5 - 09/01/2022 06:52 PM - laforge

For the record,

- The DTE rate between TA and minicom is 115200 bps
- There is no hardware or software flow control enabled
- Enabling hardware flow control doesn't improve the situation
- Most testing was done with a PL2303 USB-serial IC; switching to a FT232RL doesn't change the low throughput.

#6 - 09/01/2022 06:57 PM - laforge

manawyrm wrote in #note-4:

Maybe it's something on the client side? Guess I need to bring on more ISDN TA.

Hm, I don't think so. I've seen this with both my AVM ISDN Stack on Windows and ELSA MicroLink isdn TA.

remote over OCTOI or locally at the last CCC congress?

As L2TP is fast -- could we somehow isolate if maybe the network stack / TCP implementation in the PM3 is bad? Are there some other ways to input data, like an RS232 port or something?

no, I don't think therer is any way. I'd really like to know what's going on, especially since there were reports from other people who didn't have that problem, AFAIR.

For ISDN (X.75/V.120) it should be "relatively easy" to write a functionally equivalent open source replacement for the PM3. Use a Q.931 library for the signaling side and get X.75 and V.120 implemented. That's my mid-term strategy anyway. For the analog modems it's of course harder, as we'd need a proper softmodem implementation for the various relevant standards first, which is a separate, comprehensive project in itself.

#7 - 09/01/2022 07:04 PM - laforge

- % Done changed from 10 to 40

looking at the IRC logs, it seems like the higher CPS rates were only reported with other equipment (Ascend Max, Portmaster 4), but not with PM3.

I also recall having looked at the tcpdumps in the past and did not see anything odd there, either.

The context of this ticket was to compare multiple PM3, and I've now just done that: At least those two out of three I tested are comparable poor in "login" type use cases.

#8 - 09/01/2022 07:18 PM - manawyrm
Those tests were done remote over OCTOI. Communication between 2 machines on OCTOI via X.75 (without a PM3 involved) works at the full 7xxx bytes/second, which is why I figured that this test should be fine to do remotely.

Doing X.75 and V.120 in software sounds like a very good idea. Maybe the idea by supersat done for https://github.com/Shadytel/shadysoftmodem (operating as an external script in YATE) would be a good idea for terminating data calls? Could skip all the Q.931 handling and just focus on the X.75 for the time being. shadysoftmodem is also very promising (even if it can't do V.90 in answer mode), but it's a i386 closed software blob after all, so really not ideal.

(this discussion is probably better done somewhere else, maybe in another ticket :D)