OpenVox D410P_chan_ss7 successful case study

Written by: james.zhu (zhulizhong@gmail.com,james.zhu@openvox.cn)

Hello:
Many customers want to implement chan_ss7 in china or other counties. I introduce one of successful cases in China with OpenVox D410P and chan_ss7. there are few sections to be configured to implement chan_ss7 with OpenVox D410P(3 D410P cards):
1) **install cna_ss7, zaptel and asterisk**, please refer this for howto:http://bbs.openvox.cn/viewthread.php?tid=905&;extra=page%3D1
2) **setting files:**

==========zaptel.conf==========

```
# Autogenerated by ./genzaptelconf -- do not hand edit
# Zaptel Configuration File
#
# This file is parsed by the Zaptel Configurator, ztcfg
#
# It must be in the module loading order
# Span 1: TE4/0/1 "T4XXP (PCI) Card 0 Span 1" (MASTER)
span=1,1,0,ccs,hdb3
# termtype: te
bchan=1-31
#dchan=16
# Span 2: TE4/0/2 "T4XXP (PCI) Card 0 Span 2"
span=2,2,0,ccs,hdb3
# termtype: te
bchan=32-62
#dchan=47
# Span 3: TE4/0/3 "T4XXP (PCI) Card 0 Span 3"
span=3,3,0,ccs,hdb3
# termtype: te
bchan=63-93
#dchan=78
# Span 4: TE4/0/4 "T4XXP (PCI) Card 0 Span 4"
span=4,4,0,ccs,hdb3
# termtype: te
bchan=94-124
#dchan=109
# Span 5: TE4/1/1 "T4XXP (PCI) Card 1 Span 1"
span=5,1,0,ccs,hdb3
# termtype: te
bchan=125-139,141-155
```

```
#dchan=140
# Span 6: TE4/1/2 "T4XXP (PCI) Card 1 Span 2"
span=6,2,0,ccs,hdb3
# termtype: te
bchan=156-170,172-186
#dchan=171
# Span 7: TE4/1/3 "T4XXP (PCI) Card 1 Span 3"
span=7,3,0,ccs,hdb3,crc4
# termtype: te
bchan=187-201,203-217
# Span 8: TE4/1/4 "T4XXP (PCI) Card 1 Span 4"
span=8,4,0,ccs,hdb3
# termtype: te
bchan=218-232,234-248
#dchan=233
# Span 9: TE4/2/1 "T4XXP (PCI) Card 2 Span 1"
span=9,1,0,ccs,hdb3
# termtype: te
bchan=249-263,265-279
#dchan=264
# Span 10: TE4/2/2 "T4XXP (PCI) Card 2 Span 2"
span=10,2,0,ccs,hdb3
# termtype: te
bchan=280-294,296-310
#dchan=295
# Span 11: TE4/2/3 "T4XXP (PCI) Card 2 Span 3"
span=11,3,0,ccs,hdb3
# termtype: te
bchan=311-325,327-341
#dchan=326
# Span 12: TE4/2/4 "T4XXP (PCI) Card 2 Span 4"
span=12,4,0,ccs,hdb3
# termtype: te
bchan=342-356,358-372
#dchan=357

# Global data

loadzone        = us
defaultzone     = us
```

```
================ss7.conf=======================
[linkset-ls1]
; The linkset is enabled
enabled => yes
; The end-of-pulsing (ST) is not used to determine when incoming address
is complete
enable_st => no

; Reply incoming call with CON rather than ACM and ANM
use_connect => yes

; The CIC hunting policy (even_mru, odd_lru, seq_lth, seq_htl) is even
CIC numbers, most recently used
hunting_policy => even_mru

; Incoming calls are placed in the ss7 context in the asterisk dialplan
context => ss7

; The language for this context is da
language => da

; The value and action for t35. Value is in msec, action is either st or
timeout
; If you use overlapped dialling dial plan, you might choose: t35 =>
4000,st
t35 => 15000,timeout

; The subservice field: national (8), international (0), auto or
decimal/hex value
; The auto means that the subservice is obtained from first received SLTM
;echocancel => no
;echocan_train => 350
;echocan_taps => 128

subservice => auto
variant => CHINA

[link-l1]
linkset => ls1
channels => 1-15,17-31
schannel => 16
```

```
firstcic => 1
enabled => yes

[link-l2]
linkset => ls1
channels => 1-31
schannel =>
firstcic => 33
enabled => yes


[link-l3]
linkset => ls1
channels => 1-31
schannel =>
firstcic => 65
enabled => yes

[link-l4]
linkset => ls1
channels => 1-31
schannel =>
firstcic => 97
enabled => yes

[link-l5]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic =129
enabled => yes

[link-l6]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic =161
enabled => yes

[link-l7]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic =193
```

```
enabled => yes

[link-l8]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic =225
enabled => yes

[link-l9]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic =257
enabled => yes

[link-l10]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic =289
enabled => yes

[link-l11]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic => 321
enabled => yes

[link-l12]
linkset => ls1
channels => 1-15,17-31
schannel =>
firstcic => 353
enabled => yes

[host-openvox]
enabled => yes
opc => 0xBBBBBBB ; change to your code
dpc => ls1:0xAAAAAA ; change to your code
links =>
l1:1,l2:2,l3:3,l4:4,l5:5,l6:6,l7:7,l8:8,l9:9,l10:10,l11:11,l12:12
```

3) **testing results:**

```
=========zttest========================================
root@openvox ast]# zttest
Opened pseudo zap interface, measuring accuracy...
99.981155% 99.983208% 99.943176% 99.958488% 99.985352% 99.986130%
99.997856%
99.995018% 99.997948% 99.992676% 99.990036% 99.984955% 99.977341%
99.991905% 99.985649%
99.965714% 99.957321% 99.994240% 99.982605% 99.982712% 99.972168%
99.969925% 99.998833%
99.979584% 99.999306% 99.969147% 99.948341% 99.998634% 99.975098%
99.975296% 99.989746%
99.987106% 99.993164% 99.961136% 99.963669% 99.973732% 99.996391%
99.950478% 99.977341%
99.937698% 99.981834% 99.995804% 99.972069% 99.957329% 99.994621%
99.995895% 99.997368%
99.997650% 99.960152% 99.946289% 99.995125% 99.994537% 99.994629%
99.987206% 99.974411%
--- Results after 55 passes ---
Best: 99.999 -- Worst: 99.938 -- Average: 99.979913, Difference:
99.995488
====================IRQ=========================
[root@openvox ast]# cat /proc/interrupts
           CPU0       CPU1       CPU2       CPU3
  0:    8561589    9467840   10864459    7137658    IO-APIC-edge  tim
er
  1:          2          1          0          0    IO-APIC-edge  i80
42
  8:          1          1          2          1    IO-APIC-edge  rtc
  9:          0          0          0          0   IO-APIC-level  acp
i
12:          2          0          0          2    IO-APIC-edge  i804
2
50:   10626346    5768167    4442131   13196550   IO-APIC-level  wct4
xxp
58:    3475098   17963605   10562092    4171075   IO-APIC-level  wct4
xxp
66:   13919401    5917762    6424664    9045548   IO-APIC-level  wct4
xxp
225:      39462      21255       1281       1197   IO-APIC-level  lib
ata
```

```
233:        115          0          0   15262494         PCI-MSI  eth
0
NMI:          0          0          0          0
LOC:   36013454   36010078   35993018   35993018
ERR:          0
MIS:          0
[root@openvox ast]#
=============CPU info=============================
[root@openvox ast]# cat /proc/cpuinfo
processor       : 0
vendor_id       : GenuineIntel
cpu family      : 6
model           : 15
model name      : Intel(R) Xeon(R) CPU           X3220  @ 2.40GHz
stepping        : 11
cpu MHz         : 1596.000
cache size      : 4096 KB
physical id     : 0
siblings        : 4
core id         : 0
cpu cores       : 4
fdiv_bug        : no
hlt_bug         : no
f00f_bug        : no
coma_bug        : no
fpu             : yes
fpu_exception   : yes
cpuid level     : 10
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge
mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe nx lm
constant_tsc pni monitor ds_cpl vmx est tm2 cx16 xtpr lahf_lm
bogomips        : 4802.77

processor       : 1
vendor_id       : GenuineIntel
cpu family      : 6
model           : 15
model name      : Intel(R) Xeon(R) CPU           X3220  @ 2.40GHz
stepping        : 11
cpu MHz         : 2394.000
cache size      : 4096 KB
physical id     : 0
siblings        : 4
```

```
core id         : 1
cpu cores       : 4
fdiv_bug        : no
hlt_bug         : no
f00f_bug        : no
coma_bug        : no
fpu             : yes
fpu_exception   : yes
cpuid level     : 10
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge
mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe nx lm
constant_tsc pni monitor ds_cpl vmx est tm2 cx16 xtpr lahf_lm
bogomips        : 4800.15

processor       : 2
vendor_id       : GenuineIntel
cpu family      : 6
model           : 15
model name      : Intel(R) Xeon(R) CPU           X3220  @ 2.40GHz
stepping        : 11
cpu MHz         : 1596.000
cache size      : 4096 KB
physical id     : 0
siblings        : 4
core id         : 2
cpu cores       : 4
fdiv_bug        : no
hlt_bug         : no
f00f_bug        : no
coma_bug        : no
fpu             : yes
fpu_exception   : yes
cpuid level     : 10
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge
mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe nx lm
constant_tsc pni monitor ds_cpl vmx est tm2 cx16 xtpr lahf_lm
bogomips        : 4800.19

processor       : 3
vendor_id       : GenuineIntel
cpu family      : 6
model           : 15
```

```
model name      : Intel(R) Xeon(R) CPU           X3220  @ 2.40GHz
stepping        : 11
cpu MHz         : 2394.000
cache size      : 4096 KB
physical id     : 0
siblings        : 4
core id         : 3
cpu cores       : 4
fdiv_bug        : no
hlt_bug         : no
f00f_bug        : no
coma_bug        : no
fpu             : yes
fpu_exception   : yes
cpuid level     : 10
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge
mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe nx lm
constant_tsc pni monitor ds_cpl vmx est tm2 cx16 xtpr lahf_lm
bogomips        : 4800.18

===============TOP info=========================

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
24405 root      15   0  155m  77m 5472 S  230  1.9 165:14.21 asterisk
2855 root      15   0  1716  608  516 S    0  0.0   0:08.60 syslogd
2858 root      15   0  1668  400  336 S    0  0.0   0:15.65 klogd
24633 root      16   0  2188 1020  800 S    0  0.0   0:07.19 top
26669 root      15   0  2188 1012  796 R    0  0.0   0:00.03 top
    1 root      15   0  2064  608  524 S    0  0.0   0:01.01 init
    2 root      RT  -5     0    0    0 S    0  0.0   0:00.00
migration/0
    3 root      34  19     0    0    0 S    0  0.0   0:00.00
ksoftirqd/0
    4 root      RT  -5     0    0    0 S    0  0.0   0:00.00
watchdog/0
    5 root      RT  -5     0    0    0 S    0  0.0   0:00.02
migration/1
    6 root      34  19     0    0    0 S    0  0.0   0:00.00
ksoftirqd/1

===============asterisk ss7 debug info================
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '11' on linkset
'ls1', firstcic=1
```

[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '12' on linkset 'ls1', firstcic=33
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '13' on linkset 'ls1', firstcic=65
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '14' on linkset 'ls1', firstcic=97
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '15' on linkset 'ls1', firstcic=129
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '16' on linkset 'ls1', firstcic=161
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '17' on linkset 'ls1', firstcic=193
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '18' on linkset 'ls1', firstcic=225
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '19' on linkset 'ls1', firstcic=257
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '110' on linkset 'ls1', firstcic=289
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '111' on linkset 'ls1', firstcic=321
[Nov 19 09:16:39] NOTICE[21902] config.c: Configured link '112' on linkset 'ls1', firstcic=353
[Nov 19 09:16:39] WARNING[21902] config.c: Missing interface entries for host 'openvox'.
[Nov 19 09:16:39] NOTICE[21902] config.c: Configuring DPC XXXXXX for linkset 'ls1'.
[Nov 19 09:16:39] NOTICE[21902] mtp.c: Initialising 1 signalling links

4) **testing tools:**

Cnetos-5.2,

asterisk-1.4.20.1.tar.gz chan_ss7-1.2.tar.gz zaptel-1.4.12.1, D410P(3 cards)

==========

after testing, the result shows that the quality of voice and consumption of system resource are acceptable.

Regards!

James.zhu