

Freeswitch 1.0.6+Zaptel+ATCOM AX-4ET

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Test Environment

freeswitch-1.0.6

libpri-1.4.11.2

zaptel-1.4.12.1

Centos 5.4(kernel version: 2.6.18-164.el5)

E1 crossover cable

ATCOM AX-4ET card

Software Installation

1. Install zaptel
./configure
make
make install
make config
Attention: Please download zaptel from ATCOM website
2. Install libpri
make
make install
3. In freeswitch-1.0.6/ modules.conf file, please uncomment the following line:
../libs/openzap/mod_openzap
4. Install freeswitch and openzap
run "./configure " under the freeswitch-1.0.6/ directory
then run ./configure --with-libpri
make
make mod_openzap-install
in freeswitch-1.0.6/libs/openzap directory

run the following commands under the freeswitch-1.0.6/ directory to install freeswitch

```
make
make install
make cd-sounds-install
make cd-moh-install
```

5. Please add one line in /usr/local/freeswitch/conf/autoload_configs/modules.conf.xml (line 37)
`<load module="mod_openzap"/>`
6. Please use the following command to configure zaptel.conf file:
`genzaptelconf -sdvM`
7. zaptel.conf

```
# Span 1: Tor2/0/1 "Tormenta 2 (PCI) Quad E1 Card 0 Span 1" (MASTER)
span=1,1,0,ccs,hdb3
# termtype: te
bchan=1-15,17-31
dchan=16
```

```
# Span 2: Tor2/0/2 "Tormenta 2 (PCI) Quad E1 Card 0 Span 2"
span=2,2,0,ccs,hdb3
# termtype: te
bchan=32-46,48-62
dchan=47
```

```
# Span 3: Tor2/0/3 "Tormenta 2 (PCI) Quad E1 Card 0 Span 3"
span=3,3,0,ccs,hdb3
# termtype: te
bchan=63-77,79-93
dchan=78
```

```
# Span 4: Tor2/0/4 "Tormenta 2 (PCI) Quad E1 Card 0 Span 4"
span=4,4,0,ccs,hdb3
# termtype: te
bchan=94-108,110-124
dchan=109
```

-
8. Please edit /usr/local/openzap/conf/openzap.conf file like the following:

```
[span zt PRI_1]
name => OpenZAP
number => 1
trunk_type => e1
b-channel => 1-15
d-channel => 16
b-channel => 17-31
```

```
[span zt PRI_2]
name => OpenZAP
number => 2
trunk_type => e1
b-channel => 32-46
d-channel => 47
b-channel => 48-62
```

```
[span zt PRI_3]
name => OpenZAP
number => 3
trunk_type => e1
b-channel => 63-77
d-channel => 78
b-channel => 79-93
```

```
[span zt PRI_4]
name => OpenZAP
number => 4
trunk_type => e1
b-channel => 94-108
d-channel => 109
b-channel => 110-124
```

9. Please edit /usr/local/freeswitch/conf/autoload_configs/openzap.conf.xml file like the following:

```
<configuration name="openzap.conf" description="OpenZAP Configuration">
<libpri_spans>
  <span name="PRI_1">
    <param name="node" value="net"/>
    <param name="switch" value="euroisdn"/>
    <param name="opts" value="none"/>
    <param name="dp" value="unknown"/>
    <param name="debug" value="all"/>
    <param name="dialplan" value="XML"/>
    <param name="context" value="from-internal"/>
  </span>
  <span name="PRI_2">
    <param name="node" value="net"/>
    <param name="switch" value="euroisdn"/>
    <param name="opts" value="none"/>
    <param name="dp" value="unknown"/>
    <param name="debug" value="all"/>
    <param name="dialplan" value="XML"/>
    <param name="context" value="from-internal"/>
  </span>
  <span name="PRI_3">
    <param name="node" value="cpe"/>
    <param name="switch" value="euroisdn"/>
    <param name="opts" value="none"/>
    <param name="dp" value="unknown"/>
    <param name="debug" value="all"/>
    <param name="dialplan" value="XML"/>
    <param name="context" value="from-pstn"/>
  </span>
  <span name="PRI_4">
    <param name="node" value="cpe"/>
    <param name="switch" value="euroisdn"/>
    <param name="opts" value="none"/>
    <param name="dp" value="unknown"/>
    <param name="debug" value="all"/>
    <param name="dialplan" value="XML"/>
    <param name="context" value="from-pstn"/>
  </span>
</libpri_spans>
</configuration>
```

10. Please run " /usr/local/freeswitch/bin/freeswitch " command to start freeswitch

Run oz list, you should get the following span information you have configured

```
freeswitch@localhost.localdomain> oz list
```

```
+OK
```

```
span: 1 (PRI_1)
```

```
type: isdn
```

```
chan_count: 31
```

```
dialplan: XML
```

```
context: from-internal
```

```
dial_regex:
```

```
fail_dial_regex:
```

```
hold_music:
```

```
analog_options none
```

```
+OK
```

```
span: 2 (PRI_2)
```

```
type: isdn
```

```
chan_count: 31
```

```
dialplan: XML
```

```
context: from-internal
```

```
dial_regex:
```

```
fail_dial_regex:
```

```
hold_music:
```

```
analog_options none
```

```
+OK
```

```
span: 3 (PRI_3)
```

```
type: isdn
```

```
chan_count: 31
```

```
dialplan: XML
```

```
context: from-pstn
```

```
dial_regex:
```

```
fail_dial_regex:
```

```
hold_music:
```

```
analog_options none
```

```
+OK
```

```
span: 4 (PRI_4)
```

```
type: isdn
```

```
chan_count: 31
```

```
dialplan: XML
```

```
context: from-pstn
```

```
dial_regex:
```

```
fail_dial_regex:
```

```
hold_music:
```

```
analog_options none
```

Loopback Test

1. Please connect port 1 to port 4 with a cross-over cable
2. Please added dial-plans by creating two .xml files under the /usr/local/freeswitch/conf/dialplan directory

from-internal.xml

```
-----
<context name="from-internal">
  <extension name="from-internal">
    <condition field="destination_number" expression="^(.*)$">
      <action application="bridge" data="openzap/1/a/$1"/>
    </condition>
  </extension>
</context>
-----
```

from-pstn.xml

```
-----
<context name="from-pstn">
  <extension name="from-pstn">
    <condition field="destination_number" expression="^(.*)$">
      <action application="playback" data="ivr-welcome_to_freeswitch.wav"/>
      <action application="bridge" data="openzap/1/a/$1"/>
    </condition>
  </extension>
</context>
-----
```

3. Please use a registered sip phone to dial any number, then you should listen to the sound file 30 times, and get the following output:

```
-----
freeswitch@localhost.localdomain>      2010-07-05      16:53:42.583403      [NOTICE]
switch_channel.c:669      New      Channel      sofia/internal/1999@192.168.1.229:5060
[7ee30d1e-f240-4951-8623-b9564944d94b]
2010-07-05 16:53:42.591402 [INFO] mod_dialplan_xml.c:418 Processing 1999->1111 in context
from-internal
2010-07-05 16:53:42.592409 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:1
2010-07-05 16:53:42.592409 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:1
2010-07-05 16:53:42.593401 [NOTICE] switch_channel.c:669 New Channel OpenZAP/1:1/1111
[ee79b30a-d711-435b-8319-8a89ded4dfd5]
2010-07-05 16:53:42.608397 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 4:1
2010-07-05 16:53:42.608397 [NOTICE] ozmod_libpri.c:772 -- Ring on channel 4:1 (from 1999 to
1111)
2010-07-05 16:53:42.610398 [NOTICE] switch_channel.c:669 New Channel OpenZAP/4:1/1111
-----
```

[d9dff21e-5985-4e6c-abc9-0cb8a3103525]
2010-07-05 16:53:42.610398 [INFO] mod_dialplan_xml.c:418 Processing Extension 1999->1111
in context from-pstn
2010-07-05 16:53:42.618394 [NOTICE] mod_openzap.c:1962 Pre-Answer OpenZAP/1:1/1111!
2010-07-05 16:53:42.625395 [INFO] switch_ivr_originate.c:3105 Sending early media
2010-07-05 16:53:42.628394 [NOTICE] mod_sofia.c:1907 Pre-Answer
sofia/internal/1999@192.168.1.229:5060!
2010-07-05 16:53:42.634391 [NOTICE] switch_core_session.c:1753 Pre-Answer
OpenZAP/4:1/1111!
2010-07-05 16:53:45.215890 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:2
2010-07-05 16:53:45.215890 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:2
2010-07-05 16:53:45.215890 [NOTICE] switch_channel.c:669 New Channel OpenZAP/1:2/1111
[08d563bb-2cd1-4c2c-b19a-a80c7f57461d]
2010-07-05 16:53:45.267872 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 4:2
2010-07-05 16:53:45.267872 [NOTICE] ozmod_libpri.c:772 -- Ring on channel 4:2 (from 1999 to
1111)
2010-07-05 16:53:45.267872 [NOTICE] switch_channel.c:669 New Channel OpenZAP/4:2/1111
[9a1a395d-6cd1-4bb1-9a1b-ad6cd042f5fb]
2010-07-05 16:53:45.269877 [INFO] mod_dialplan_xml.c:418 Processing Extension 1999->1111
in context from-pstn
2010-07-05 16:53:45.277871 [NOTICE] mod_openzap.c:1962 Pre-Answer OpenZAP/1:2/1111!
2010-07-05 16:53:45.305864 [NOTICE] switch_core_session.c:1753 Pre-Answer
OpenZAP/4:2/1111!
2010-07-05 16:53:47.887340 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:3
2010-07-05 16:53:47.887340 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:3
2010-07-05 16:53:47.887340 [NOTICE] switch_channel.c:669 New Channel OpenZAP/1:3/1111
[b194e39a-ee11-4fc5-8754-f49f54c4258d]
2010-07-05 16:53:47.925332 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 4:3
2010-07-05 16:53:47.925332 [NOTICE] ozmod_libpri.c:772 -- Ring on channel 4:3 (from 1999 to
1111)
2010-07-05 16:53:47.927335 [NOTICE] switch_channel.c:669 New Channel OpenZAP/4:3/1111
[c33a5659-07c7-449d-9036-063d7dd81291]
2010-07-05 16:53:47.927335 [INFO] mod_dialplan_xml.c:418 Processing Extension 1999->1111
in context from-pstn
2010-07-05 16:53:47.935331 [NOTICE] mod_openzap.c:1962 Pre-Answer OpenZAP/1:3/1111!
2010-07-05 16:53:47.965325 [NOTICE] switch_core_session.c:1753 Pre-Answer
OpenZAP/4:3/1111!

2010-07-05 16:56:13.129176 [NOTICE] switch_channel.c:669 New Channel OpenZAP/1:29/1
[102f00a3-1e86-46a9-a252-da7546e27e5f]
2010-07-05 16:56:13.179181 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 4:29
2010-07-05 16:56:13.179181 [NOTICE] ozmod_libpri.c:772 -- Ring on channel 4:29 (from 1999
to 1)

2010-07-05 16:56:13.181239 [NOTICE] switch_channel.c:669 New Channel OpenZAP/4:29/1 [7a53b526-9df4-4227-8a99-a60e87ee7706]

2010-07-05 16:56:13.183226 [INFO] mod_dialplan_xml.c:418 Processing Extension 1999->1 in context from-pstn

2010-07-05 16:56:13.191164 [NOTICE] mod_openzap.c:1962 Pre-Answer OpenZAP/1:29/1!

2010-07-05 16:56:13.211163 [NOTICE] switch_core_session.c:1753 Pre-Answer OpenZAP/4:29/1!

2010-07-05 16:56:15.790642 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:30

2010-07-05 16:56:15.790642 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:30

2010-07-05 16:56:15.790642 [NOTICE] switch_channel.c:669 New Channel OpenZAP/1:30/1 [fc5a9261-4658-47ec-b00e-da59b4ae321e]

2010-07-05 16:56:15.847633 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 4:30

2010-07-05 16:56:15.847633 [NOTICE] ozmod_libpri.c:772 -- Ring on channel 4:30 (from 1999 to 1)

2010-07-05 16:56:15.847633 [NOTICE] switch_channel.c:669 New Channel OpenZAP/4:30/1 [01e167c9-b241-440f-98c2-33ee48f5cb82]

2010-07-05 16:56:15.850658 [INFO] mod_dialplan_xml.c:418 Processing Extension 1999->1 in context from-pstn

2010-07-05 16:56:15.856630 [NOTICE] mod_openzap.c:1962 Pre-Answer OpenZAP/1:30/1!

2010-07-05 16:56:15.877626 [NOTICE] switch_core_session.c:1753 Pre-Answer OpenZAP/4:30/1!

2010-07-05 16:56:18.460126 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:31

2010-07-05 16:56:18.460126 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 1:31

2010-07-05 16:56:18.460126 [NOTICE] switch_channel.c:669 New Channel OpenZAP/1:31/1 [c6da8a77-027d-404b-b1a9-d0ba19fa47d8]

2010-07-05 16:56:18.509195 [INFO] ozmod_zt.c:638 Setting echo cancel to 64 taps for 4:31

2010-07-05 16:56:18.509195 [NOTICE] ozmod_libpri.c:772 -- Ring on channel 4:31 (from 1999 to 1)

2010-07-05 16:56:18.511090 [NOTICE] switch_channel.c:669 New Channel OpenZAP/4:31/1 [b689a522-9959-4f91-9581-7a782eae246]

2010-07-05 16:56:18.511090 [INFO] mod_dialplan_xml.c:418 Processing Extension 1999->1 in context from-pstn

2010-07-05 16:56:18.519144 [NOTICE] mod_openzap.c:1962 Pre-Answer OpenZAP/1:31/1!

2010-07-05 16:56:18.547085 [NOTICE] switch_core_session.c:1753 Pre-Answer OpenZAP/4:31/1!

Reference

http://wiki.freemwitch.org/wiki/OpenZAP#OpenZAP_CLI_Commands

http://wiki.freemwitch.org/wiki/FreeSwitch_Dialplan_XML#Dial_plan_parser

http://wiki.freemwitch.org/wiki/Installation_Guide

http://wiki.freemwitch.org/wiki/Getting_Started_Guide