foneBRIDGE2 Quick Install Guide
(Updated Feb. 27, 2007)

- **Hardware requirements:** modern PC/server platform (P4,Opteron,512MB memory,Ethernet interface). A dedicated Ethernet interface is recommended as well as a managed switch if not connecting the fonebridge directly to your Asterisk server. Server grade Ethernet NICs are also recommended.

- **Software requirements**: asterisk, libpri, zaptel

- **Zaptel requirements**: zaptel-1.4.0-beta1 or patched zaptel-1.2 or newer on linux-2.6 systems. Any version of zaptel should work on linux-2.4 systems. Alternatively we offer a pre-patched version of zaptel-1.2.11 and zaptel-1.2.12. They can be downloaded from the following location;
http://support.red-fone.com/downloads/zaptel/

- **foneBRIDGE software**: fonulator-2 configuration utility

Patching zaptel-1.2. for linux-2.6 based systems

1. Download patch;
http://support.red-fone.com/downloads/zaptel/zaptel_patch.diff

2. Copy zaptel_patch.diff to your /usr/src/zaptel-1.2.x directory

3. From the /usr/src/zaptel-1.2.x directory enter;
#patch -p0 < zaptel_patch.diff

4. A succesful application of the patch will print out;
patching file zaptel.h
Hunk #1 succeeded at 1357 (offset 13 lines).
patching file ztd-eth.c
patching file ztd-loc.c
patching file ztdynamic.c

5. Rebuild zaptel
#make clean
#make linux26
#make install

6. rmmod any current zaptel modules to ensure the updated ones are loaded or reboot server to be safe.

Download and Install foneBRIDGE2 Config Utility (fonulator).
NOTE: fonulator version 0.2.4d applies to all foneBRIDGE2 devices marked as MOD: A. Previous versions require an earlier version of fonulator or a field upgrade to the latest firmware version.

1. Download fonulator source;
http://support.red-fone.com/downloads/fonulator/fonulator-0.2.4d.tar.gz

2. Untar
   #tar –xzvf fonulator-0.2.4d.tar.gz

3. Change to fonulator-0.2.4d directory

```
#cd fonulator-0.2.4d
```

4. Configure and build fonulator

```
#CFLAGS=-static ./configure
#make clean
#make
#make install
```

This last step will place the fonulator in the /usr/local/bin/ directory

5. Add fonulator utility to load automatically upon system boot following the guidelines for your Linux distribution. Alternatively, or for testing purposes the utility can be executed directly from the command line. Ex.

```
#fonulator
```

Configure redfone.conf

1. Download sample redfone.conf file to your /etc/ directory;
http://support.red-fone.com/downloads/fonulator/redfone.conf

2. Under the [globals] section change the fb1 and fb2 to reflect the addresses of your foneBRIDGE2 as identified on the label on the bottom of the device. Ex;
[globals]
fb1=00:50:C2:65:D0:70
fb2=00:50:C2:65:D0:71

3. Up to four Asterisk server MAC addresses can be specified with the serverx parameter. This can be used to route individual T1 or E1 ports to an individual Asterisk server's Ethernet interface. Ex;
server1=00:16:36:76:09:91
server2=00:16:36:76:09:92
server3=00:16:36:76:09:93
server4=00:10:18:14:5E:57

4. The *card=ethN,fb1* describes the interfaces we use to send the configuration information to the fonebridge. The *ethN* corresponds to the Ethernet interface of the Asterisk server that will be sending the update packet to the fonebridge (example eth0). The *fb1* specifies that the packet will be received on fb1 of the fonebridge using the MAC address identified earlier under [globals].

5. Only fb1 of the fonebridge device can be used to receive configuration data, although both fb1 and fb2 can be used to send and receive traffic between the fonebridge and Asterisk server(s).

6. The [spanN] parameters are used to configure the individual T1/E1 spans of the fonebridge. Format follows closely the standard syntax used in zaptel.conf described as follows;
span=<span num>,<timing source>,<LBO>,<framing>,<coding>

7. The 'timing source' and 'LBO' are automatically adjusted by the fonebridge and do not require any specific parameters. Framing and Coding should match the Telco equipment you are connecting to.

8. The serverN specifies which Asterisk Ethernet interface this

particular spans traffic will be communicating with as defined above
in the [globals] section

9. The fbN specifies which Ethernet port on the fonebridge this
particular spans traffic will be communicating with as defined above
in the [globals] section

10. The 'pri' parameter specifies that this port on the fonebridge is
connecting to a primary rate interface

11. The absence of the 'pri' parameter will place the span in RBS/CAS
mode. This is used when connecting to channel banks, E&M lines or
other equipment that uses Robbed Bit Signaling/CAS.

Configuring zaptel.conf

The zaptel.conf file follows all standard rules and syntax as other
zaptel based hardware with the only exception being the use of the
dynamic= parameter.
dynamic=eth,<ethN>,/<FB MAC address>,/<span number>,<numchans>,<timing>

A sample 4x T1 PRI configuration would like the following;

```
dynamic=eth,eth2/00:50:C2:65:D0:70/0,24,4
dynamic=eth,eth2/00:50:C2:65:D0:70/1,24,3
dynamic=eth,eth2/00:50:C2:65:D0:70/2,24,2
dynamic=eth,eth2/00:50:C2:65:D0:70/3,24,1
#
bchan=1-23
dchan=24
bchan=25-47
dchan=48
bchan=49-71
dchan=72
bchan=73-95
dchan=96
#
loadzone = us
defaultzone=us
```

In the above example, the Asterisk server is communicating on it's eth2
with the fb address of *00:50:C2:65:D0:70*. Span numbers start at 0. It
has 24 channels (E1 would be 31) and timing begins at 4.
A sample 2x E1 PRI configuration would look like the following;

```
dynamic=eth,eth2/00:50:C2:65:D0:70/0,31,2
dynamic=eth,eth2/00:50:C2:65:D0:70/1,31,1
#
bchan=1-15,17-31
dchan=16
bchan=32-46,48-62
dchan=47
#
loadzone = us
defaultzone=us
```

The zaptel.conf file is parsed and loaded by the ztcfg utility included
in the zaptel library. Ex;
#ztcfg

Configuring foneBRIDGE

Power on the fonebridge and once your redfone.conf file is complete you will update the fonebridge by executing the fonulator utility. The fonulator utility will read the information contained in your redfone.conf and provided all MAC addressing is correct, send it to the fonebridge which will configure all of its spans as per your parameters, come on line and begin transmitting TDMoE traffic in under one second.

1. Execute the fonulator utility from the Linux command line. Ex;
#fonulator

2. By default the fonulator will look for /etc/redfone.conf. You can specify an alternative file name by affixing the full file name path after fonulator. Ex;

#fonulator /etc/redfone2.conf

3. After executing fonulator you should notice immediately that both LEDs on the fonebridge Ethernet port (FB1/FB2) are turned on solid indicating that TDMoE traffic is flowing. By executing *#zttool* you can further determine if Alarms are cleared on your Asterisk server.

4. Please note that if power is cycled to the fonebridge it will loose its current configuration and you will need to fonulate again.

5. Configure /etc/asterisk/zapata.conf as per normal instructions Additional configuration samples, information and technical support can be found at;

http://www.red-fone.com/Support/