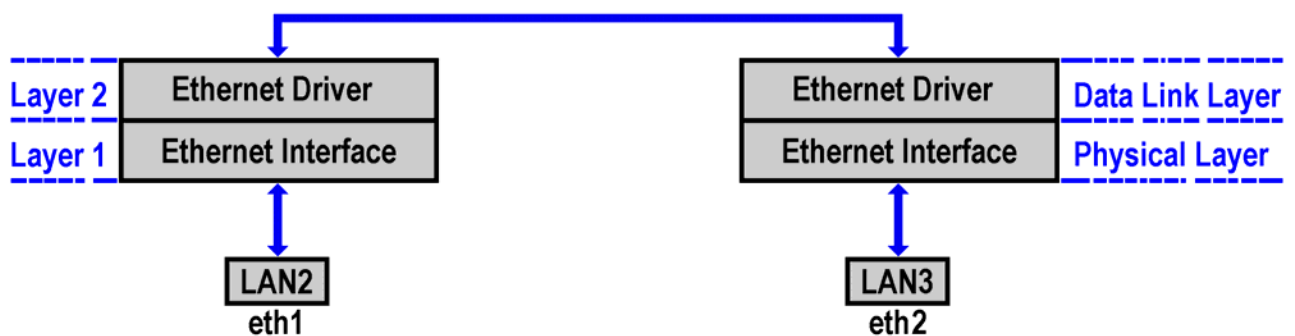


How to setup an Ethernet Bridge

The DIL/NetPC ADNP/1520 default embedded Linux configuration – called “Embedded Gateway Linux” – of your IGW/100 Linux Security Gateway comes with an integrated Ethernet bridging tool with support for the Spanning Tree Protocol (STP).

Ethernet bridging is a way to connect networks together to form a larger network. The standard for bridging is ANSI/IEEE 802.1d (MAC Bridges) which can be downloaded from IEEE web site. A bridge is a way to connect two separate network segments together in a protocol independent way. Packets are forwarded based on Ethernet address, rather than IP address (like a router). Since forwarding is done at Layer 2, all protocols can go transparently through a bridge.



For configuration and control of an Ethernet bridge the Embedded Gateway Linux of your IGW/100 Linux Security Gateway offers a *brctl* command. The following steps shows how to create an Ethernet bridge with the LAN2 (eth1) and LAN3 (eth2) ports of the IGW/100. LAN1 (eth0) is unused in this sample.

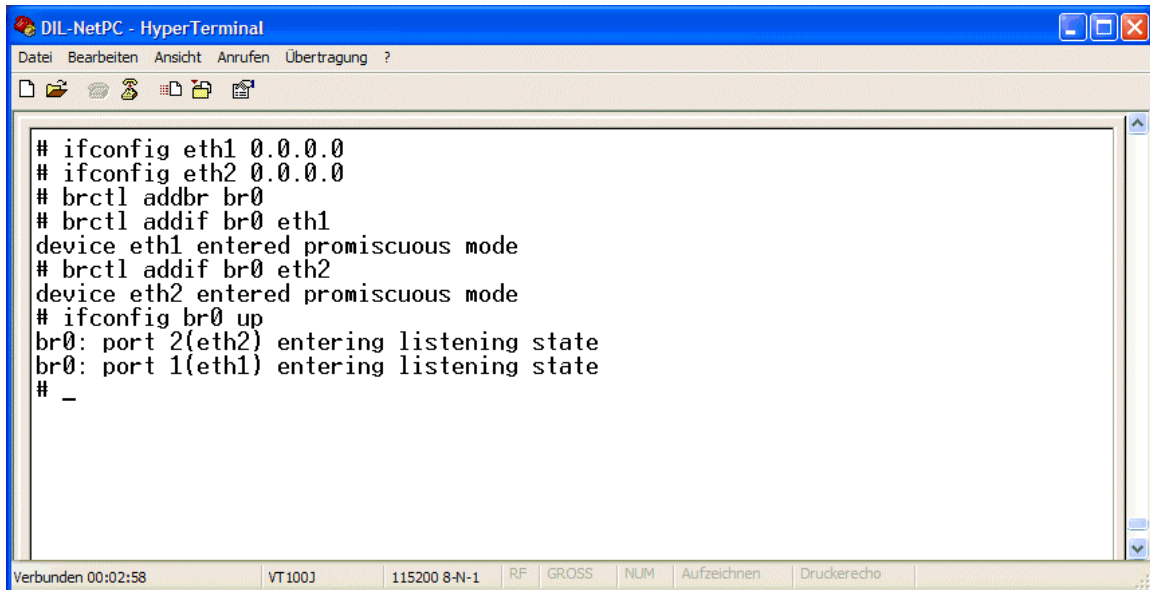
- **1. Step:** Enter the following command sequence within an IGW/100 Linux Security Gateway Telnet or RS232-based serial console session:

```
ifconfig eth1 0.0.0.0
ifconfig eth2 0.0.0.0
brctl addbr br0
brctl addif br0 eth1
brctl addif br0 eth2
ifconfig br0 up
```

The first two commands of this sample removes the default IP addresses from eth1 (IGW/100 LAN2 interface) and eth2 (IGW/100 LAN3 interface).

The three *brctl* commands defines a bridge with the name *br0* and adds the two interfaces eth1 and eth2 to this bridge.

The final *ifconfig* command brings the Ethernet bridge up to work. After this command the IGW/100 LAN2 and LAN3 Ethernet interfaces form a transparent dual-port switch. The LAN2 and LAN3 interfaces are now in promiscuous mode.



```

# ifconfig eth1 0.0.0.0
# ifconfig eth2 0.0.0.0
# brctl addbr br0
# brctl addif br0 eth1
device eth1 entered promiscuous mode
# brctl addif br0 eth2
device eth2 entered promiscuous mode
# ifconfig br0 up
br0: port 2(eth2) entering listening state
br0: port 1(eth1) entering listening state
# -

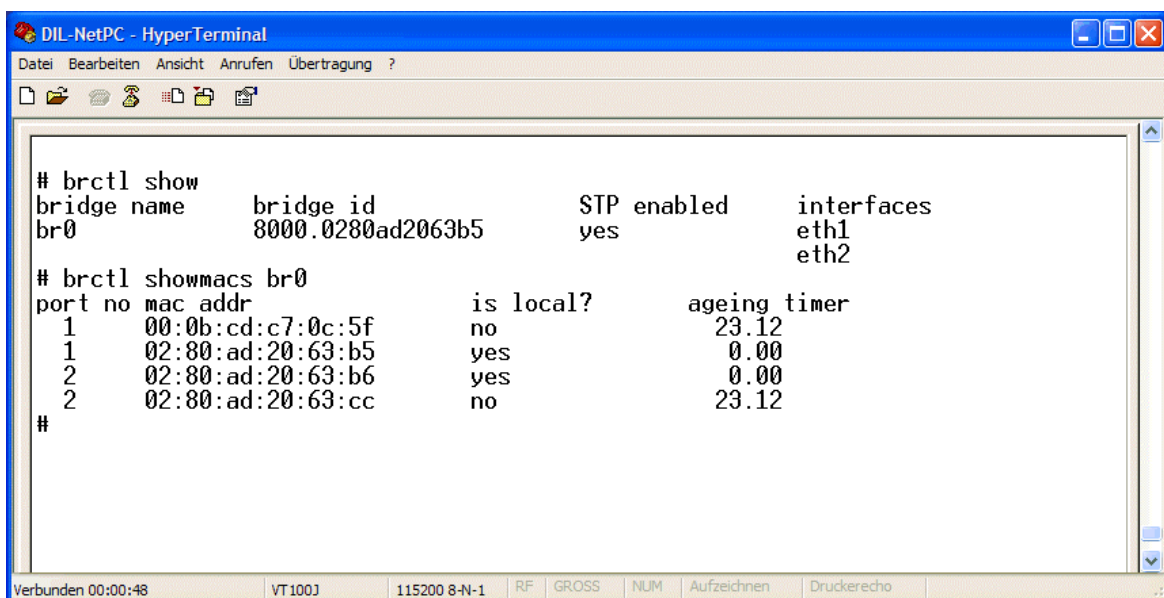
```

Please note: It is also possible to add the command sequence of the first step to the IGW/100 *autostart.sh* file. The IGW/100 Linux Security Gateway comes with an Autostart feature. This feature allows you to start programs or execute Linux shell commands at boot time.

- **2. Step:** Make sure that some LAN traffic goes over the LAN2 (eth1) and LAN3 (eth2) ports of the IGW/100. Then enter the following commands and watch the results:

```
brctl show
```

```
brctl showmacs br0
```



```

# brctl show
bridge name      bridge id          STP enabled      interfaces
br0              8000.0280ad2063b5  yes              eth1
                                                         eth2

# brctl showmacs br0
port no  mac addr          is local?  ageing timer
  1      00:0b:cd:c7:0c:5f  no         23.12
  1      02:80:ad:20:63:b5  yes         0.00
  2      02:80:ad:20:63:b6  yes         0.00
  2      02:80:ad:20:63:cc  no         23.12
#

```

The first command *brctl show* shows the devices in a bridge. The second command *brctl showmacs br0* displays some information about MAC addresses for a bridge. The following table gives an overview for the available *brctl* command.

IGW/100 <i>brctl</i> Command	Function
<code>brctl addbr <bridge></code>	Creating a bridge device
<code>brctl addif <bridge> <device></code>	Adding devices to a bridge
<code>brctl delbr <bridge></code>	Deleting a bridge device
<code>brctl delif <bridge> <device></code>	Deleting devices from a bridge
<code>brctl show</code>	Showing devices in a bridge
<code>brctl showmacs <bridge></code>	Showing information about MAC addresses
<code>brctl showstp <bridge></code>	Show bridge STP (Spanning Tree Protocol) info
<code>brctl setageing <bridge> <time></code>	Set ageing time
<code>brctl setbridgeprio <bridge> <prio></code>	Set bridge priority
<code>brctl setfd <bridge> <time></code>	Set bridge forward delay
<code>brctl setgcint <bridge> <time></code>	Set garbage collection interval
<code>brctl sethello <bridge> <time></code>	Set hello time
<code>brctl setmaxage <bridge> <time></code>	Set max message age
<code>brctl setpathcost <bridge> <port> <cost></code>	Set path cost
<code>brctl setportprio <bridge> <port> <prio></code>	Set port priority
<code>brctl stp <bridge> <state></code>	Turn stp on/off

Table 1: IGW/100 *brctl* Command Overview

That's all.