

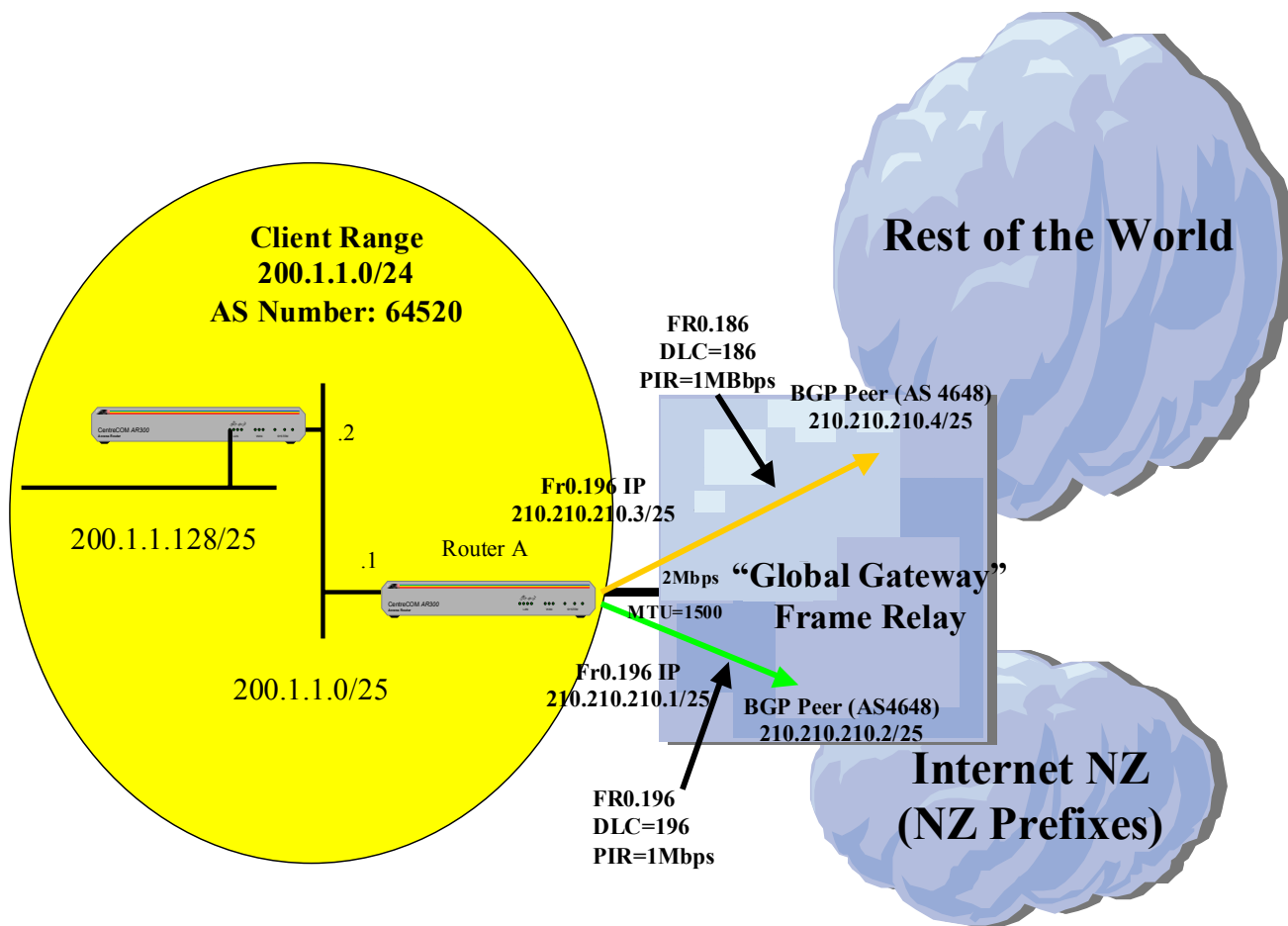
NZ BGP4 Configurations

Version 1.1, M. Jury, 13 September

Version 1.2, T Wilkins, 20 August 2003 (Fixed filters)

Version 1.3, T. Wilkins, 9 September 2003 (added CID)

Solution 1: "Global Gateway" using Frame Relay with Rate Clamping



```
#  
# SYN configuration  
#  
set syn=syn0 speed=2048000
```

```
#  
# FRAME RELAY configuration  
#  
create fr=0 over=syn0  
add fr=0 li=186  
add fr=0 li=196
```

```

#set "cirlimit" to PIR of DLC
set fr=0 dlc=186 cir=1024000 cirlimit=on
set fr=0 dlc=186 li=186
set fr=0 dlc=196 cir=1024000 cirlimit=on
set fr=0 dlc=196 li=196
#
# IP configuration
#
enable ip
set ip autonomous=65555

#BGP filter for international in (only allows default route)
Add ip filt=300 ip=0.0.0.0 sm=255.255.255.255 ac=include
Add ip filt=300 ip=0.0.0.0 sm=0.0.0.0 ac=exclude
#BGP filter for domestic and national out (only allows 210.1.1.0 out)
Add ip filt=301 ip=210.1.1.0 sm=255.255.255.0 ac=include
Add ip filt=301 ip=0.0.0.0 sm=0.0.0.0 ac=exclude
#BGP filter for domestic in (deletes default route but all others ok)
Add ip filt=302 ip=0.0.0.0 sm=255.255.255.255 ac=exclude
Add ip filt=302 ip=0.0.0.0 sm=0.0.0.0 ac=include

add ip int=eth0 ip=200.1.1.1 mask=255.255.255.192
set ip int=eth0 pro=off
add ip int=fr0.196 ip=210.210.210.1 mask=255.255.255.252
add ip int=fr0.186 ip=210.210.210.3 mask=255.255.255.252
add ip rou=200.1.1.128 mask=255.255.255.128 int=eth0 next=200.1.1.2
add ip rou=0.0.0.0 mask=0.0.0.0 int=fr0.186 next=0.0.0.0 dlc=186

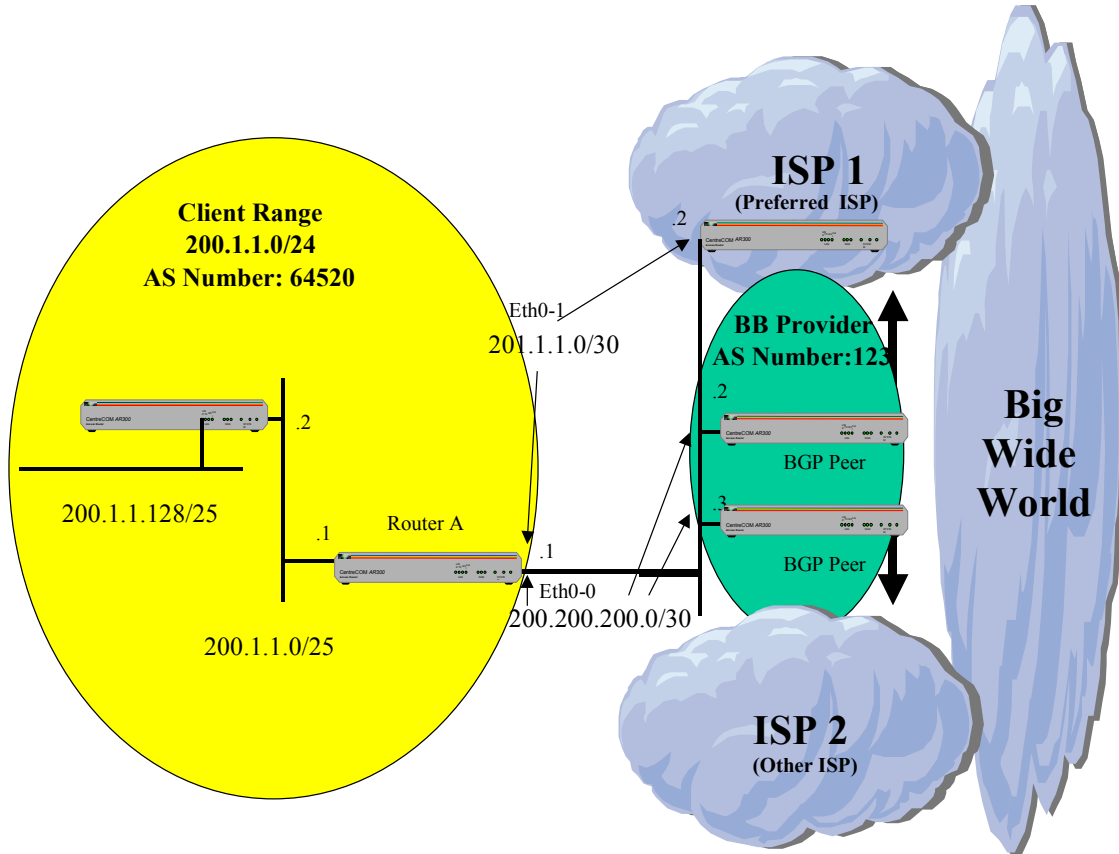
#
#BGP4
#
add bgp pe=210.210.210.4 rem=4648
set bgp pe=210.210.210.4 desc="Global Gateway International BGP"
set bgp pe=210.210.210.4 outf=301 infilter=300
ena bgp pe=210.210.210.4
add bgp pe=210.210.210.2 rem=4648
set bgp pe=210.210.210.2 desc="Global Gateway National BGP"
set bgp pe=210.210.210.2 outf=301 infilter=302
ena bgp pe=210.210.210.2

# BGP networks must be added for each static route
add bgp net=200.1.1.0/25
add bgp net=200.1.1.128/25
# or
# Import all interface routes with ( add bgp imp=interface ) *need firmware 2.5.* or above
# To import all static routes with ( add bgp imp=static)
# Summarize routes to BB provider
add bgp agg=200.1.1.0/24 sum=yes

```

Solution 2: "City Link"

Diagram : Path to Multiple ISPs with 2 BGP peers provided by BB supplier



Configuration of "Router A" running 2.5.* SW

```
#
# IP configuration
#
enable ip
set ip autonomous=64520
# 300 filter is for your public IP address space
add ip fil=300 so=210.55.255.0 sm=255.255.255.0 ac=include
add ip fil=300 so=0.0.0.0 sm=0.0.0.0 ac=exclude
add ip fil=301 so=210.55.255.0 sm=255.255.255.0 ac=exclude
add ip fil=301 so=0.0.0.0 ac=include
# Add interfaces and routes for Default gateway (ISP) and internal network
# In a shared Ethernet environment, ensure proxy arp is off
add ip int=eth0-0 ip=200.200.200.1 mask=255.255.255.252
set ip int=eth0-0 pro=off
add ip int=eth0-1 ip=201.1.1.1 mask=255.255.255.252
set ip int=eth0-1 pro=off
```

```
add ip int=eth1-0 ip=200.1.1.1 mask=255.255.255.128
set ip int=eth1-0 pro=off
add ip route=0.0.0.0 int=eth0-1 next=201.1.1.2
add ip route=200.1.1.128 mask=255.255.255.128 next=200.1.1.2 int=eth1-0

# BGP configuration

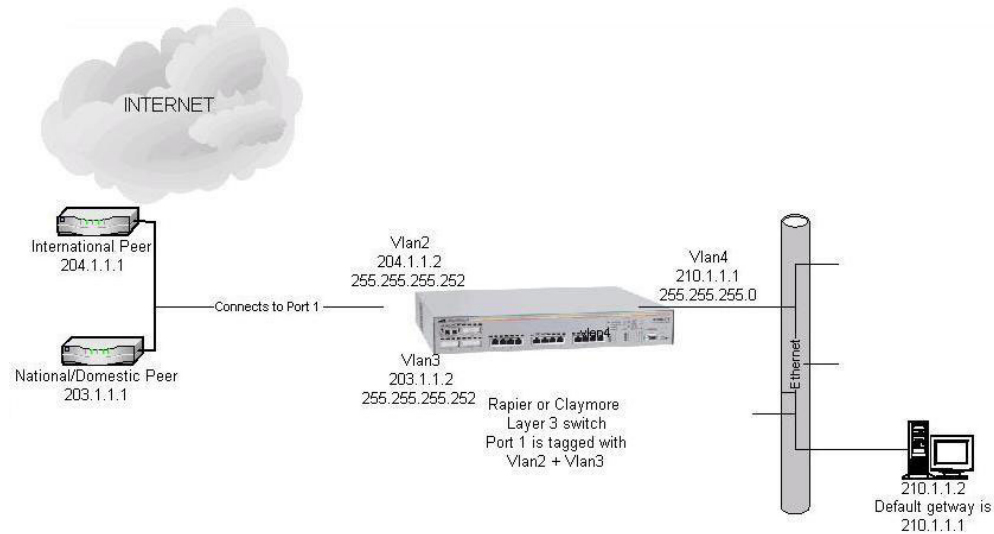
# Create BGP Peers and apply filter 300 to prevent re-advertising learn't routes
# back to the BB provider

add bgp pe=200.200.200.2 rem=123
set bgp pe=200.200.200.2 outfilter=300 infilter=301
ena bgp pe=200.200.200.2
add bgp pe=200.200.200.3 rem=123
set bgp pe=200.200.200.3 outfilter=300 infilter=301
ena bgp pe=200.200.200.3

# BGP networks must be added for each static route
add bgp net=200.1.1.0/25
add bgp net=200.1.1.128/25
# or
# Import all interface routes with ( add bgp imp=interface ) *need firmware 2.5.* or above
# To import all static routes with ( add bgp imp=static)

# Summarize routes to BB provider
add bgp agg=200.1.1.0/24 sum=yes
```

Global gateway 'CID' using VLANS, BGP on a Layer 3 Switch



Global Gateway offer a service sold through telecom called CID

<http://www.telecom.co.nz/corporateinternetdirect>

http://www.telecom.co.nz/binaries/cid_customer_manual1.pdf

The connection is via 10/100/1000 Mbit Ethernet.

Like the frame connection with a DLC per peer the Ethernet has a Vlan per peer.

The VLANs used at each end must match. In global gateway uses vlan vid = 1001 the Layer 3 Switch must use vlan vid = 1001.

For the example the following is used

International peer is via VLAN 2 with a limit of 2Mbit

Its ip is 204.1.1.1 the switches ip is 204.1.1.2

Domestic/National is via VLAN 3 with a limit of 10Mbit

Is ip is 203.1.1.1 the switches ip is 203.1.1.2

Vlan 4 is the vlan where all the servers are placed with public ips.

Vlan 4 ip is 210.1.1.1 mask=255.255.255.0

VLAN setup

Create vlan=vlan2

Add vlan=vlan2 port=1 frame=tagged

Create vlan=vlan3

Add vlan=vlan3 port=1 frame=tagged

Create vlan=vlan4

Add vlan=vlan2 port=2-24

IP setup

Enable ip

#The autonomous number is either from Global Gateway or APNIC

Set ip auto=2

In a **shared Ethernet environment**, ensure **proxy arp** is **off**

```
Add ip int=vlan2 ip=204.1.1.2 mask=255.255.255.252
Set ip int=vlan2 proxy=off
Add ip int=vlan3 ip=203.1.1.2 mask=255.255.255.252
Set ip int=vlan3 proxy=off
Add ip int=vlan4 ip=210.1.1.1 mask=255.255.255.252
```

```
#BGP filter for international in (only allows default route)
Add ip filt=300 ip=0.0.0.0 sm=255.255.255.255 ac=include
Add ip filt=300 ip=0.0.0.0 sm=0.0.0.0 ac=exclude
```

```
#BGP filter for domestic and national out (only allows 210.1.1.0 out)
Add ip filt=301 ip=210.1.1.0 sm=255.255.255.0 ac=include
Add ip filt=301 ip=0.0.0.0 sm=0.0.0.0 ac=exclude
```

```
#BGP filter for domestic in (deletes default route but all others ok)
Add ip filt=302 ip=0.0.0.0 sm=255.255.255.255 ac=exclude
Add ip filt=302 ip=0.0.0.0 sm=0.0.0.0 ac=include
```

BGP setup

```
Add bgp peer=204.1.1.2 rem=4648
Add bgp peer=204.1.1.2 desc="international"
Add bgp peer=204.1.1.2 outfilt=301 infilt=300
```

```
Add bgp peer=204.1.1.2 rem=4648
Add bgp peer=204.1.1.2 desc="international"
Add bgp peer=204.1.1.2 outfilt=301 infilt=302
```

```
Add bgp import=interface
```

```
Enable bgp peer=all
```

Help

The www.alliedtelesyn.co.nz has the BGP reference manual available online.
<http://www.alliedtelesyn.co.nz/documentation/documentation.html>

Call Allied Telesyn's sales office on 04 566 4438
<http://www.alliedtelesyn.net.nz/Products/contacts.htm>

Commands to help with testing and debugging

Show BGP peer will show if the connection is established.
If it is established then the two peers are working and you should be able to see if the messages in/out.
The BGP peering might take a minute depending on the routing table size.

Manager > show bgp peer

BGP peer entries

Peer	State	AS	InMsg	OutMsg
192.168.254.1	Estab	1	2376	2389

To check the peers info you can specify it to check.
Below shows that the peer has been up for 19 hours and the amount of the different messages in/out.

Manager > show bgp peer=192.168.254.1

Peer 192.168.254.1
Description -
State Established
Remote AS 1
BGP Identifier 192.168.254.2
Connect retry 120s
Hold time 90s (actual 90s)
Keep alive 30s (actual 30s)
Min AS originated ... 15
Min route advert 30

Filtering

In filter -
In path filter -
In route map -
Out filter -
Out path filter ... -
Out route map -

Max prefix OFF
External hops 1 (EBGP multihop disabled)
Next hop self No
Send community No
Messages In/Out 2377/2391
Debugging -
Device -

Connection type EXTERNAL

Established transitions 4
Established duration 19:00:11
Time since last update received ... 00:00:00

Message counters:

inOpen	4	outOpen	4
inKeepAlive	2370	outKeepAlive	2374
inUpdate	2	outUpdate	12
inNotification	1	outNotification	1

Show bgp show how many peers are setup and how many are active.
It also shows the number to routes in the routing table from BGP.
NZ's national table is from 600-1000 routes.
The entire international table is 150-180,000 routes.

Manager > show bgp

BGP router ID 192.168.254.2
Local autonomous system 2
Confederation ID 0
Local preference 100 (default)
Multi exit discriminator -
Route table route map -

Number of peers

Defined 1
Established 1

BGP route table

Iteration 9
Number of routes 4
Route table memory 3070