

Internet Week 2000

IPv6 address deployment status

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IPv6 Address Deployment

- ◆ Registration records (whois)
 - ◆ Allocations to RIRs and 6BONE
 - ◆ Allocations by RIRs
 - ◆ Assignment records
- ◆ Routing table analysis
 - ◆ Allocated prefixes
 - ◆ Unaggregated prefixes
- ◆ Conclusions



IPv6 Allocations

- ◆ 6bone
 - ◆ TLA 3ffe::/16 allocated to 6BONE
 - ◆ RFC2471: *“IPv6 Testing Address Allocation”*
- ◆ RIRs
 - ◆ TLA 2001::/16 allocated for subTLAs
 - ◆ SubTLA blocks (/23) allocated to each RIR
 - ◆ RFC2928: *“Initial IPv6 Sub-TLA ID Assignments”*



IPv6 Allocations to RIRs

```
% whois -h whois.apnic.net 2001:200::/23
```

```
inet6num:      2001:200::/23
netname:       APNIC-AP-SUBTLAS
descr:         Asia Pacific Network Information Center
descr:         Level 1 - 33 Park Road.
descr:         PO Box 2131
descr:         Milton QLD 4064
descr:         Australia
country:       AU
admin-c:       HM20-AP
tech-c:        NO4-AP
mnt-by:        MAINT-APNIC-AP
changed:       dbmon@apnic.net 19990813
source:        APNIC
```



IPv6 Allocations to RIRs

```
% whois -h whois.arin.net 2001:400::/23
```

```
American Registry for Internet Numbers (ARIN-001)
```

```
4506 Daly Dr
```

```
Suite 201
```

```
Chantilly, VA 20151
```

```
US
```

```
Netname: ARIN-001
```

```
Netnumber: 2001:0400:0000:0000:0000:0000:0000:0000/23
```

```
Maintainer: ARIN
```

```
The ARIN Registration Services Host contains ONLY Internet  
Network Information: Networks, ASN's, and related POC's.  
Please use the whois server at rs.internic.net for DOMAIN  
Information and whois.nic.mil for NIPRNET Information.
```



IPv6 Allocations to RIRs

```
% whois -h whois.ripe.net 2001:600::/23
```

```
inet6num:      2001:0600::/23
netname:       EU-ZZ-2001-0600
descr:         RIPE NCC
descr:         European Regional Registry
country:       EU
admin-c:       NN32-RIPE
tech-c:        CREW-RIPE
tech-c:        OPS4-RIPE
status:        SUBTIA
mnt-by:        RIPE-NCC-HM-MNT
mnt-lower:     RIPE-NCC-HM-MNT
changed:       hostmaster@ripe.net 19990810
changed:       hostmaster@ripe.net 20000615
source:        RIPE
```

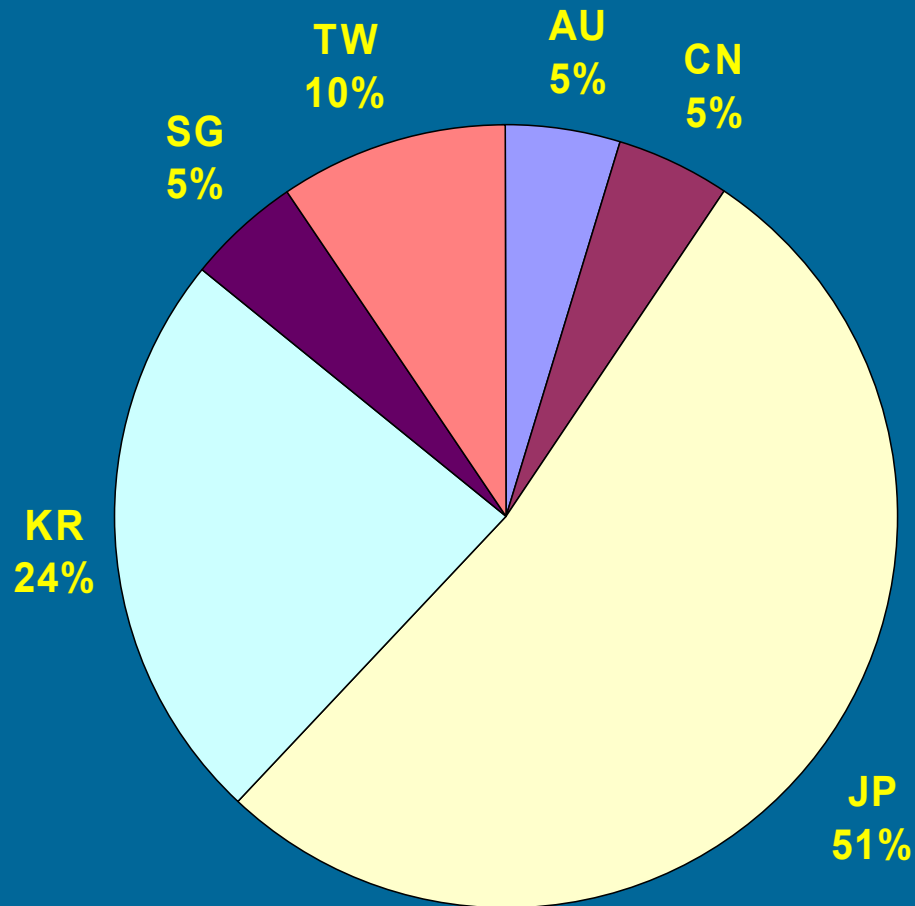


IPv6 Allocations by RIRs

- ◆ APNIC 2001:0200::/23
 - ◆ 21 allocations (/35)
- ◆ ARIN 2001:0400::/23
 - ◆ 10 allocations (/35)
- ◆ RIPE NCC 2001:0600::/23
 - ◆ 22 allocations (/35)
- ◆ 6bone 3ffe::/16
 - ◆ 76 allocations (59 /24 + 17 /28)

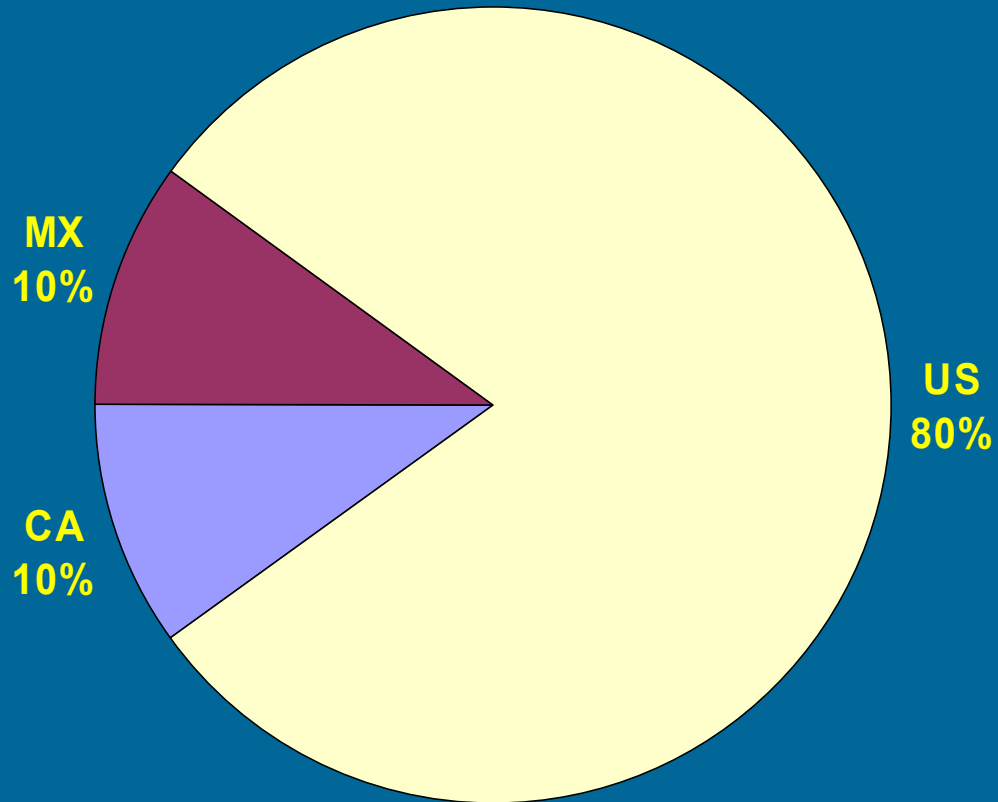


APNIC Allocations by Country



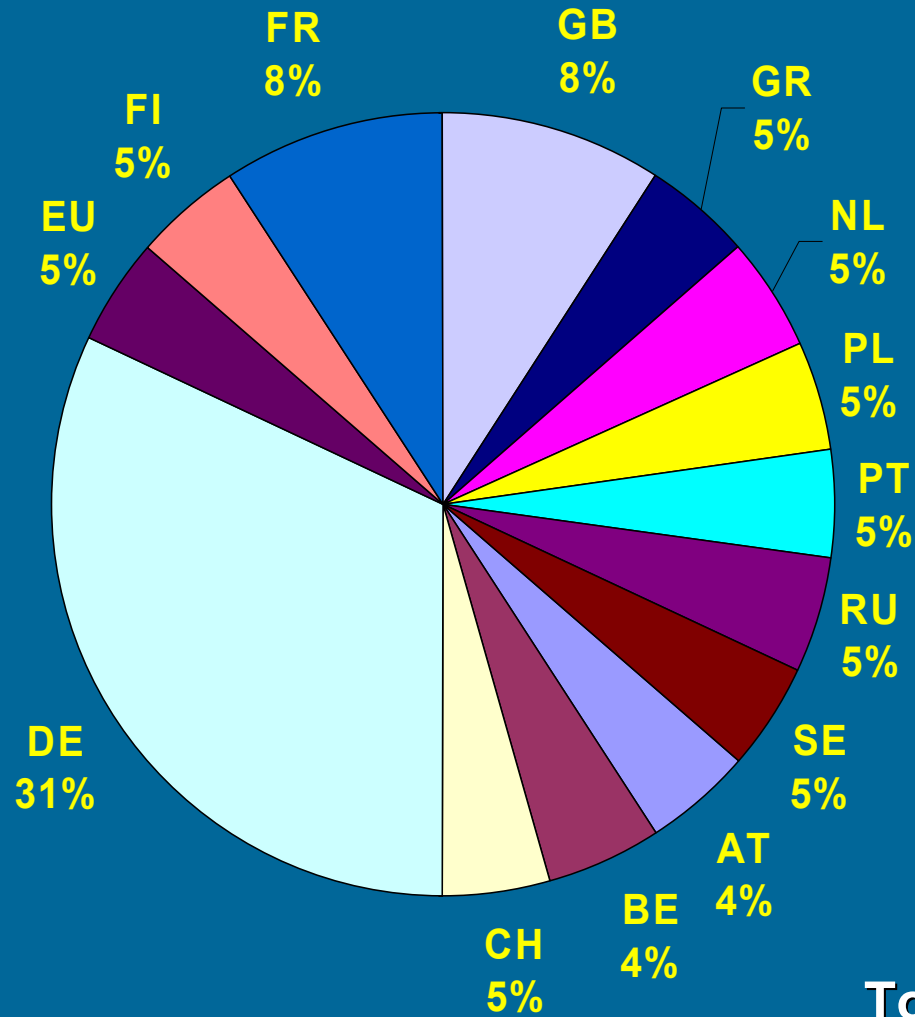
Total Allocations: 21

ARIN Allocations by Country



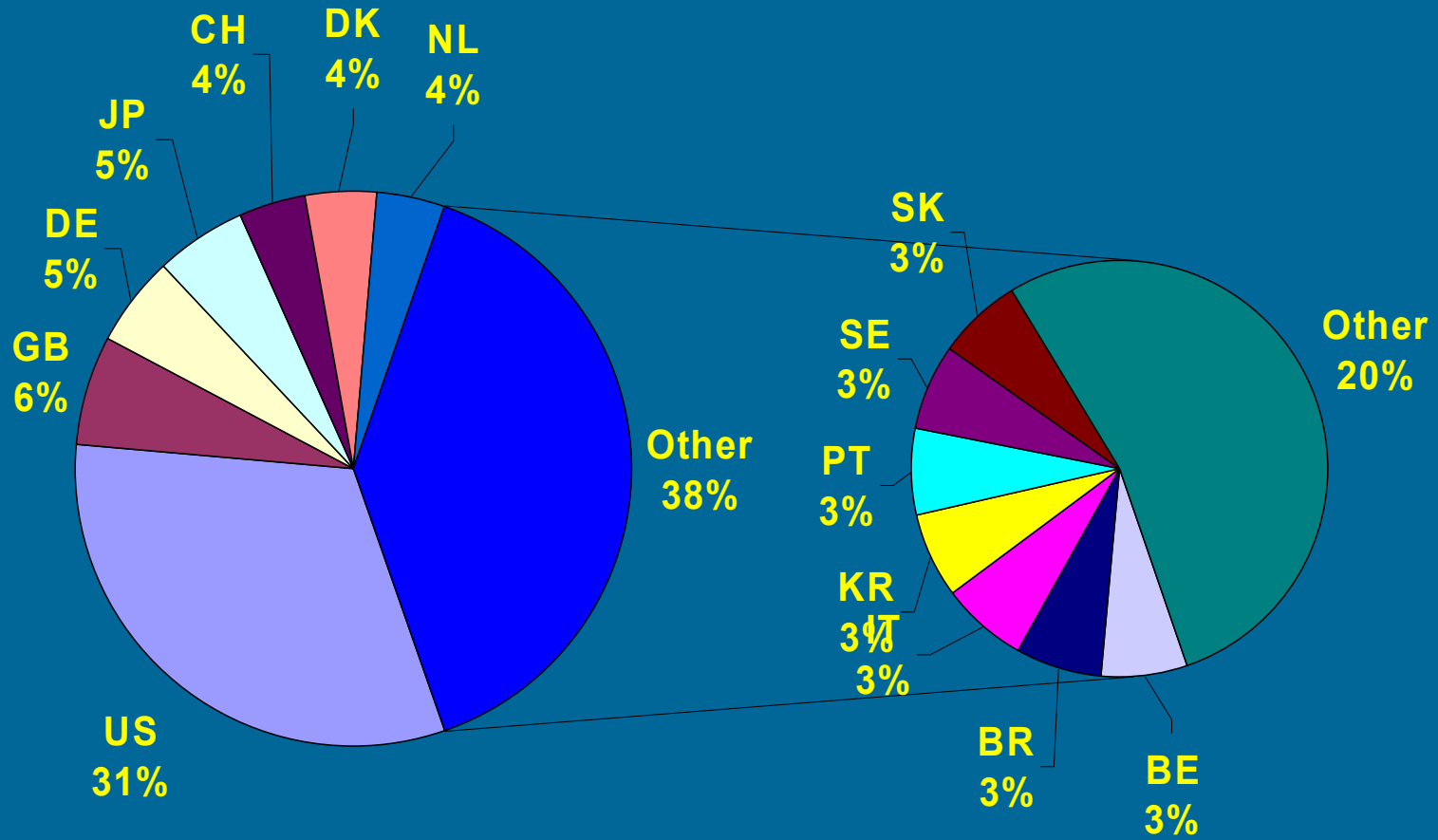
Total Allocations: 10

RIPE NCC Allocations by Country



Total Allocations: 22

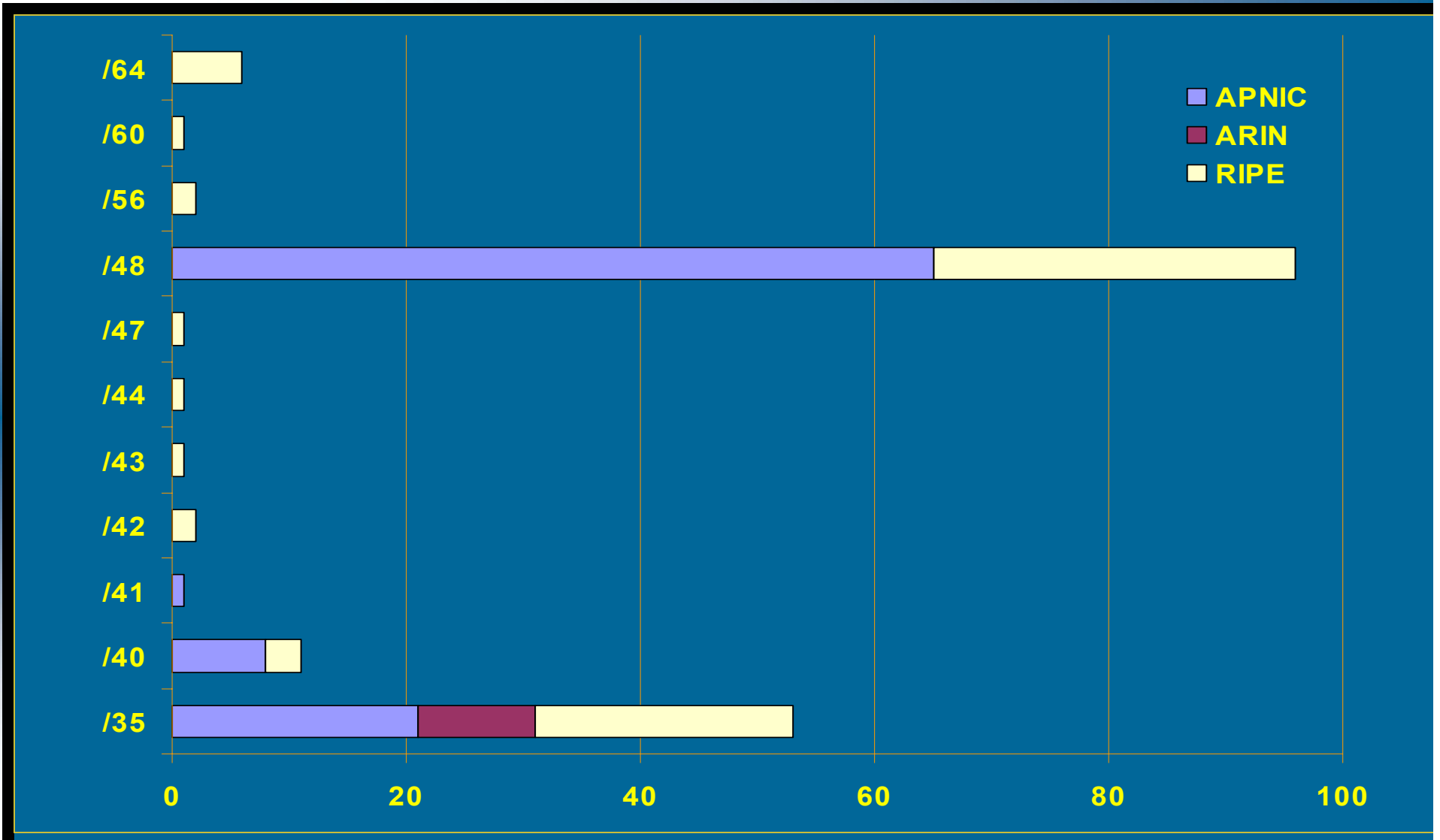
6BONE Allocations by Country



Total Allocations: 76

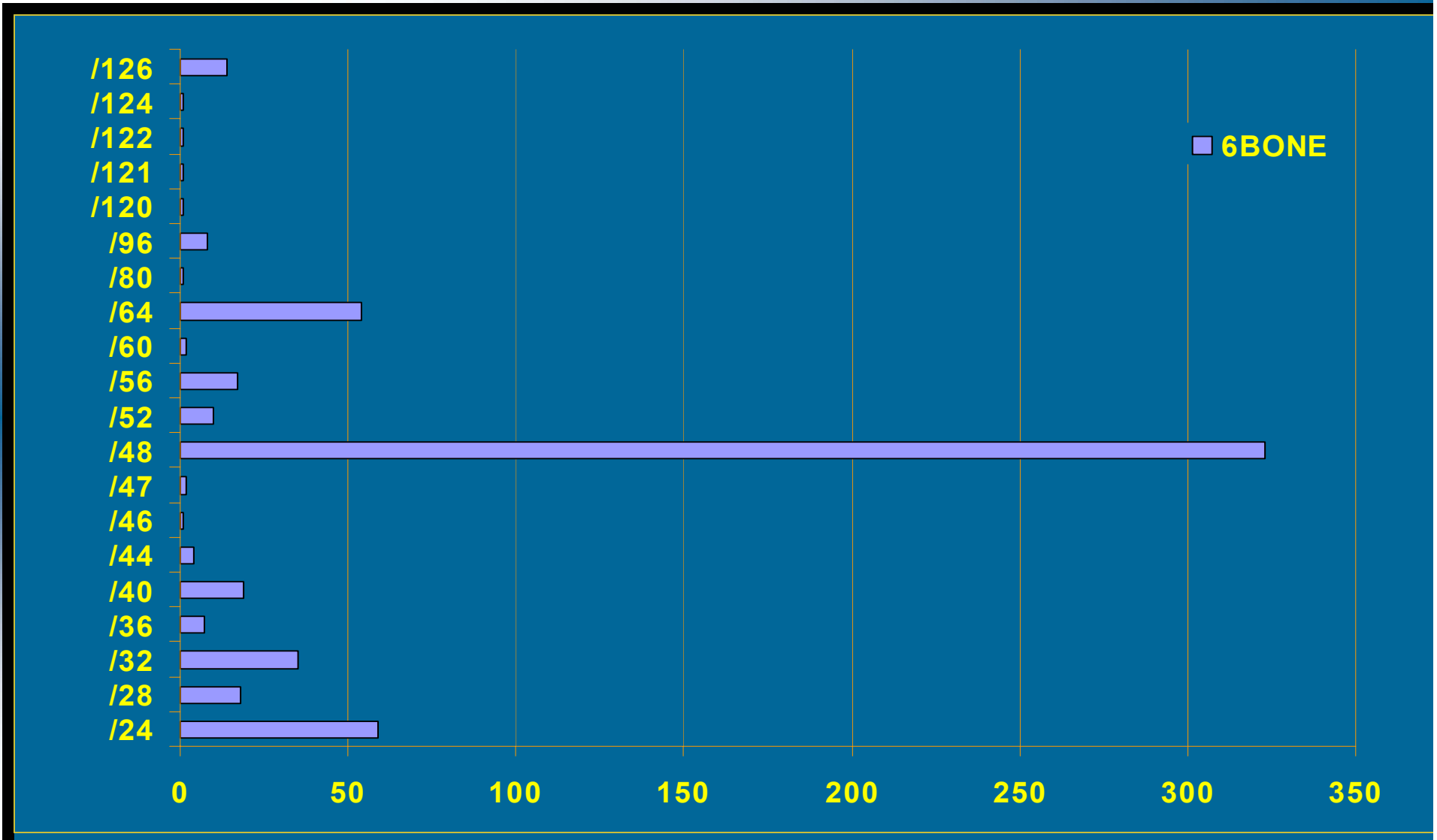


Database Registrations by RIR





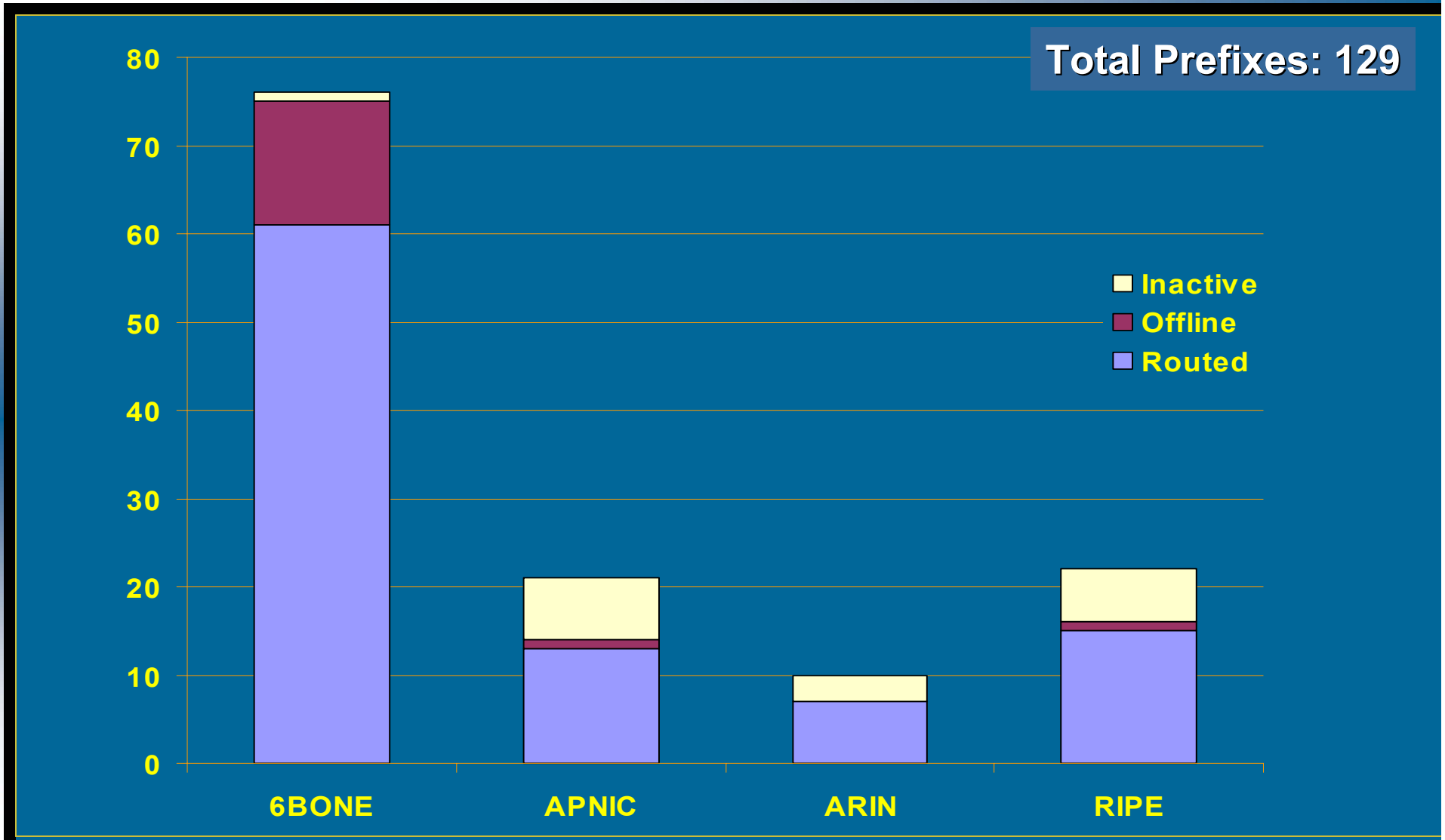
Database Registrations – 6BONE



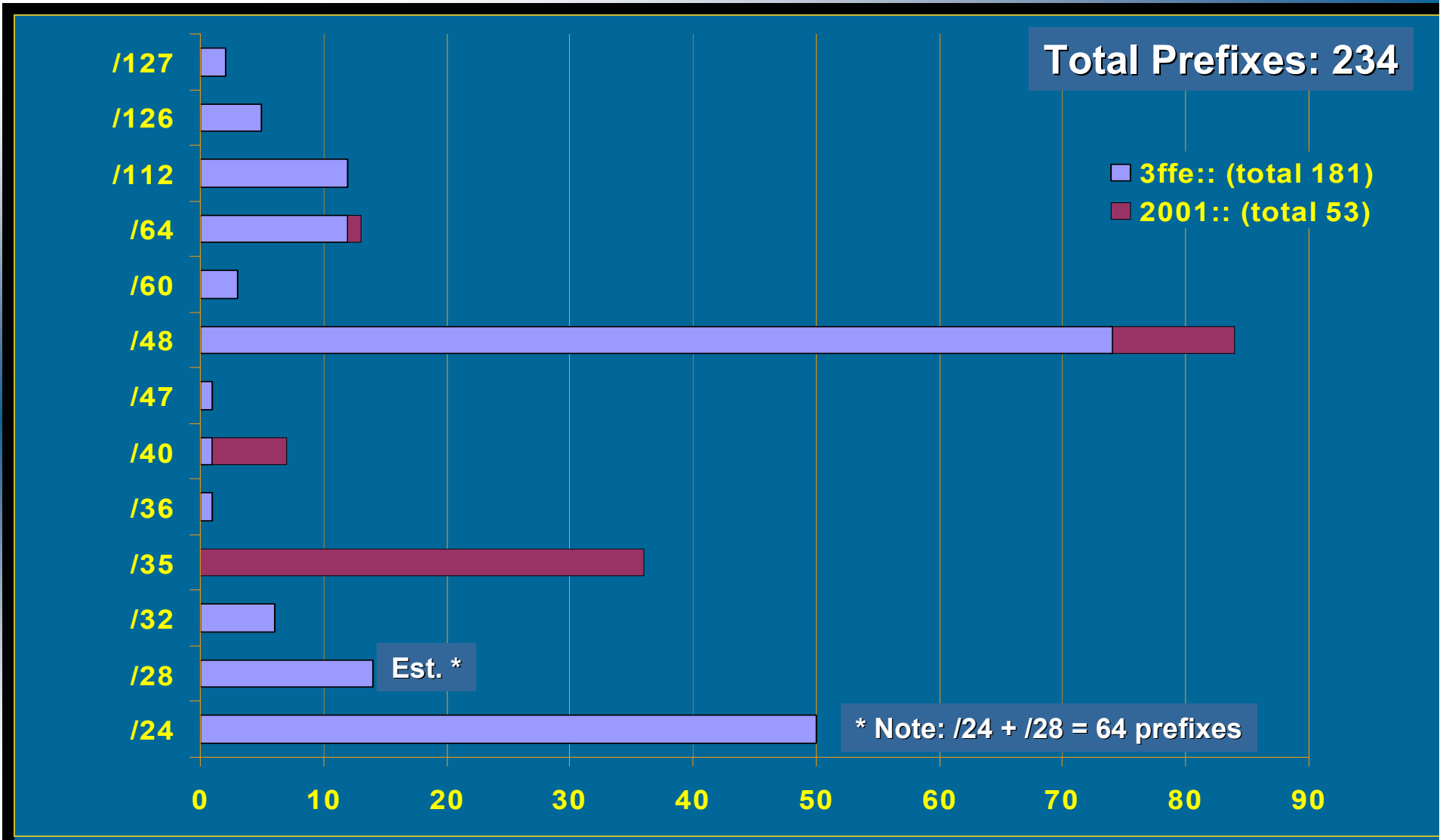
Routing Table Analysis

- ◆ Registration does not indicate usage
 - ◆ Allocation records are reliable to determine who “might” use address space
 - ◆ Assignment records may be incomplete
- ◆ Actual usage shown by routing tables
 - ◆ However, this is a subjective view depending on point of observation
 - ◆ Also, view changes constantly with time

Allocations Routed (6BONE/CSELT)



Prefix Distribution (6BONE/Merit)



Conclusions

- ◆ Useful statistics are available
 - ◆ 6BONE, CSELT, MERIT
 - ◆ However no “complete picture”
- ◆ Need consolidated standard set of stats
 - ◆ Preferably available from multiple “views”