



# RIR Update Report To The IEPG

# RIR Update Report Elements



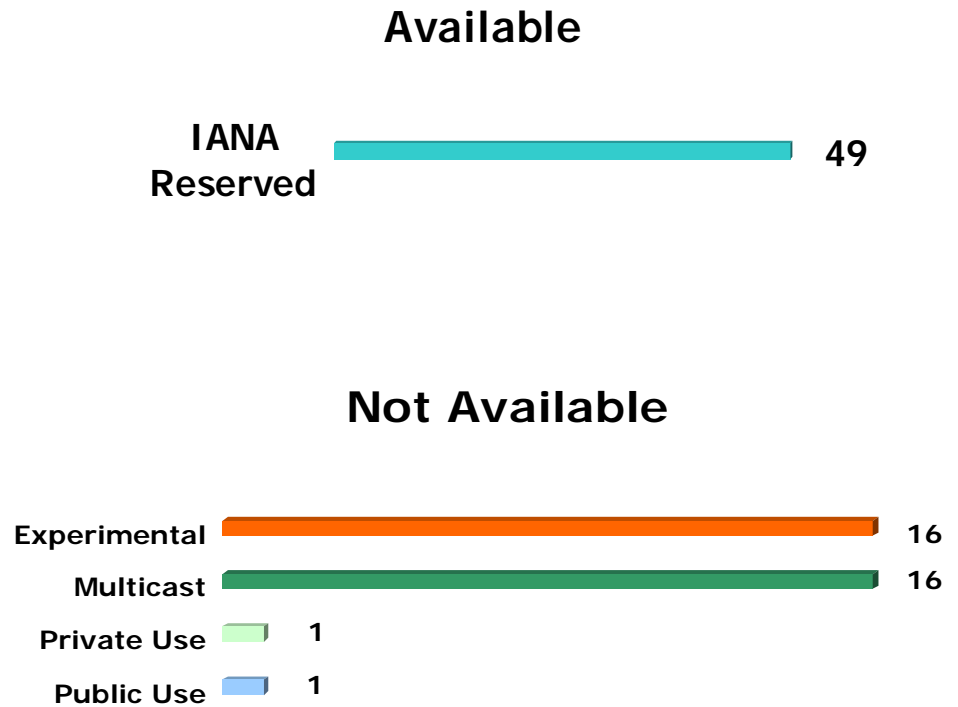
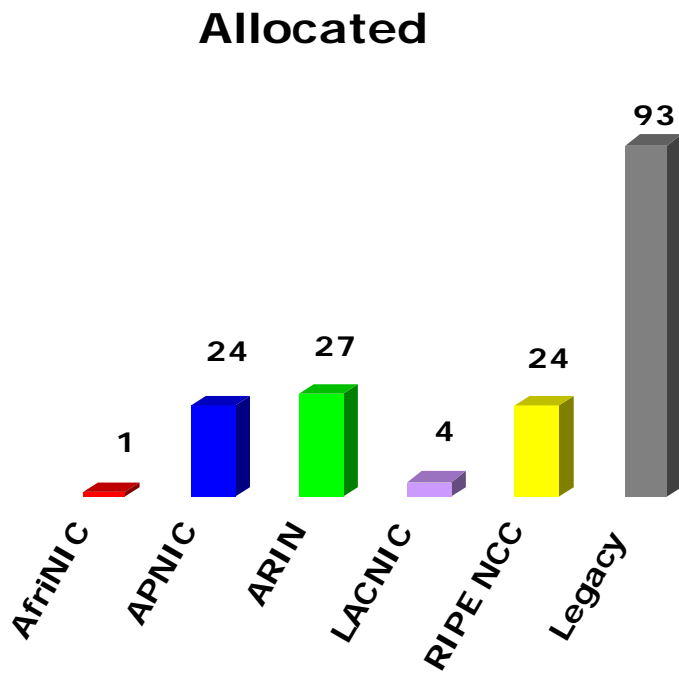
- Internet Number Resource Status
- Number Resource Policy Activity
- IPv4 Depletion and IPv6 Migration



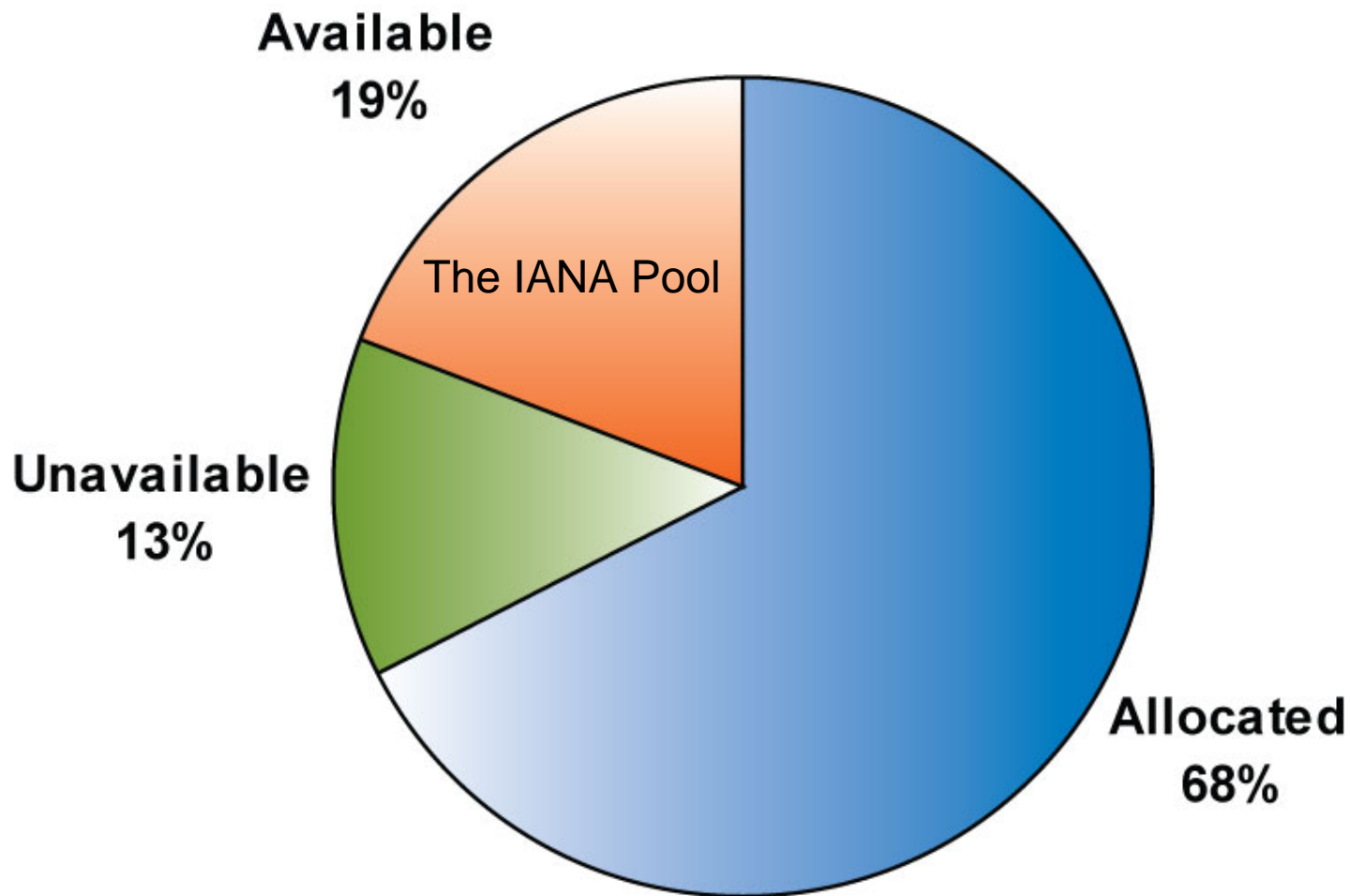
# Internet Number Resource Status Report

As of 31 March 2007

# Status of IPv4 Address Space (/8s)



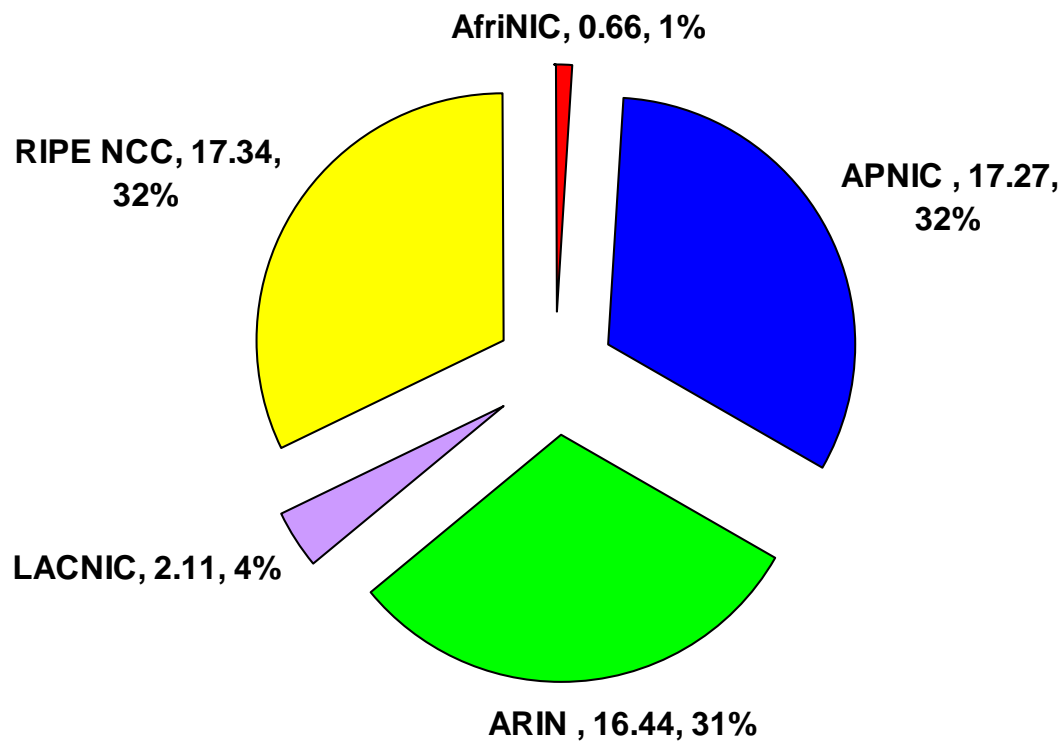
# IPv4 - Address Space Utilization



# IPv4 Allocations

## RIRs to LIRs/ISPs

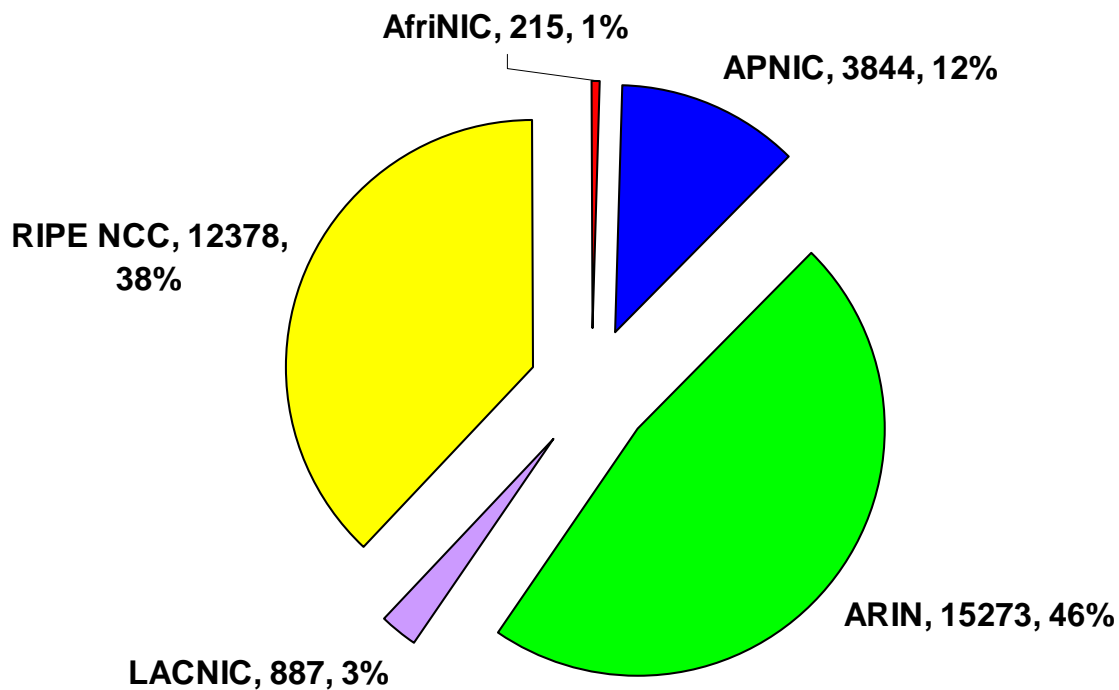
Cumulative Total (Jan 1999 – Mar 2007)



# ASN Assignments

## RIRs to LIRs/ISPs

Cumulative Total (Jan 1999 – Mar 2007)



# IANA IPv6 Allocations to RIRs (issued Oct 06)



<b>RIR</b>	<b>IPv6 Address</b>
<b>AfriNIC</b>	<b>2C00:0000::/12</b>
<b>APNIC</b>	<b>2400:0000::/12*</b>
<b>ARIN</b>	<b>2600:0000::/12*</b>
<b>LACNIC</b>	<b>2800:0000::/12*</b>
<b>RIPE NCC</b>	<b>2A00:0000::/12*</b>

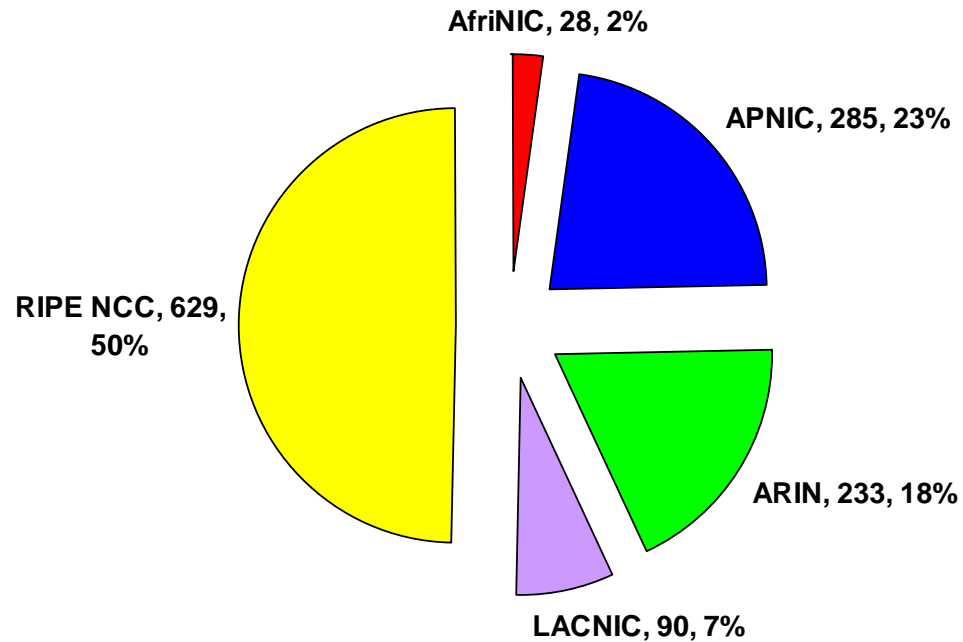
**\*Contains the /23s allocated by the IANA to the RIR  
under the previous policy**



# IPv6 Allocations

## RIRs to LIRs/ISPs

Cumulative Total (Jan 1999 – Mar 2007)



# Links

## Internet Number Resource Statistics

- **RIR Stats:**

<http://www.nro.net/statistics/>

- **Raw Data/Historical RIR Allocations:**

<http://www.aso.icann.org/stats>

<http://www.iana.org/assignments/ipv4-address-space>






<http://www.iana.org/assignments/as-numbers>

<http://www.iana.org/assignments/ipv6-unicast-address-assignments>








# Number Resource Policy Activity






# IPv4 Policy Discussions

RIR	TOPIC	STATUS
 <p><b>AfriNIC</b> The Internet Numbers Registry for Africa</p>	<ul style="list-style-type: none"> <li>• 12 month allocation period</li> <li>• IPv4 countdown</li> </ul>	<ul style="list-style-type: none"> <li>• Adopted</li> <li>• No Consensus</li> </ul>
 <p><b>APNIC</b></p>	<ul style="list-style-type: none"> <li>• 4 byte ASN</li> <li>• IPv4 countdown</li> </ul>	<ul style="list-style-type: none"> <li>• Adopted</li> <li>• Discuss</li> </ul>
 <p><b>ARIN</b> American Registry for Internet Numbers</p>	<ul style="list-style-type: none"> <li>• Transfer Policy Clarification</li> <li>• IPV4 Minimum Allocation Change</li> <li>• IPv4 countdown</li> </ul>	<ul style="list-style-type: none"> <li>• Adopted</li> <li>• Abandoned</li> <li>• Abandoned</li> </ul>
 <p><b>LACNIC</b></p>	<ul style="list-style-type: none"> <li>• Micro-Allocations for critical infrastructure</li> <li>• IPv4 Countdown</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss</li> <li>• Abandoned</li> </ul>
 <p><b>RIPE</b> NCC</p>	<ul style="list-style-type: none"> <li>• IP Assignments for TLD Operators and Anycasting</li> <li>• IPv4 countdown</li> </ul>	<ul style="list-style-type: none"> <li>• Adopted</li> <li>• No Consensus</li> </ul>

# IPv6 Policy Discussions

RIR	TOPIC	STATUS
 <p><b>Afrinic</b> The Internet Numbers Registry for Africa</p>	<ul style="list-style-type: none"> <li>• Critical infrastructure assignments</li> <li>• ULA Central</li> <li>• PI for Providers</li> </ul>	<ul style="list-style-type: none"> <li>• Adopted</li> <li>• Discuss</li> <li>• Adopted</li> </ul>
 <p><b>APNIC</b></p>	<ul style="list-style-type: none"> <li>• Changes to v6 initial allocation</li> <li>• ULA Central</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss</li> <li>• Discuss</li> </ul>
 <p><b>ARIN</b> American Registry for Internet Numbers</p>	<ul style="list-style-type: none"> <li>• Changes to v6 Initial Allocation Criteria</li> <li>• Interim status removed from V6 policy</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss</li> <li>• Adopted</li> </ul>
 <p><b>LACNIC</b></p>	<ul style="list-style-type: none"> <li>• Eliminate “interim” references of V6 policy</li> <li>• Modify multiple /48 requirement for v6 alloc</li> </ul>	<ul style="list-style-type: none"> <li>• Last Call</li> <li>• Last Call</li> </ul>
 <p><b>RIPE NCC</b></p>	<ul style="list-style-type: none"> <li>• Change V6 Initial Allocation Criteria</li> <li>• PI for end sites</li> </ul>	<ul style="list-style-type: none"> <li>• Last Call</li> <li>• Discuss</li> </ul>

# Other Policy Discussions

RIR	TOPIC	STATUS
	<ul style="list-style-type: none"> <li>• 4 Byte ASN</li> </ul>	<ul style="list-style-type: none"> <li>• Adopted</li> </ul>
	<ul style="list-style-type: none"> <li>• IPV4 Exhaustion</li> <li>• eGLOP Multicast Assignments</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss</li> <li>• Discuss</li> </ul>
	<ul style="list-style-type: none"> <li>• Reinstate X.509 Authentication/PGP</li> <li>• Immediate Need Clarifications</li> </ul>	<ul style="list-style-type: none"> <li>• Abandoned</li> <li>• Discuss</li> </ul>
	<ul style="list-style-type: none"> <li>• Global Policy related to end IPV4 Distribution</li> <li>• Global Policy related to 4 Byte ASN distribution from IANA to RIR's</li> </ul>	<ul style="list-style-type: none"> <li>• Last Call</li> <li>• Last Call</li> </ul>
	<ul style="list-style-type: none"> <li>• None</li> </ul>	

# Public Policy Meetings

RIR	DATE	LOCATION
 <b>Afrinic</b> The Internet Numbers Registry for Africa	<b>24-28 SEP 2007</b>	<b>Durbin</b>
 APNIC	<b>29 AUG - 7 SEP 2007</b>	<b>New Delhi</b>
 <b>ARIN</b> American Registry for Internet Numbers	<b>17 – 19 OCT2007</b>	<b>Albuquerque</b>
 LACNIC	<b>TBD 2008</b>	<b>TBD</b>
 <b>RIPE</b> NCC	<b>22 – 26 OCT 2007</b>	<b>Amsterdam</b>

# Policy Archives



RIR

LINK



<http://www.afrinic.net/policy.htm>



<http://www.apnic.net/docs/policy/proposals/archive.html>



[http://www.arin.net/policy/proposals/proposal\\_archive.html](http://www.arin.net/policy/proposals/proposal_archive.html)



<http://lacnic.net/en/politicas/desarrollo.html>



<http://www.ripe.net/ripe/policies/proposals/>





# IPv4 Depletion & Migration to IPv6

# Requirement



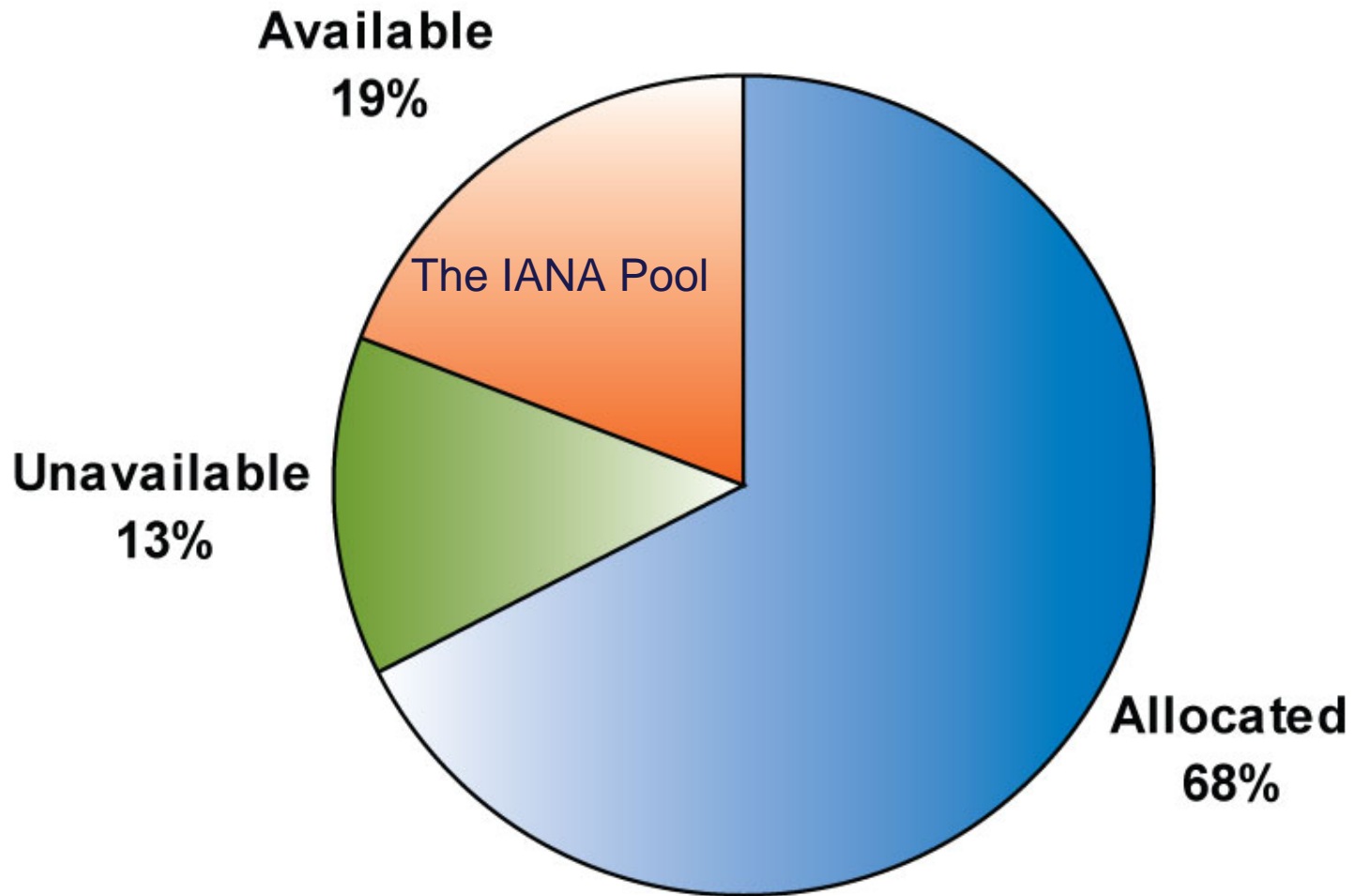
- **Users Need Access to Services**
- **Access Provided by a Healthy Internet**
- **Healthy Internet Needs Contiguous Address Space**
  - **Build out of major new networks**
  - **Addition of new customers by Internet Service Providers**

# Situation – Part I

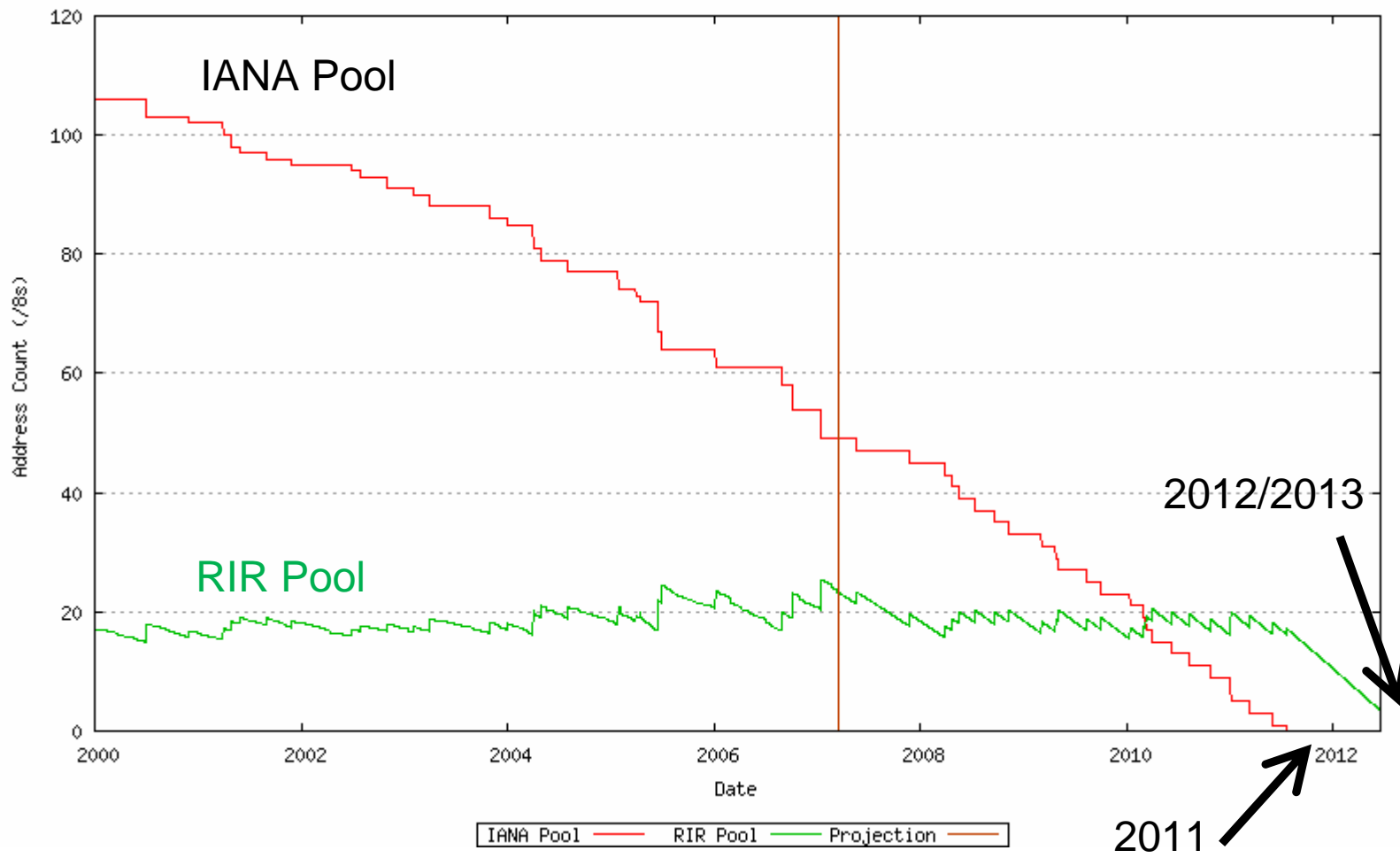


- **Current Source of Contiguous Address Space is IPv4**
- **This Supply is Diminishing**

# IPv4 - Address Space Utilization



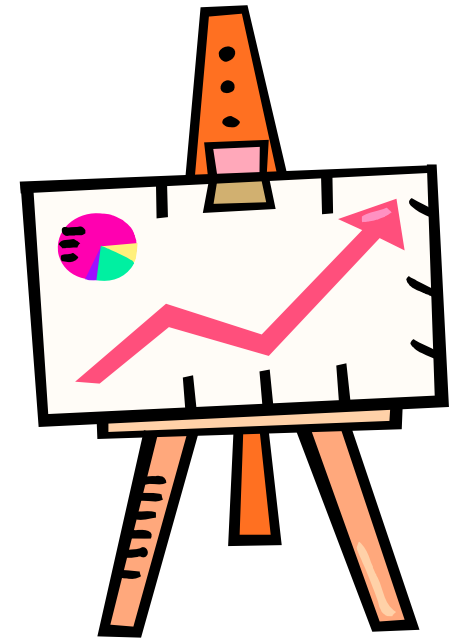
# The Declining Pool



Source : Geoff Huston – APNIC – [www.potaroo.net/tools/ipv4/](http://www.potaroo.net/tools/ipv4/)

# The Simple Solution

- **Get New Source of Contiguous Address Space**
- **This Supply is IPv6**



## Situation – Part II



- IPv4 Demand Continues
- IPv6 Migration is “No to Slow”

**IPv6**

- Today, there are organizations attempting to reach mail and web servers via IPv6.
- In the near future, there will be organizations that have **NO CHOICE** but to reach mail and web servers via IPv6

# Consequences

- **No Access to Internet Services**
  - IPv6-only Networks
  - IPv6-only Users
- **Routing Table Fragmentation**
  - NAT Use Increase
  - Other Market Development



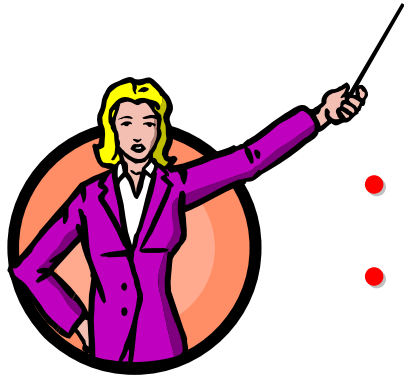


# What to Do?



- **Raise Public Awareness [outreach]**
- **Facilitate IPv6 Deployment**
- **Implement IPv6 Accessible Services**

# RIRs Actions



- Issued Advisories
- Create Educational Material

## Outreach

Facilitate IPv6  
Deployment



- Policy Actions
- Administrative Actions

Implement  
IPv6 Accessible  
Services



Mail & web servers  
Available  
Via IPv6 & IPv4

**Thank You**