

APNIC eLearning: Internet Registry Policies

APNIC

Issue Date: 01/04/2015

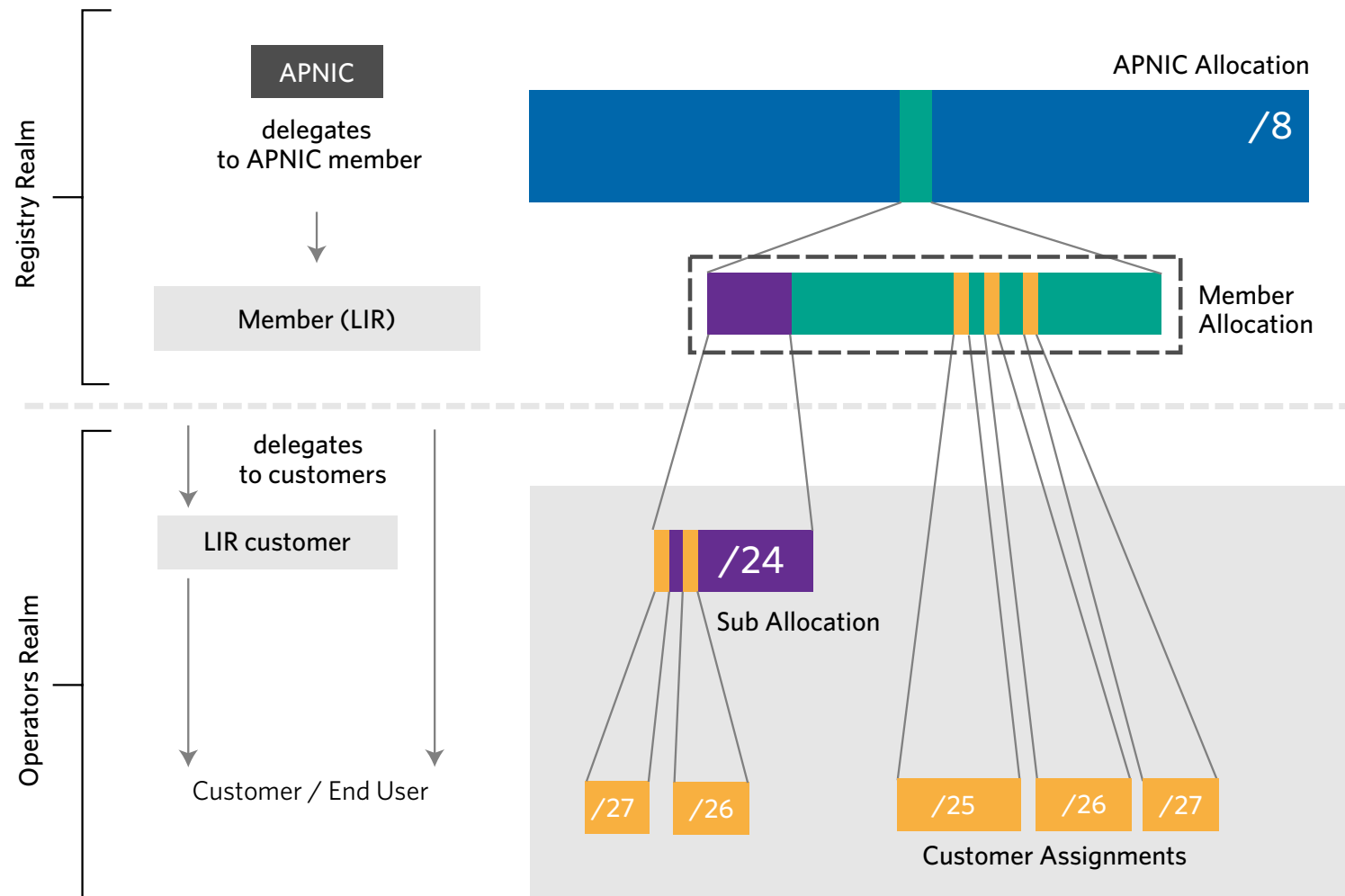
Revision:



Overview

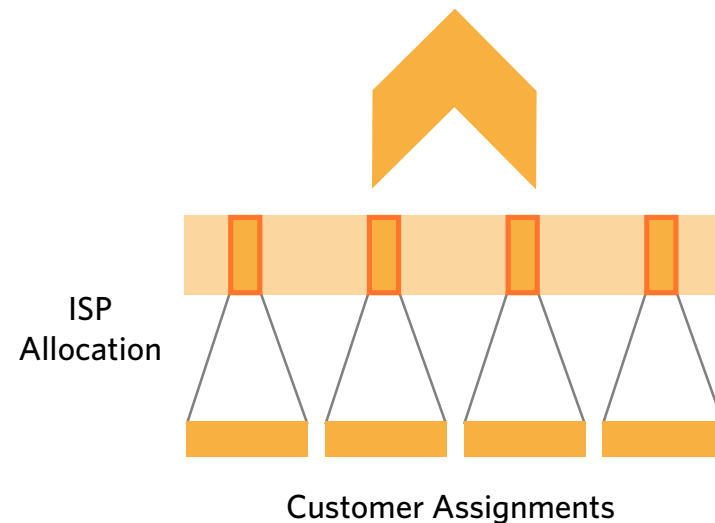
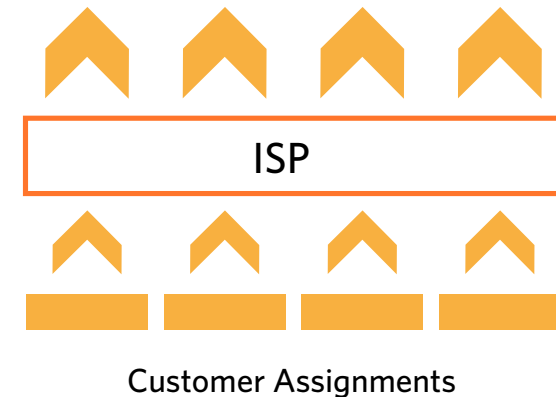
- Allocation and Assignment
- Portable and Non-Portable Addresses
- IRM Objectives and Goals
- APNIC Policy Environment
- APNIC Allocation and Assignment Policies
- APNIC Transfer Policies
- Sub-allocation
- Policy Development Process

How IP Addresses are Delegated

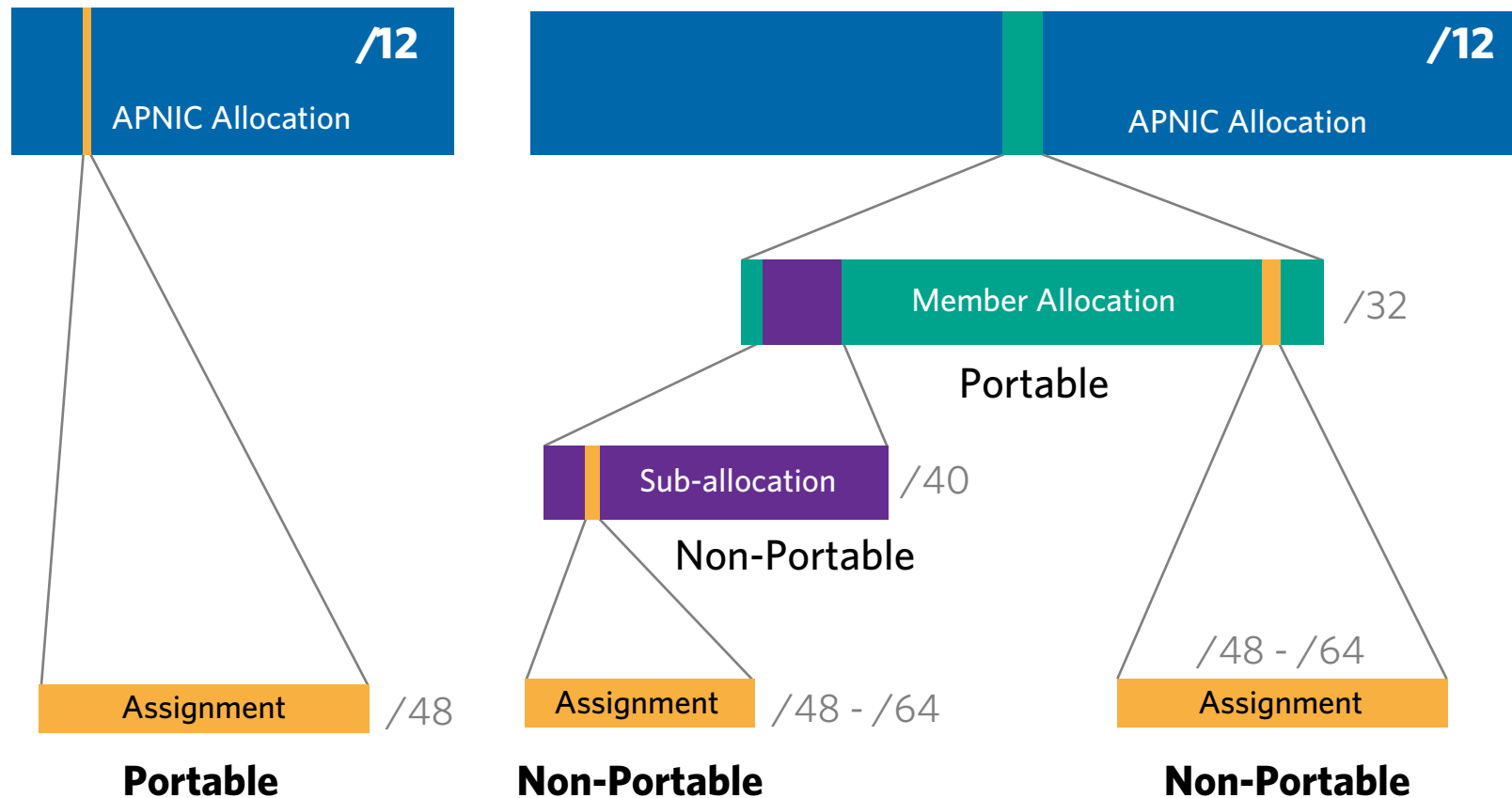


Portable and Non-Portable

- Portable Address
 - Provider-Independent (PI)
 - Assigned by RIR to end-user
 - Keeps addresses when changing ISP
 - Increases the size of routing tables
- Non-portable Address
 - Provider-aggregatable (PA)
 - End-user gets address space from LIR
 - Must renumber if changing upstream provider
 - Can be aggregated for improved routing efficiency



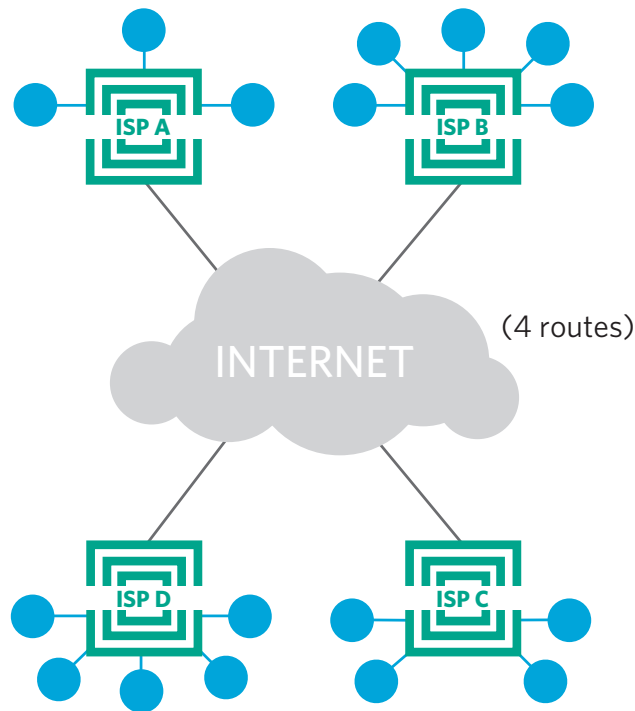
IPv6 Address Management Hierarchy



Describes “portability” of the address space

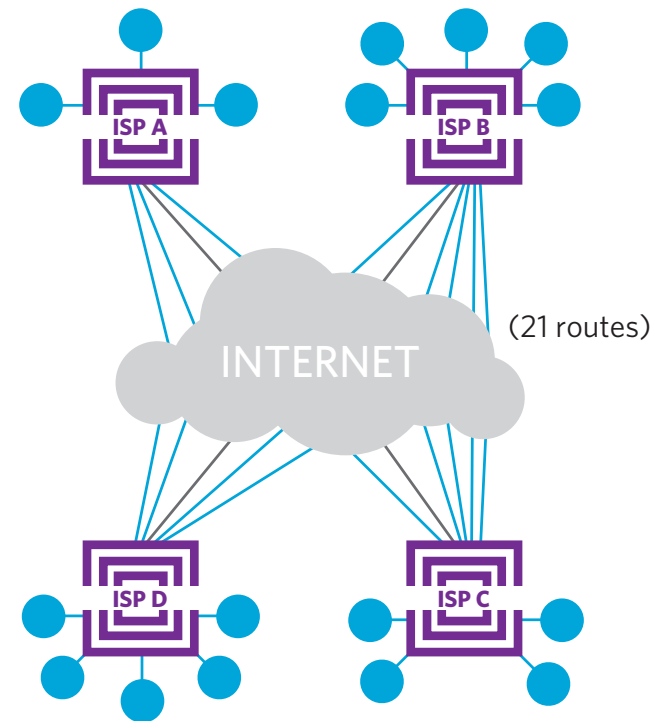
Aggregation and Portability

Aggregation



(non-portable assignments)

No Aggregation



(portable assignments)

IRM Objectives

Conservation

- Efficient use of resources
- Based on demonstrated need

Aggregation

- Limit routing table growth
- Support provider-based routing

Registration

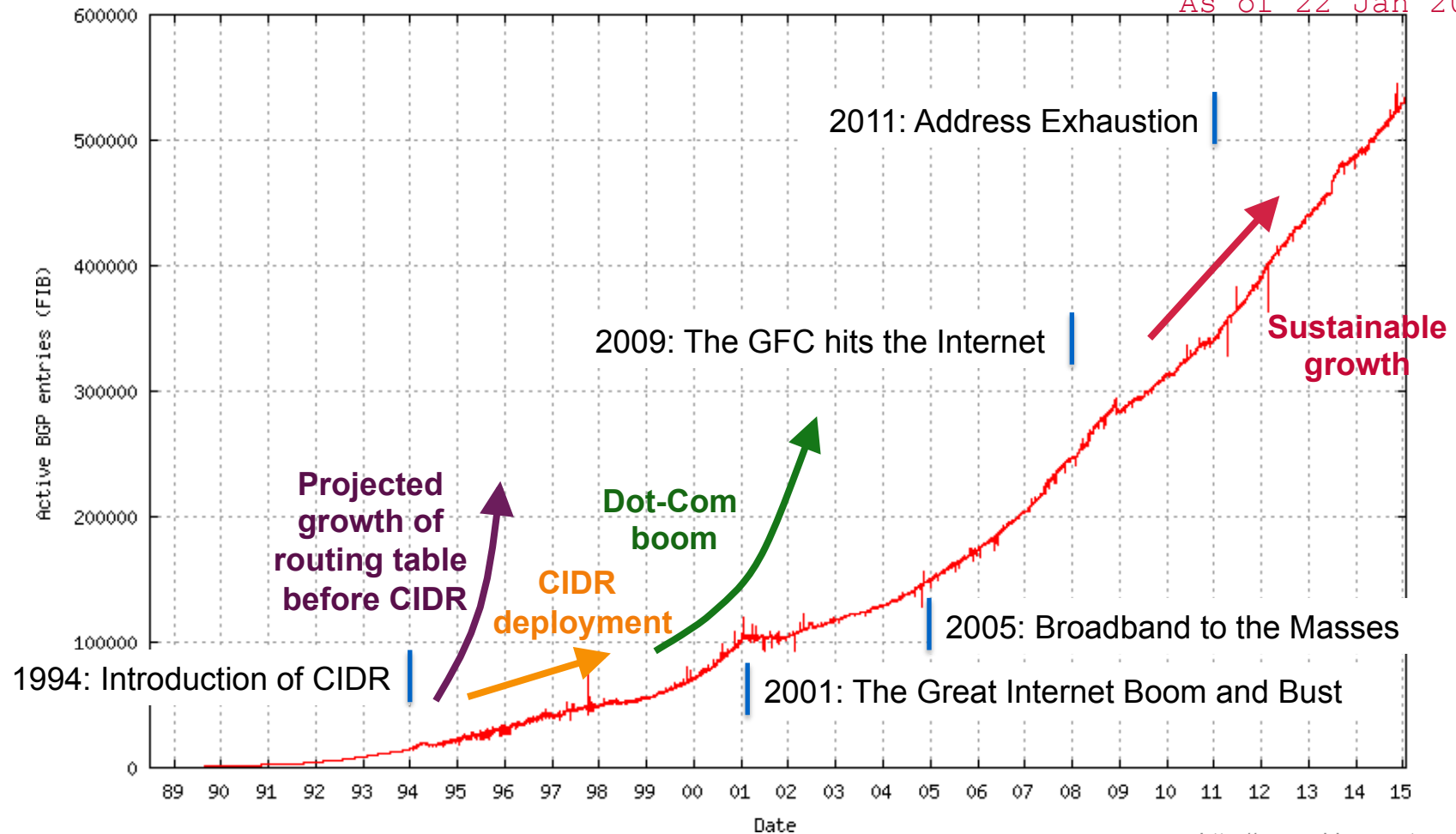
- Ensure uniqueness
- Facilitate trouble shooting

Uniqueness, fairness and consistency

Growth of the Global Routing Table

534062 prefixes

As of 22 Jan 2015



<http://www.cidr-report.org/as2.0/>

APNIC Policy Environment

- Internet resources are delegated on a license basis
 - Limited duration (usually one year)
 - Renewable on the following conditions:
 - Original basis of delegation remains valid, and
 - Address space is properly registered at the time of renewal
- Security and confidentiality
 - APNIC to maintain systems and practices that protect the confidentiality of Members' information and their customers

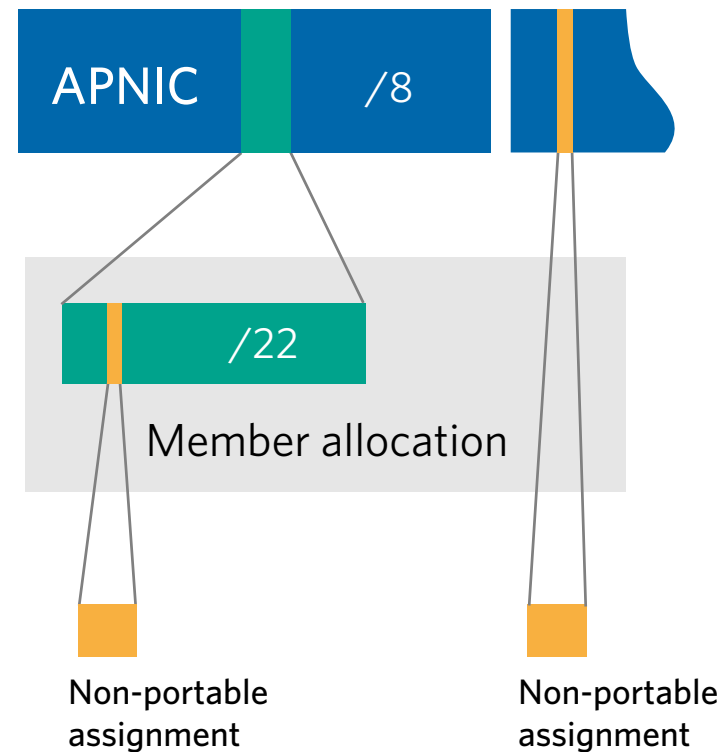
<https://www.apnic.net/policy/policy-environment>

Allocation Policies

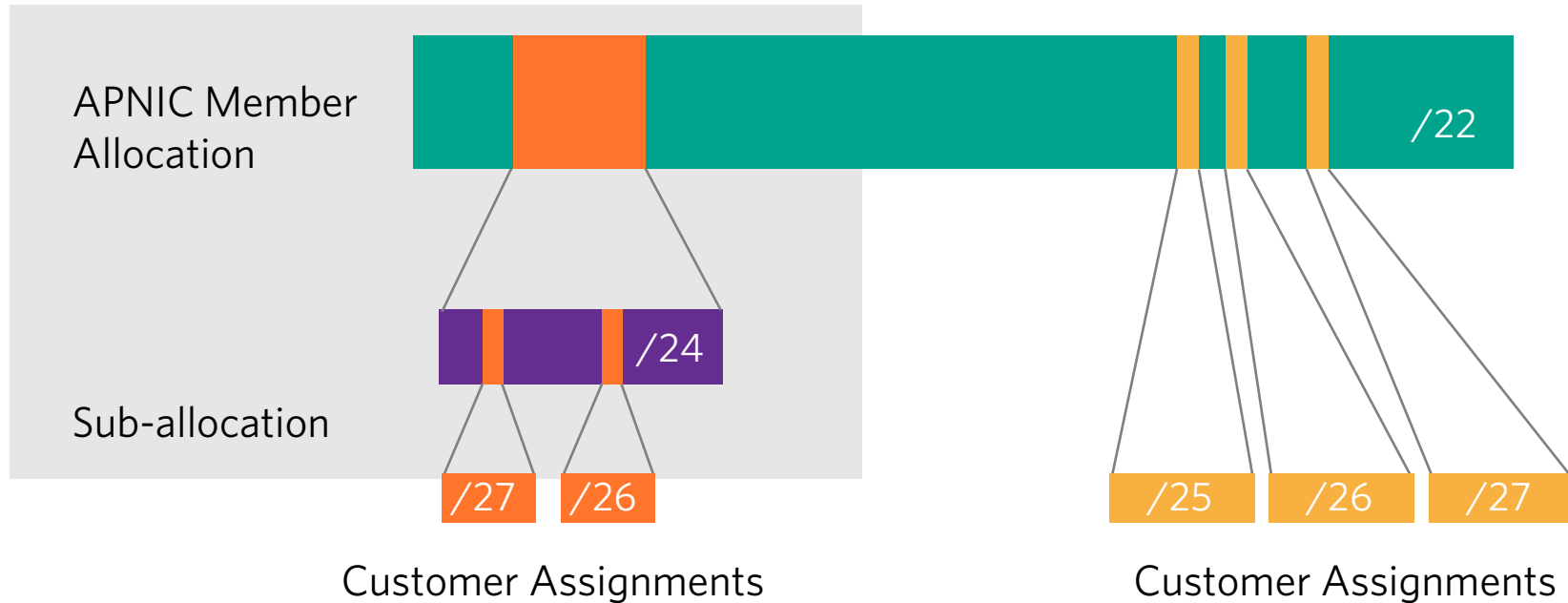
- Aggregation of allocation
 - Provider responsible for aggregation
 - Customer assignments /sub-allocations must be non-portable
- Allocations based on demonstrated need
 - Detailed documentation required
- All address space held to be declared

IPv4 Allocation Policies

- APNIC IPv4 allocation size per account holder
 - Minimum /24
 - Maximum /21
 - /22 from final /8 block
 - /22 from the recovered block
- According to current allocation from the final /8 block
 - Allocation is based on demonstrated need



IPv4 Sub-allocation

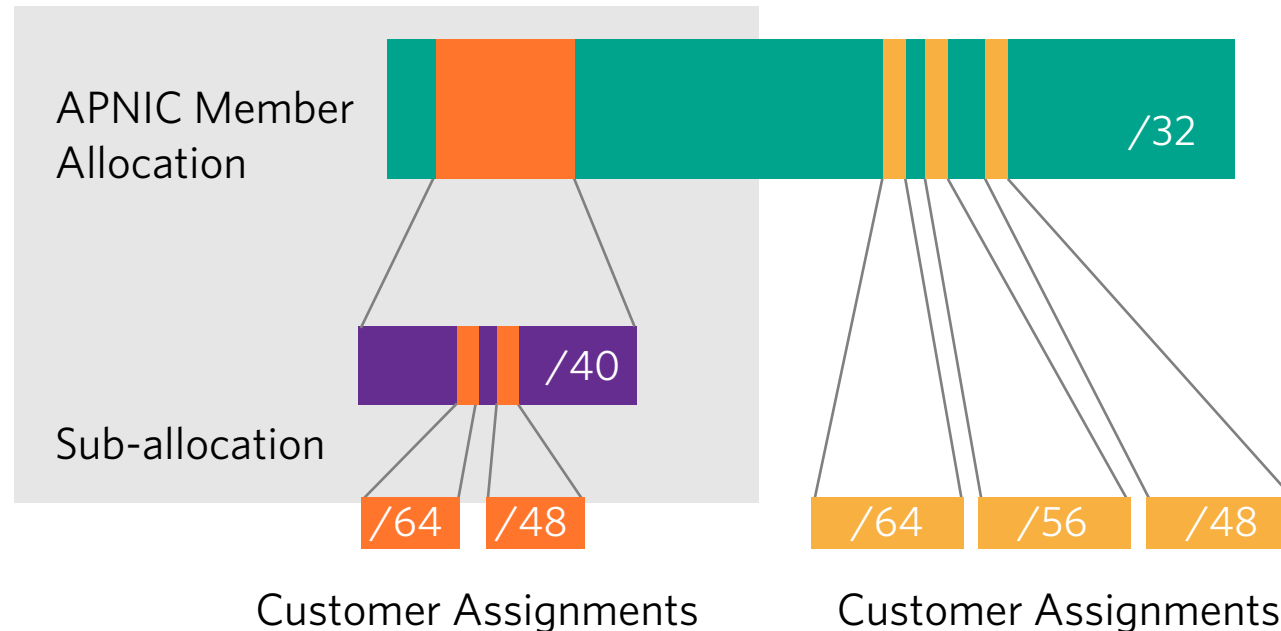


- No max or min size
 - Max 1 year requirement
- Assignment Window & 2nd Opinion
 - applies to both sub-allocation & assignments
 - Sub-allocation holders don't need to send in 2nd opinions

IPv6 Allocation Policies

- Initial allocation criteria
 - minimum of /32 IPv6 block
 - larger than /32 may be justified
- For APNIC members with existing IPv4 space
 - One-click Policy (through MyAPNIC)
- Without existing IPv4 space
 - Must meet initial allocation criteria
- Subsequent allocation
 - Based on HD ratio (0.94)
 - Doubles the allocated address space

IPv6 Sub-allocation



- All /48 assignments to end sites must be registered
- LIR must submit a second opinion request for assignments greater than /48

What is an Assignment Window?

“The amount of address space a member may assign without a ‘second opinion’”

- All members have an Assignment Window
 - Starts at zero, increases as member gains experience in address management
- Second opinion process
 - Customer assignments require a ‘second-opinion’ when proposed assignment size is larger than member’s Assignment Window

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IPv6 Utilisation (HD = 0.94)

IPv6 Prefix	Site Address Bits	Total site address in /56	Threshold (HD = 0.94)	Utilisation %
/42	14	16,384	9,153	55.9%
/36	20	1,048,576	456,419	43.5%
/35	21	2,097,152	875,653	41.8 %
/32	24	16,777,216	6,185,533	36.9%
/29	27	134,217,728	43,665,787	32.5 %
/24	32	4,294,967,296	1,134,964,479	26.4 %
/16	40	1,099,511,627,776	208,318,498,661	18.9 %

RFC 3194 “In a hierarchical address plan, as the size of the allocation increases, the density of assignments will decrease.”

IPv6 Assignment Policies

- Assignment address space size
 - Minimum of /64 (only 1 subnet)
 - Normal maximum of /48
- Assignment of multiple /48s to a single end site
 - Documentation must be provided
 - Will be reviewed at the RIR/NIR level
- Assignment to operator's infrastructure
 - /48 per Point-of-Presence of an IPv6 service operator

Portable Assignments

- Small multi-homing assignment
 - For (small) organisations who require a portable assignment for multi-homing purposes
- Criteria
 - Currently multi-homed, or demonstrate a plan to multi-home within 1 month
 - Demonstrate need to use 25% of requested space immediately, and 50% within 1 year

IXP Assignments

- APNIC has a reserved block of space from which to make IXP assignments
- To be used exclusively to connect IXP participant devices to the exchange point
- Criteria:
 - 3 or more peers
 - Demonstrate “open peering policy”
- Assignment size:
 - IPv4: /24
 - IPv6: /48 minimum

Portable Critical Infrastructure

- What is Critical Internet Infrastructure?
 - Domain registry infrastructure
 - Root DNS operators, gTLD operators, ccTLD operators
 - Address Registry Infrastructure
 - RIRs & NIRs, IANA
- Why a specific policy?
 - To protect the stability of core Internet functions
- Assignment sizes:
 - IPv4: /24
 - IPv6: /32 (Maximum)

Sub-allocation Guidelines

- Sub-allocate cautiously
 - Seek APNIC advice if in doubt
 - If customer requirements meet min allocation criteria, customers can approach APNIC for portable allocation
- Efficient assignments
 - ISPs responsible for overall utilisation
- Database registration (WHOIS database)
 - Sub-allocations & assignments to be registered in the database

IPv4 Transfer Policies

- Between APNIC members
 - Minimum transfer size of /24
 - Source entity must be the currently registered holder of the IPv4 resources
 - Recipient entity will be subject to current APNIC policies
- Inter-RIR IPv4 Transfers
 - Minimum transfer size of /24
 - Conditions on the source and recipient RIR will apply

Historical Resources

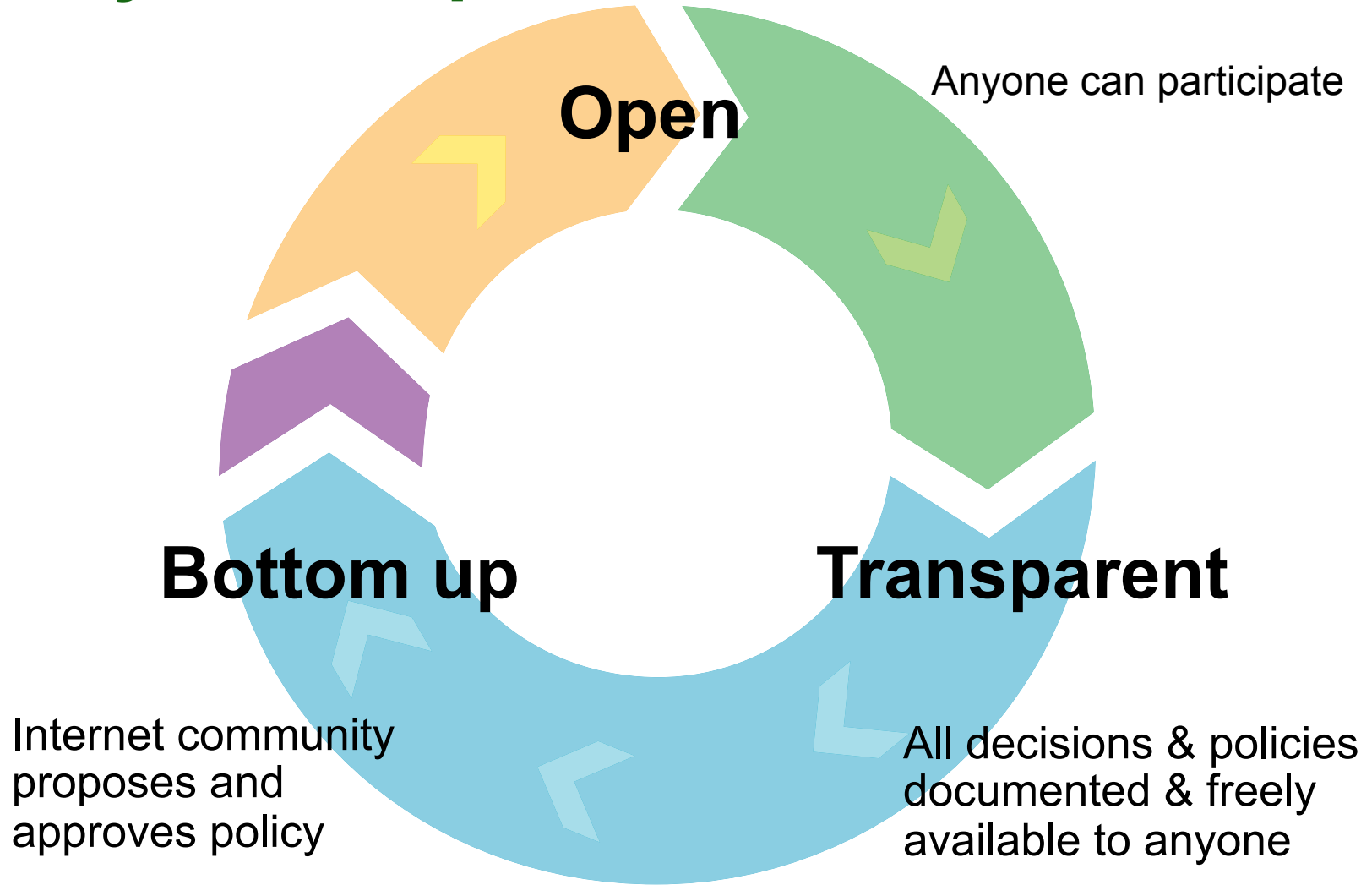
- Internet resources registered under early registry policies without formal agreements and include:
 - Registrations transferred to APNIC as part of the AUNIC to APNIC migration
 - Registrations transferred as part of the Early Registration Transfer (ERX) project
 - Historical APNIC resources

<https://www.apnic.net/policy/historical-resource-policies>

Historical Resource Transfer

- Bring historical resource registrations into the current policy framework
 - Allow transfers of historical resources to APNIC members
 - The recipient of the transfer must be an APNIC member
 - No technical review or approval
 - Historical resource holder must be verified
 - Resources will then be considered "current"
- Address space subject to current policy framework

Policy Development Process



How to Participate

- Read the policy proposals currently under discussion
- Check out discussions on the Policy SIG mailing list
- Join the discussion at APNIC meetings
 - webcast (live streaming)
 - live transcripts
 - comment on Jabber chat
- Provide your feedback
 - Training or community outreach events



Questions



APNIC Helpdesk Chat

APNIC

Services Training Events Research Community Blog About MyAPNIC

Contact us | Jobs | Site map | Search... Go

Connected Via 

Your IP address:
2001:dc0:a000:4:3c7a:8810:4682:51c8

Services

▼ **Services APNIC provides**

- ▶ Registration services
- ▶ Informing the community
- ▶ Routing Registry
- ▶ Resource certification
- ▶ Training & education
- ▶ Policy development
- ▼ **Helpdesk**
 - Using VoIP
- ▶ Apply for resources
- ▶ Become a Member
- ▶ Make a payment
- ▶ Manage Internet resources
- ▶ Helpdesk

Helpdesk

APNIC's Member Services Helpdesk can assist with [frequently asked questions](#) and help you to receive faster responses for:

- Status of requests
- Membership enquiries
- Billing issues
- Database enquiries

Existing members - Please use [MyAPNIC](#) to apply for resources.

Contact details

APNIC Helpdesk is open **Monday - Friday, 09:00 to 21:00 (UTC +10)** (closed for some [public holidays](#)).

APNIC Live Chat Online

Click here to chat

APNIC Helpdesk Chat

Welcome to our Live Chat

To better assist you, please provide the following information.

Name Email

Question

[APNIC Privacy Policy](#)

Thank you!

End of Session

APNIC

Issue Date:

Revision:

