

# Large BGP Communities

## draft-snijders-grow-large-communities-usage-00

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# Like RFC 1997 Communities, but Larger



# Large BGP Communities - Benefits

- Today's RFC1997 communities are 4 octets each: 2 for ASN and 2 to indicate the action
- With 4 octets for the ASN, it is mapped one to one to your actual globally unique assigned ASN: clean name space!
- With 8 octets for the action, you can easily create opaque action code points: you have room for a "target" and an "action"
- Example:
- "2914:303:199036" (In NTT: prepend 3 times to 32-bit AS 199036)
  - **(currently not possible with NTT's standard BGP Communities)**

# Canonical Representation

- Each large community is represented as A:B:C
- A, B and C are each a non-negative decimal integer
  - A – ASN
  - B – Local Data 1
  - C – Local Data 2
- Why it matters
  - ISPs publish their communities in a consistent format
  - <https://onestep.net/communities/>

# Large BGP Community Examples

RFC 1997 (Current)	Large BGP Communities	Action
65400:peer-as	2914:65400:peer-as	Do not Advertise to <i>peer-as</i> in North America (NTT)
0:peer-as	6667:0:peer-as	Do not Announce to Route Server <i>peer-as</i> (AMS-IX)
65520:nnn	2914:65520:nnn	Lower Local Preference in Country <i>nnn</i> (NTT)
2914:410	2914:400:10	Route Received From a Peering Partner (NTT)
2914:420	2914:400:20	Route Received From a Customer (NTT)

- No namespace collisions or use of reserved ASNs
- Enables us to use 32-bit ASNs in \$Me and \$You values

# The Design Pattern - part #1

- Informational Communities
  - Informational Communities serve as markers regarding the origin of the route announcement, the relation with the EBGP neighbor or for instance the intended propagation audience
- Action Communities
  - Action Communities are attached to routes to request non-default behaviour in an adjacent Autonomous System

# The Design Pattern – part #2

$\{\text{YOU}\}:\{\text{FUNCTION}\}:\{\text{PARAMETER}\}$   
2914 :15 :65536

$\{\text{YOU}\}$  = your ASN

$\{\text{Function}\}$  = prepend, prepend in North America, no export, etc

$\{\text{Parameter}\}$  = a “target” (could be an ASN, or region identifier, etc)

(Note: Regular Expressions are avoided and left as exercise for the reader, this is not an attempt at global product management, its just inspiration)

# Info: An ISO 3166-1 Numeric Function

- Function 1, parameter = ISO 3166-1

Large BGP Community	Meaning
64497:1:528	Route Learned in the Netherlands
64497:1:392	Route Learned in Japan
64497:1:840	Route Learned in the United States of America



# Info: An UNSD Region Function

- Function 2, parameter: UNSD

Large BGP Community	Meaning
64497:2:2	Route Learned in Africa
64497:2:9	Route Learned in Oceania
64497:2:145	Route Learned in Western Asia
64497:2:150	Route Learned in Europe

# Action: Peer ASN Based Selective NO\_EXPORT

- Function: 4, parameter: peer ASN

Large BGP Community	Meaning
64497:4:2914	Do not Export Route to AS 2914
64497:4:7018	Do not Export Route to AS 7018
64497:4:65551	Do not Export Route to AS 65551

# Action: Location Based Selective NO\_EXPORT

- Function: 5, parameter: peer ASN

Large BGP Community	Meaning
64497:5:528	Do not Export to EBGP Neighbors in the Netherlands
64497:5:392	Do not Export to EBGP Neighbors in Japan
64497:5:840	Do not Export to EBGP Neighbors in the United States of America

Etcetera...

**The end!**

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