**Notice of Liability**

Despite careful checking of content, we accept no liability for the content of external links. Content on linked sites is exclusively the responsibility of the respective website operator.

**Links visited during the webinar**

- RFCs: see next page
- Well-known communities:
  - Standard: [https://www.iana.org/assignments/bgp-well-known-communities/bgp-well-known-communities.xhtml#bgp-well-known-communities-1](https://www.iana.org/assignments/bgp-well-known-communities/bgp-well-known-communities.xhtml#bgp-well-known-communities-1)
  - Extended: [https://www.iana.org/assignments/bgp-well-known-communities/bgp-well-known-communities.xhtml#bgp-well-known-communities-1](https://www.iana.org/assignments/bgp-well-known-communities/bgp-well-known-communities.xhtml#bgp-well-known-communities-1)
- Provider Examples:
  - DE-CIX Communities: [https://www.de-cix.net/en/resources/informational-bgp-communities](https://www.de-cix.net/en/resources/informational-bgp-communities)
  - DE-CIX Routeserver Guides: [https://www.de-cix.net/en/resources/route-server-guides](https://www.de-cix.net/en/resources/route-server-guides)
  - KPN - AS286 - Community page: [https://as286.net/AS286-communities.html](https://as286.net/AS286-communities.html)
  - NTT - AS2914 - Community page: [https://www.us.ntt.net/support/policy/routing.cfm](https://www.us.ntt.net/support/policy/routing.cfm)
  - NTT Looking Glass: [https://www.us.ntt.net/support/looking-glass/](https://www.us.ntt.net/support/looking-glass/)
- Tools which helped building this presentation:
  - GNS3: [https://www.gns3.com](https://www.gns3.com)
  - Dynamips: [https://github.com/GNS3/dynamips/](https://github.com/GNS3/dynamips/)
- Configuration examples Cisco IOS:
  - See next pages
### BGP Community Evolution

<table>
<thead>
<tr>
<th></th>
<th>Original Communities</th>
<th>Extended Communities</th>
<th>Large Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defined in</td>
<td>RFC1997</td>
<td>RFC4360</td>
<td>RFC8092</td>
</tr>
<tr>
<td>Published</td>
<td>August 1996</td>
<td>February 2006</td>
<td>February 2017</td>
</tr>
<tr>
<td>Size</td>
<td>32bit</td>
<td>64bit</td>
<td>96bit</td>
</tr>
<tr>
<td>Commonly used</td>
<td>16Bit AS : 16Bit Value</td>
<td>Type : 32Bit AS : 16Bit Value -or- Type : 16Bit Value: 32Bit AS</td>
<td>32Bit AS : 32Bit Value</td>
</tr>
<tr>
<td>Example</td>
<td>6695:65010</td>
<td>RT:6695:2010223112</td>
<td>6695:65010:2010223112</td>
</tr>
<tr>
<td>Intention</td>
<td></td>
<td>Replace original standard</td>
<td>Supplement original standard</td>
</tr>
</tbody>
</table>
**BGP Communities for DE-CIX Route Servers**

Example is for DE-CIX Frankfurt, AS **6695**. For other sites replace 6695 to the local route server AS.

<table>
<thead>
<tr>
<th></th>
<th>Original Communities</th>
<th>Extended Communities</th>
<th>Large Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Announce to all peers</td>
<td>6695:6695</td>
<td>rt:6695:6695</td>
<td>6695:1:0</td>
</tr>
<tr>
<td>Do not announce to any peer</td>
<td>0:6695</td>
<td>rt:0:6695</td>
<td>6695:0:0</td>
</tr>
<tr>
<td>Redistribute to PEERAS</td>
<td>6695:PEERAS</td>
<td>rt:6695:PEERAS</td>
<td>6695:1:PEERAS</td>
</tr>
<tr>
<td>Do not redistribute to PEERAS</td>
<td>0:PEERAS</td>
<td>rt:0:PEERAS</td>
<td>6695:0:PEERAS</td>
</tr>
<tr>
<td>Add NO-EXPORT</td>
<td>6695:65281</td>
<td></td>
<td>6695:901:0</td>
</tr>
<tr>
<td>Add NO-ADVERTISE</td>
<td>6695:65282</td>
<td></td>
<td>6695:902:0</td>
</tr>
<tr>
<td>Add NO-EXPORT to PEERAS</td>
<td></td>
<td></td>
<td>6695:901:PEERAS</td>
</tr>
<tr>
<td>Add NO-ADVERTISE to PEERAS</td>
<td></td>
<td></td>
<td>6695:902:PEERAS</td>
</tr>
<tr>
<td>Prepend 1 times to all peers</td>
<td>65001:0</td>
<td></td>
<td>6695:101:0</td>
</tr>
<tr>
<td>Prepend 2 times to all peers</td>
<td>65002:0</td>
<td></td>
<td>6695:102:0</td>
</tr>
<tr>
<td>Prepend 3 times to all peers</td>
<td>65003:0</td>
<td></td>
<td>6695:103:0</td>
</tr>
<tr>
<td>Prepend 1 times to PEERAS</td>
<td>65001:PEERAS</td>
<td>rt:65001:PEERAS</td>
<td>6695:101:PEERAS</td>
</tr>
<tr>
<td>Prepend 2 times to PEERAS</td>
<td>65002:PEERAS</td>
<td>rt:65002:PEERAS</td>
<td>6695:102:PEERAS</td>
</tr>
<tr>
<td>Prepend 3 times to PEERAS</td>
<td>65003:PEERAS</td>
<td>rt:65003:PEERAS</td>
<td>6695:103:PEERAS</td>
</tr>
<tr>
<td>Blackhole (if supported by Peer)</td>
<td>BLACKHOLE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Empty means this community is not offered.
**Configuration Example: Scrubbing**

Scrub all standard communities beginning with "64500:..." on received prefixes.

**Cisco IOS**

```
ip community-list expanded scrub-incoming permit 64500:.*
!
route-map upstream-in permit 10
    set comm-list scrub-incoming delete
!
router bgp 64500
    neighbor upstream route-map upstream-in in
```

**Juniper**

```
policy-options {
    community my-communities members 65001:*
    
    policy-statement from-upstream {
        from protocol bgp;
        then {
            community delete my-communities;
            accept;
        }
    }
}

protocols {
    bgp {
        group upstream {
            type external;
            import from-upstream;
        }
    }
```
**Configuration Example: Announcements**

Announce to Upstream, Peering, Customers depending on communities set

**Cisco IOS**

```plaintext
ip community-list expanded remove-my-communities permit 64500:.*
ip community-list expanded announce-to-customers permit 64500:5[1357].*
ip community-list expanded announce-to-upstream permit 64500:5[4567].*
ip community-list expanded announce-to-upstream permit 64500:5[2367].*
!
route-map upstream-out permit 10
  match community announce-to-upstream
  set comm-list remove-my-communities delete
!
route-map peering-out permit 10
  match community announce-to-peering
  set comm-list remove-my-communities delete
!
route-map customers-out permit 10
  match community announce-to-customers
  set comm-list remove-my-communities delete
!
router bgp 64500
  neighbor customers route-map customers-out out
  neighbor peering route-map peering-out out
  neighbor upstream route-map upstream out
```