Revising BGP Maximum Prefix Limits

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Recap

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(slides: https://datatracker.ietf.org/meeting/104/materials/slides-104-grow-bgp-maximum-prefix-limits)

These “maximum prefix limits” are a design feature to ensure the network inherently responds in a way that will cause no or minimal harm to the network or the global Internet.
What happens when limits are applied in pre-policy during a full table leak:

We're both safe now

Maximum Prefix value
What happens when limits are applied post-policy

- Full table leak
- Maximum Prefix value
- Invalid paths that made it through the whitelist
- Normal announcements
- Filtered announcements

Time
Pre-policy vs Post-policy in EBGP-IN attachment

Pre-policy limits:

- Protects against memory exhaustion (keep in mind – pre-policy limit only works if you keep all rejected routes in Adj-RIB-IN)
- Protects against route leaks

Post-policy limits:

- Protect against RIB & FIB exhaustion
- To enforce contractual agreements
# Maximum prefix limits in context of `ebgp-in`

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Pre-Policy (the most effective place)</th>
<th>Post-Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco IOS XR</td>
<td>Not available</td>
<td>“maximum-prefix”</td>
</tr>
<tr>
<td>Cisco IOS XE</td>
<td>Not available</td>
<td>“maximum-prefix”</td>
</tr>
<tr>
<td>Juniper Junos</td>
<td>“prefix-limit”</td>
<td>“accepted-prefix-limit” or “prefix-limit” + “keep none”</td>
</tr>
<tr>
<td>Nokia SR-OS</td>
<td>“prefix-limit”</td>
<td>Not available</td>
</tr>
<tr>
<td>NIC.CZ’s BIRD</td>
<td>“import keep filtered” + “receive limit”</td>
<td>“import limit” or “receive limit”</td>
</tr>
<tr>
<td>OpenBSD’s OpenBGPD</td>
<td>“max-prefix”</td>
<td>Not available</td>
</tr>
</tbody>
</table>
New: Outbound maximum prefix limits

Was brought up in operational forums – it would be useful to specify how we envision outbound maximum prefix limits should work.

An outbound limit would be a “self-destruct” control action, in case you end up announcing far more than is plausible on a given EBGP session.

Only BIRD supports this today, hope we can get more to support the feature.

→ To drive consistency across BGP implementations

Insight: previously I rejected “soft limits”, but that was my failing understanding of the core BGP spec wording. So that’s back!

Progress: Moved target working group from GROW to IDR

(Susan Hares kindly articulated how extensive the changes to the core BGP spec are)
Next step

Clean up language, ask for IDR WG adoption


Thanks!!!!