netkit lab

bgp: announcement

<table>
<thead>
<tr>
<th>Version</th>
<th>2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td>G. Di Battista, M. Patrignani, M. Pizzonia, F. Ricci, M. Rimondini</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:contact@netkit.org">contact@netkit.org</a></td>
</tr>
<tr>
<td>Web</td>
<td><a href="http://www.netkit.org/">http://www.netkit.org/</a></td>
</tr>
<tr>
<td>Description</td>
<td>a simple bgp announcement</td>
</tr>
</tbody>
</table>
copyright notice

- All the pages/slides in this presentation, including but not limited to, images, photos, animations, videos, sounds, music, and text (hereby referred to as “material”) are protected by copyright.
- This material, with the exception of some multimedia elements licensed by other organizations, is property of the authors and/or organizations appearing in the first slide.
- This material, or its parts, can be reproduced and used for didactical purposes within universities and schools, provided that this happens for non-profit purposes.
- Information contained in this material cannot be used within network design projects or other products of any kind.
- Any other use is prohibited, unless explicitly authorized by the authors on the basis of an explicit agreement.
- The authors assume no responsibility about this material and provide this material “as is”, with no implicit or explicit warranty about the correctness and completeness of its contents, which may be subject to changes.
- This copyright notice must always be redistributed together with the material, or its portions.
announcements and traffic flows

- bgp allows a router to offer connectivity to another router
- “offering connectivity” means “promising the delivery to a specific destination”

bgp announcement
195.11.14.0/24

ip traffic
(to be delivered to 195.11.14.0/24)
announcement commands

- **cisco command syntax**

  `network <network-ip> mask <network-mask>`

- **zebra command syntax**

  `network <network-ip/network-mask>`

- this command flags a network as local to the as
- without further specifications the network will be announced to all peers
- notice that the network
  - may not be local
  - is not even required to exist(!)
announcement commands

- observe that the **network** command
  - *does not* inject any route in the kernel forwarding table
  - checks whether the network address matches the netmask; if it does not, the command is automatically replaced in the router configuration; for example:
    - **network 193.100.0.0/8** is replaced by
      - **network 193.0.0.0/8**
    - **network 1.2.3.4/0** is replaced by
      - **network 0.0.0.0/0**
announcement example

! router 1 configuration file
router bgp 1
network 195.11.14.0/24
neighbor 193.10.11.2 remote-as 2

! router 2 configuration file
router bgp 2
network 200.1.1.0/24
neighbor 193.10.11.1 remote-as 1
peering configuration

- **AS1**
  - Router 1
  - eth0
  - eth1
  - B
  - 195.11.14.0/24

- **AS2**
  - Router 2
  - eth0
  - eth1
  - C
  - 200.1.1.0/24
  - 193.10.11.0/24

© Computer Networks Research Group Roma Tre

last update: May 2007
announcement example

- start the lab

```
user@localhost:~$ cd netkit-lab_bgp-announcement
user@localhost:~/netkit-lab_bgp-announcement$ lstart
```

- check the zebra routing table

```
router2:~# telnet localhost zebra
......
User Access Verification
Password: zebra
Router> show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF,
      B - BGP, > - selected route, * - FIB route

C>* 127.0.0.0/8 is directly connected, lo
C>* 193.10.11.0/24 is directly connected, eth0
B>* 195.11.14.0/24 [20/0] via 193.10.11.1, eth0, 00:04:46
C>* 200.1.1.0/24 is directly connected, eth1
Router>  
```
announcement example

- check the bgpd log file

```
router2:~# less /var/log/zebra/bgpd.log
2007/05/22 12:36:57 BGP: 193.10.11.1 [FSM] Receive_KEEPALIVE_message
(Established->Established)
2007/05/22 12:36:58 BGP: 193.10.11.1 [FSM] Timer (routeadv timer expire)
2007/05/22 12:36:58 BGP: 193.10.11.1 send UPDATE 200.1.1.0/24
2007/05/22 12:36:58 BGP: 193.10.11.1 rcvd UPDATE w/ attr: nexthop
193.10.11.1, origin i, path 1
2007/05/22 12:36:58 BGP: 193.10.11.1 rcvd 195.11.14.0/24
2007/05/22 12:36:58 BGP: 193.10.11.1 [FSM] Receive_UPDATES_message
(Established->Established)
2007/05/22 12:37:28 BGP: 193.10.11.1 [FSM] Timer (routeadv timer expire)
2007/05/22 12:37:50 BGP: Performing BGP general scanning
2007/05/22 12:37:57 BGP: 193.10.11.1 [FSM] Timer (keepalive timer expire)
(Established->Established)
2007/05/22 12:37:57 BGP: 193.10.11.1 sending KEEPALIVE
/var/log/zebra/bgpd.log
```
announcement example

- check the bgpd log file

```
router2:~# less /var/log/zebra/bgpd.log
2007/05/22 12:36:57 BGP: 193.10.11.1 [FSM] Receive_KEEPALIVE_message
(Established->Established)
2007/05/22 12:36:57 BGP: 193.10.11.1 [FSM] Receive_UPDATE_message
(Established->Established)
2007/05/22 12:36:58 BGP: 193.10.11.1 [FSM] Timer (routeadv timer expire)
2007/05/22 12:36:58 BGP: 193.10.11.1 send UPDATE 200.1.1.0/24
2007/05/22 12:36:58 BGP: 193.10.11.1 rcvd UPDATE w/ attr: nexthop
193.10.11.1
2007/05/22 12:36:58 BGP: 193.10.11.1 rcvd 195.11.14.0/24
2007/05/22 12:36:58 BGP: 193.10.11.1 [FSM] Receive_UPDATE_message
(Established->Established)
2007/05/22 12:37:28 BGP: 193.10.11.1 [FSM] Timer (routeadv timer expire)
2007/05/22 12:37:50 BGP: Performing BGP general scanning
2007/05/22 12:37:57 BGP: 193.10.11.1 [FSM] Timer (keepalive timer expire)
(Established->Established)
2007/05/22 12:37:57 BGP: 193.10.11.1 sending KEEPALIVE
/var/log/zebra/bgpd.log
```

sent announcement

received announcement
announcement example

- check the bgpd cli (command line interface)
  - type "telnet localhost bgpd"
  - insert the password "zebra"
  - type "show ip bgp neighbors"
  - type "show ip bgp 200.1.1.0"
- ping "200.1.1.0"
- terminate the lab

```bash
user@localhost:~$ cd netkit-lab_bgp-announcement
user@localhost:~/netkit-lab_bgp-announcement$ lcrash
```