How to Poll BGP Neighbours under VRF on ISR and ASR routers with SNMP v3

Contents

Introduction

This document describes the Border Gateway Protocol (BGP) routing table needs to monitor at regular interval for many of the customers for tracking reachability networks via network monitoring tool. It also explains how to collect BGP statistics via Simple Network Management Protocol (SNMP) with respect to the Virtual Routing and Forwarding (VRF) route table on the Aggregation Services Router (ASR) and Integrated Service Router (ISR) platform.

Problem

How to monitor BGP neighbours with the use of BGP4-MIB under VRF on ASR and ISR with the use of SNMP v3.

> **Note**: BGP4-MIB is a context-aware MIB. This document is limited to the configuration on ASR and ISR platforms.

Solution

Use **snmp context.** SNMP context needs to be mapped to the SNMP group and the VRF which has those BGP neighbours.

```
Create new context mapping under VRF configuration:
#context <context_name>

SNMP context enabling configuration:
#snmp-server context <context_name>

Apply snmp context mapping to snmp group configuration
#snmp-server group <group_name> v3 <privacy_and_authentication_type> context <context_name>
```

> **Note**: Depending on your release, the **context** command may get replace by **snmp context** command. See the *CIsco IOS Network Managemnet Command Refrence* for more information

Configuration example:

Configure context bgp under vrf

```
R1(config)#ip vrf test
R1(config)#context bgp
```

Associate context bgp to snmp configuration and apply on snmp-server group configuration

```
R1(config)#do show run | sec snmp
snmp-server group testgroup v3 priv context bgp
snmp-server context bgp
```

```
R1(config)#do show snmp user

User name: testuser

Engine ID: 800000090300002CC8818300

storage-type: nonvolatile        active

Authentication Protocol: MD5

Privacy Protocol: AES128

Group-name: testgroup
```

Test VRF which contains the BGP neighbours:

```
R1#sh ip bgp vpnv4 vrf test summary

BGP router identifier 1.1.1.1, local AS number 1

BGP table version is 1, main routing table version 1

Neighbor        V           AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd

10.1.1.2        4            2       0       0        1    0    0 never    Idle
```

Polling result with the use of the context (use the **“-n”** attribute to add the **context** when you poll):

```
ade # snmpwalk -v3 -u testuser -l authPriv -n bgp -a md5 -A BGL@dmin1 -x aes -X BGL@dmin1
10.201.168.29  1.3.6.1.2.1.15

SNMPv2-SMI::mib-2.15.1.0 = Hex-STRING: 10

SNMPv2-SMI::mib-2.15.2.0 = INTEGER: 1

SNMPv2-SMI::mib-2.15.3.1.1.10.1.1.2 = IpAddress: 0.0.0.0

SNMPv2-SMI::mib-2.15.3.1.2.10.1.1.2 = INTEGER: 1

SNMPv2-SMI::mib-2.15.3.1.3.10.1.1.2 = INTEGER: 2

SNMPv2-SMI::mib-2.15.3.1.4.10.1.1.2 = INTEGER: 4

SNMPv2-SMI::mib-2.15.3.1.5.10.1.1.2 = IpAddress: 0.0.0.0

SNMPv2-SMI::mib-2.15.3.1.6.10.1.1.2 = INTEGER: 0

SNMPv2-SMI::mib-2.15.3.1.7.10.1.1.2 = IpAddress: 10.1.1.2

SNMPv2-SMI::mib-2.15.3.1.8.10.1.1.2 = INTEGER: 0
```

```
SNMPv2-SMI::mib-2.15.3.1.9.10.1.1.2 = INTEGER: 2

SNMPv2-SMI::mib-2.15.3.1.10.10.1.1.2 = Counter32: 0

SNMPv2-SMI::mib-2.15.3.1.11.10.1.1.2 = Counter32: 0

SNMPv2-SMI::mib-2.15.3.1.12.10.1.1.2 = Counter32: 0

SNMPv2-SMI::mib-2.15.3.1.13.10.1.1.2 = Counter32: 0
```