

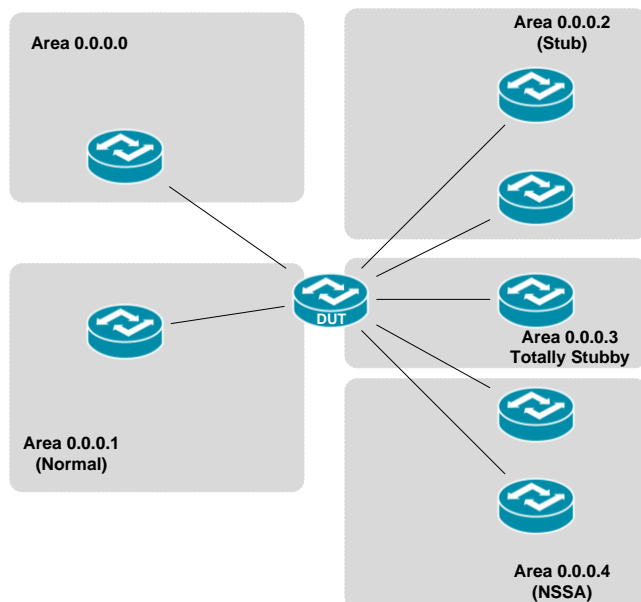
How to use SNMP to create various OSPF Area

Created at 2011/05/30

Introduction

Simple Network Management Protocol (SNMP) is a widely used protocol for monitoring the health and welfare of network equipment.

Topology



There are five OSPF area in this topology, the DUT is an Area Border router which attach to between areas.

OID

ospfImportAsExtern

Name: ospfImportAsExtern
Type: OBJECT-TYPE
OID: 1.3.6.1.2.1.14.2.1.3
Full path: iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).ospf(14).ospfAreaTable(2).ospfAreaEntry(1).ospfImportAsExtern(3)
Module: OSPF-MIB

Parent: ospfAreaEntry
Prev sibling: ospfAuthType
Next sibling: ospfSpfRuns

Numerical syntax: Integer (32 bit)
Base syntax: INTEGER
Composed syntax: INTEGER
Status: current
Max access: read-create
Value list: 1: importExternal(1)
2: importNoExternal(2)
3: importNssa(3)

Default values: 1: importExternal (name)

Reference: [OSPF Version 2, Appendix C.2 Area parameters](#)

Description: The area's support for importing AS external link-state advertisements.

ospfAreaSummary

Name: ospfAreaSummary
Type: OBJECT-TYPE
OID: 1.3.6.1.2.1.14.2.1.9
Full path: iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).ospf(14).ospfAreaTable(2).ospfAreaEntry(1).ospfAreaSummary(9)
Module: OSPF-MIB

Parent: ospfAreaEntry
Prev sibling: ospfAreaLsaChecksumSum
Next sibling: ospfAreaStatus

Numerical syntax: Integer (32 bit)
Base syntax: INTEGER
Composed syntax: INTEGER
Status: current
Max access: read-create
Value list: 1: noAreaSummary(1)
2: sendAreaSummary(2)

Default values: 1: noAreaSummary (name)

Description: The variable ospfAreaSummary controls the import of summary LSAs into stub areas. It has no effect on other areas.

If it is noAreaSummary, the router will neither originate nor propagate summary LSAs into the stub area. It will rely entirely on its default route.

If it is sendAreaSummary, the router will both summarize and propagate summary LSAs.

ospfAreaStatus

Name: ospfAreaStatus
Type: OBJECT-TYPE
OID: 1.3.6.1.2.1.14.2.1.10
Full path: iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).ospf(14).ospfAreaTable(2).ospfAreaEntry(1).ospfAreaStatus(10)
Module: OSPF-MIB

Parent: ospfAreaEntry
Prev sibling: ospfAreaSummary

Numerical syntax: Integer (32 bit)
Base syntax: INTEGER
Composed syntax: RowStatus
Status: current
Max access: read-create

Description: This variable displays the status of the entry. Setting it to 'invalid' has the effect of rendering it inoperative. The internal effect (row removal) is implementation dependent.

Step-by-Step

I. SNMP Command

Blue color is OSPF area ID

- i. Create area 0.0.0.1 as normal area

```
snmpset -v 2c -c private <DUT IP> 1.3.6.1.2.1.14.2.1.3.0.0.0.1 i 1  
1.3.6.1.2.1.14.2.1.10.0.0.0.1 i 4
```

- ii. Create area 0.0.0.2 as Stub area

```
snmpset -v 2c -c private <DUT IP> 1.3.6.1.2.1.14.2.1.3.0.0.0.2 i 2  
1.3.6.1.2.1.14.2.1.9.0.0.0.2 i 2 1.3.6.1.2.1.14.2.1.10.0.0.0.2 i 4
```

- iii. Create area 0.0.0.3 as Totally stubby area

```
snmpset -v 2c -c private <DUT IP> 1.3.6.1.2.1.14.2.1.3.0.0.0.3 i 2  
1.3.6.1.2.1.14.2.1.9.0.0.0.3 i 1 1.3.6.1.2.1.14.2.1.10.0.0.0.3 i 4
```

- iv. Create area 0.0.0.4 as Not-so-stubby area

```
snmpset -v 2c -c private <DUT IP> 1.3.6.1.2.1.14.2.1.3.0.0.0.4 i 3  
1.3.6.1.2.1.14.2.1.10.0.0.0.4 i 4
```

II. Result

- i. Create area 0.0.0.1 as normal area

```
C:\>snmpset -v 2c -c private -m ALL 10.90.90.91 1.3.6.1.2.1.14.2.1.3.0.0.0.1 i 1
1.3.6.1.2.1.14.2.1.10.0.0.0.1 i 4
OSPF-MIB::ospfImportAsExtern.0.0.0.1 = INTEGER: importExternal(1)
OSPF-MIB::ospfAreaStatus.0.0.0.1 = INTEGER: createAndGo(4)
```

- ii. Create area 0.0.0.2 as Stub area

```
C:\>snmpset -v 2c -c private -m ALL 10.90.90.91 1.3.6.1.2.1.14.2.1.3.0.0.0.2 i 2
1.3.6.1.2.1.14.2.1.9.0.0.0.2 i 2 1.3.6.1.2.1.14.2.1.10.0.0.0.2 i 4
OSPF-MIB::ospfImportAsExtern.0.0.0.2 = INTEGER: importNoExternal(2)
OSPF-MIB::ospfAreaSummary.0.0.0.2 = INTEGER: sendAreaSummary(2)
OSPF-MIB::ospfAreaStatus.0.0.0.2 = INTEGER: createAndGo(4)
```

- iii. Create area 0.0.0.3 as Totally stubby area, which it will block not only type 5 external LSA and all Summary LSA except a single Type 3 default route.

```
C:\>snmpset -v 2c -c private -m ALL 10.90.90.91 1.3.6.1.2.1.14.2.1.3.0.0.0.3 i 2
1.3.6.1.2.1.14.2.1.9.0.0.0.3 i 1 1.3.6.1.2.1.14.2.1.10.0.0.0.3 i 4
OSPF-MIB::ospfImportAsExtern.0.0.0.3 = INTEGER: importNoExternal(2)
OSPF-MIB::ospfAreaSummary.0.0.0.3 = INTEGER: noAreaSummary(1)
OSPF-MIB::ospfAreaStatus.0.0.0.3 = INTEGER: createAndGo(4)
```

- iv. Create area 0.0.0.4 as Not-so-stubby area

```
C:\>snmpset -v 2c -c private -m ALL 10.90.90.91 1.3.6.1.2.1.14.2.1.3.0.0.0.4 i 3
1.3.6.1.2.1.14.2.1.10.0.0.0.4 i 4
OSPF-MIB::ospfImportAsExtern.0.0.0.4 = INTEGER: importNssa(3)
OSPF-MIB::ospfAreaStatus.0.0.0.4 = INTEGER: createAndGo(4)
```

- v. OSPF area status on device

```
DGS-3627:admin#show ospf area
Command: show ospf area

OSPF Area Settings

Area ID      Type      Stub Import Summary LSA Stub Default Cost Translate
-----
0.0.0.0      Normal   None
0.0.0.1      Normal   None
0.0.0.2      Stub     Enabled  1
0.0.0.3      Stub     Disabled 1
0.0.0.4      NSSA     Enabled  1

Total Entries : 5
```

Reference

- This example is made by DGS-3600 series in firmware R 2.80.B61.
- SNMP Tools is Net-SNMP.