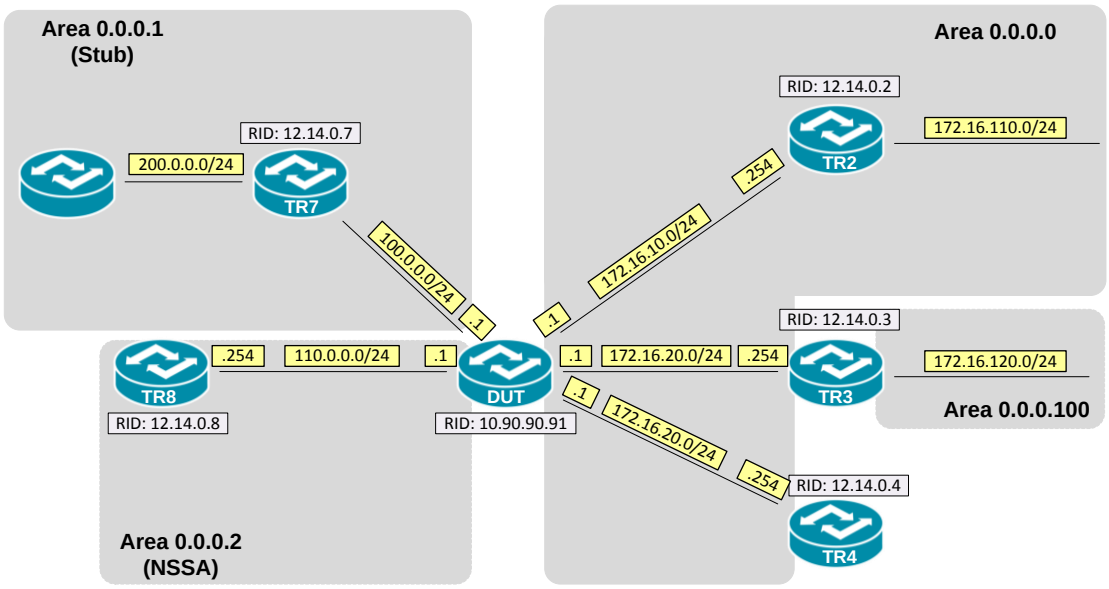
How to use SNMP to get Checksum of OSPF Link State Advertisement

Created at 2011/05/31

Introduction

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

Topology



OID

ospfLsdbChecksum

Name:	ospfLsdbChecksum
Type:	OBJECT-TYPE
OID:	1.3.6.1.2.1.14.4.1.7
Full path:	iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).ospf(14).ospfLsdbTable(4).ospfLsdbEntry(1).ospfLsdbChecksum(7)
Module:	OSPF-MIB
Parent:	ospfLsdbEntry
Prev sibling:	ospfLsdbAge
Next sibling:	ospfLsdbAdvertisement
Numerical syntax:	Integer (32 bit)
Base syntax:	Integer32
Composed syntax:	Integer32
Status:	current
Max access:	read-only
Reference:	OSPF Version 2, Section 12.1.7 LS checksum
Description:	This field is the checksum of the complete contents of the advertisement, excepting the age field. The age field is excepted so that an advertisement's age can be incremented without updating the checksum. The checksum used is the same that is used for ISO connectionless datagrams; it is commonly referred to as the Fletcher checksum.

Step-by-Step

I. SNMP Command

snmpwalk -v 2c -c private <DUT IP> 1.3.6.1.2.1.14.4.1.7.<Area ID>

II. Result

```
C:\>snmpwalk -v 2c -c private -m ALL 192.168.1.91 1.3.6.1.2.1.14.4.1.7.0.0.0.0
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.routerLink.10.90.90.91.10.90.90.91 = INTEGER: 17055
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.routerLink.12.14.0.2.12.14.0.2 = INTEGER: 26775
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.routerLink.12.14.0.3.12.14.0.3 = INTEGER: 65346
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.routerLink.12.14.0.4.12.14.0.4 = INTEGER: 52572
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.networkLink.172.16.10.1.10.90.90.91 = INTEGER: 50290
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.networkLink.172.16.20.1.10.90.90.91 = INTEGER: 25799
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.networkLink.172.16.30.1.10.90.90.91 = INTEGER: 1053
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.summaryLink.100.0.0.0.10.90.90.91 = INTEGER: 31830
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.summaryLink.110.0.0.0.10.90.90.91 = INTEGER: 63950
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.summaryLink.172.16.120.0.12.14.0.3 = INTEGER: 34600
OSPF-MIB::ospfLsdbChecksum.0.0.0.0.summaryLink.200.0.0.0.10.90.90.91 = INTEGER: 12099
```

The checksum is the complete contents of the LSA, excepting the LS age field. The checksum is used to detect data corruption of an LSA. This corruption can occur

while an LSA is being flooded, or while it is being held in a router's memory.

- OSPF Link-State database of Router LSA in Backbone area

```
DGS-3627:admin#show ospf lsdb area 0.0.0.0 type rtrlink
Command: show ospf lsdb area 0.0.0.0 type rtrlink

Area ID: 0.0.0.0                    LS Type: Router Link
Link State ID: 10.90.90.91/0        Advertising Router: 10.90.90.91
Link State Age: 1412
Checksum: 0x429F                    LS Sequence Number: 0x80000032

Area ID: 0.0.0.0                    LS Type: Router Link
Link State ID: 12.14.0.2/0          Advertising Router: 12.14.0.2
Link State Age: 779
Checksum: 0x6897                    LS Sequence Number: 0x8000002D

Area ID: 0.0.0.0                    LS Type: Router Link
Link State ID: 12.14.0.3/0          Advertising Router: 12.14.0.3
Link State Age: 659
Checksum: 0xFF42                    LS Sequence Number: 0x8000002E

Area ID: 0.0.0.0                    LS Type: Router Link
Link State ID: 12.14.0.4/0          Advertising Router: 12.14.0.4
Link State Age: 659
Checksum: 0xCD5C                    LS Sequence Number: 0x8000002F

Total Entries: 4
```

Reference

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