SNMP Transition Tool

Management of IPv6 Networks with IPv4/IPv6 SNMP Gateway

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Introduction

IPv6 is the „next generation” protocol designed by IETF to replace the current IPv4
- since January 1995
- more and more popular regular service
- no support for IPv6 in commercial management platforms
No Support for IPv6 in Management Platforms

Management platforms:

• HP OpenView
• Tivoli NetView
• Cisco CiscoWorks
• IPSWITCH WhatsUp
Possible Solution – Dual Stack

IPv4/6 network

if IPv6 routing process fails

IPv4/6 network

Network Management Station

IPv6 only network
The Idea of SNMP Transition Tool

The main purpose of the development the SNMP Transition Tool is to enable the existing IPv4 network management platforms to monitor and configure the native IPv6 networks. The SNMP Transition Tool will translate SNMP protocol messages between IPv4 and IPv6 networks using its Address Translation Table.
Overview of SNMP Transition Tool

IPv4 SNMP Manager

IPv4 SNMP Message
IPv4 Packet
UDP Datagram
Physical Layers

IPv4 ↔ IPv6 SNMP Transition Mechanism

SNMP Transition Tool

IPv6 SNMP Agent

IPv6 SNMP Message
IPv6 Packet
UDP Datagram
Physical Layers
Transition Tool Architecture 1

IPv4/6 network

Network Management Station

IPv4/6 network

IPv6 only network

Transition Tool System

IPv6 only network
Transition Tool Architecture 2

Transition Tool

Management Station
IPv6 or IPv4 Network

Network device
IPv4 or IPv6 Network

SNMP Request
SNMP Response

SNMP Request
SNMP Response

Transition DB

SSL (Our Protocol)

Transition Tool Manager
IPv4 or IPv6 Network
Graphical User Interface of Transition Tool

- user friendly
- written in Java 1.4
- secure protocol - SSL
- X.509 PKI
Tests and Results 1

Efficiency

Every station performs a `snmpwalk` towards all agents simultaneously using the Transition Tool.

The Transition Tool translates SNMP packets between IPv4 and IPv6 networks in both directions.
Tests and Results 2

```
[bart@birch bart]$ snmpwalk -c public 10.0.7.14
SNMPv2-MIB::sysDescr.0 = STRING: Linux fernek 2.2.22 #1 Sun Nov 17 10:56:45 UTC 2002
SNMPv2-MIB::sysObjectID.0 = OID: NET-SNMP-MIB::netSmplAgentOIDs.10
SNMPv2-MIB::sysUpTime.0 = Timeticks: 0:00:49.49
SNMPv2-MIB::sysContact.0 = STRING: Mass <maxiu@fernek.man.poznan.pl>
SNMPv2-MIB::sysName.0 = STRING: fernek
SNMPv2-MIB::sysLocation.0 = STRING: Right here, right now.
SNMPv2-MIB::sysORLastChange.0 = Timeticks: 0:00:00.00
SNMPv2-MIB::sysORID.1 = OID: IF-MIB::ifMIB
SNMPv2-MIB::sysORID.2 = OID: SNMPv2-MIB::snmpMIB
SNMPv2-MIB::sysORID.3 = OID: TCP-MIB::tcpMIB
SNMPv2-MIB::sysORID.4 = OID: IP-MIB::ip
SNMPv2-MIB::sysORID.5 = OID: UDP-MIB::udpMIB
SNMPv2-MIB::sysORID.6 = OID: SNMP-VIEW-Based-ARCH-MIB::vacmBasicGroup
SNMPv2-MIB::sysORID.7 = OID: SNMP-FRAMEWORK-MIB::snmpFrameworkMIBCompliance
SNMPv2-MIB::sysORID.8 = OID: SNMP-NP-MIB::snmpNPDCompliance
SNMPv2-MIB::sysORID.9 = OID: SNMP-USER-BASED-SM-MIB::usmMIBCompliance
SNMPv2-MIB::sysORDescr.1 = STRING: The MIB module to describe generic objects for
network interface sub-layers
SNMPv2-MIB::sysORDescr.2 = STRING: The MIB module for SNMPv2 entities
SNMPv2-MIB::sysORDescr.3 = STRING: The MIB module for managing TCP implementatio
```
Tests and Results 3
Implementation

Testbed presented on TF-NGN, Poznan, May 2003:
- IPv4 network
- WhatsUp [Web interface possible]
- SNMP Transition Tool
- IPv6 network
Future Development

• Extend tool with new modules – DNS, 6tunnel, etc
• Trap forwarding
• SubAgent – collaborates with any SNMP agent AgentX protocol compatible
• Automatic address configuration
• MIB conversions – lots of problems to solve, e.g. see RFC 2962 - "An SNMP Application Level Gateway for Payload Address Translation"
Proposition of the New Transition Tool Architecture
How to Get it

http://www.ipv6.man.poznan.pl

License Type: GPL
Thank you!

Any questions, comments or remarks are very welcome.

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