Network Working Group
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SNMP over IPX

Status of this Memo

This memo provides information for the Internet community. It does not specify an Internet standard. Distribution of this memo is unlimited.

Abstract

This memo defines a convention for encapsulating Simple Network Management Protocol (SNMP) [1] packets over the transport mechanism provided via the Internetwork Packet Exchange (IPX) protocol [2].

Editor's Note

As stated below and in reference [5], it is strongly advised that for interoperability, SNMP be implemented over UDP/IP and not directly on media or other protocols (such as IPX).

1. Introduction

The SNMP protocol has been specified as the official network management protocol of the Internet. Its widespread acceptance and implementation by developers, both inside and outside the Internet community, is fostering synergetic growth to a variety of protocols and platforms.

This memo addresses the use of SNMP over the IPX protocol, which has become quite widespread principally due to the popularity of Novell NetWare. Roughly equivalent to UDP in function, IPX provides connectionless, unacknowledged datagram service over a variety of physical media and protocols.

Although modifications have been made elsewhere in the NetWare protocol suite, IPX is identical to the Xerox Internet Datagram Protocol (IDP) [3]. The socket address space authority is administered by Novell.

The use of SNMP over the UDP transport [4] is today the common mode of operation in the Internet. This specification may be appropriate for some environments in which UDP transport services are not

available. SNMP implementors should be aware that the choice of underlying transport may have a significant impact on the interoperability and ubiquity of the management capability in the Internet. Considerations relevant to choosing a transport for use with SNMP are described in [5].

2. Specification

SNMP packets will always set the Packet Type field in the IPX header to 4 (i.e., Packet Exchange Packet).

2.1 Socket Assignments

SNMP protocol entities will receive GetRequest-PDU, GetNextRequest-PDU, and SetRequest-PDU messages on socket 36879 (Destination Socket field set to hexadecimal 900F), and Trap-PDU messages on socket 36880 (Destination Socket field set to hexadecimal 9010).

GetResponse-PDU messages will be addressed to the IPX address and socket from which the corresponding GetRequest-PDU, GetNextRequest-PDU, or SetRequest-PDU originated.

2.2 Maximum Packet Length

Although SNMP does not require conformant implementations to accept messages whose length exceed 484 bytes, it is recommended that implementations support a maximum SNMP message size of 546 bytes (the maximum size allowed under IPX). Furthermore, this limit is the maximum packet length guaranteed to traverse IPX routers which do not provide fragmentation. Implementors may choose to use longer packet lengths if the maximum is known, which depends on the intermediate routers and/or intermediate datalink layer protocols.

2.3 The agent-addr Field for the Trap-PDU

The agent-addr field in a Trap-PDU emitted by an SNMP agent should contain the IpAddress 0.0.0.0. An SNMP manager may ascertain the source of the trap by querying the transport layer.

2.4 IPX Transport Address Representation

There are occasions when it is necessary to represent a transport service address in a MIB. For instance, the SNMP party MIB [6] uses an OBJECT IDENTIFIER to define the transport domain (IP, IPX, etc.) and an OCTET STRING to represent an address within that domain. The following definitions are provided for use in such a scheme.

```
 RFC1298-MIB DEFINITIONS ::= BEGIN

    IMPORTS
      enterprises         FROM RFC1155-SMI;

      novell              OBJECT IDENTIFIER ::= { enterprises 23 }
      transportDomains    OBJECT IDENTIFIER ::= { novell 7 }

      ipxTransportDomain  OBJECT IDENTIFIER ::= { transportDomains 1 }

    -- Authoritatively names the IPX Transport Domain

    IpxTransportAddress ::= OCTET STRING (SIZE (12))

    -- A textual convention denoting a transport service address in
    -- the ipxTransportDomain.  An IpxTransportAddress is 12 octets
    -- long and comprises 3 fields, each in network-byte (high-low)
    -- order.

    -- The first field is 4 octets long and contains the network
    -- number.

    -- The next field is 6 octets long and contains the physical
    -- address of the node.  Since IPX can run over a variety of
    -- subnet architectures, the physical node address may not
    -- require all 6 octets.  As specified in [2], the physical
    -- node address will occupy the least significant portion of
    -- the field and the most significant octets should be set
    -- to zero.

    -- The last field is 2 octets long and contains the socket
    -- number.

 END
```

3. Document Procurement

This section provides contact points for procurement of selected documents.

A complete description of IPX may be secured at the following address:

Novell, Inc.
122 East 1700 South
P. O. Box 5900
Provo, Utah 84601 USA
800 526 5463

Novell Part # 883-000780-001

The specification for IDP (part of XNS) may be ordered from:

Xerox System Institute
475 Oakmead Parkway
Sunnyvale, CA 94086
Attn: Fonda Pallone
(415) 813-7164

4. References

[1] Case J., Fedor M., Schoffstall M., and J. Davin, "A Simple Network Management Protocol (SNMP)", RFC 1157, SNMP Research, Performance Systems International, Performance Systems International, and MIT Laboratory for Computer Science, May 1990.

[2] Novell, Inc., "NetWare System Technical Interface Overview", June 1989.

[3] Xerox System Integration Standard, "Internet Transport Protocols", XSIS 028112, Xerox Corporation, December 1981.

[4] Postel, J., "User Datagram Protocol," RFC 768, USC/Information Sciences Institute, 28 August 1980.

[5] Kastenholz, F., "SNMP Communications Services," RFC 1270, Clearpoint Research Corporation, October 1991.

[6] McCloghrie, K., Davin, J., and J. Galvin, "Definitions of Managed Objects for Administration of SNMP Parties", RFC in preparation.

5. Security Considerations

Security issues are not discussed in this memo.

6. Authors' Addresses

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