



Technology Training that Works

SNMP Network Management: The Essentials

Contents

1	Introduction	1
1.1	Need for network management	1
1.2	Network management	1
1.3	Elements of network management architecture	2
1.4	Distributed network management	3
1.5	Open systems interconnection (OSI) model	5
1.6	SNMP history	7
1.7	Introduction to SNMP	7
1.8	SNMP components	7
1.9	SNMP model	8
2	Revision of Supporting Network Technology	9
2.1	Introduction	9
2.2	TCP/IP – An introduction	10
2.3	Internet protocol	13
2.4	Transmission control protocol	17
2.5	User datagram protocol	18
2.6	Ethernet : An introduction	19
3	SNMP Overview	21
3.1	SNMP – An introduction	21
3.2	Manageable objects	21
3.3	Structure of management information	22
3.4	Structure of MIB	22
3.5	SNMP protocol	23
3.6	SNMP agents	24
3.7	Abstract Syntax Notation One (ASN.1)	25
3.8	Basic encoding rules	27
4	SNMPv1 Details	31
4.1	Module and type definition	31
4.2	Network management relationships	31
4.3	Identifying and communicating object instances	32
4.4	SNMP protocol data units	33
4.5	MIB structure	36
5	Using SNMP	43
5.1	Remote network monitoring	43
5.2	The RMON MIB	45
5.3	RMON2 – an overview	51
5.4	Web-based network management	56



Technology Training that Works

5.5	Configuration management	59
5.6	Performance management	60
5.7	Security management	60
5.8	Fault management	61
5.9	Network management applications	61
6	SNMPv2	63
6.1	Background	63
6.2	SNMPv2 enhancements	65
6.3	Structure of management information	65
6.4	SNMPv2 textual conventions	66
6.5	Protocol operations	67
6.6	SNMPv2 transport mappings	74
6.7	SNMPv2 MIB	75
6.8	Conformance statements	79
6.9	SNMPv2 security	80
6.10	SNMPv1 and SNMPv2 co-existence	80
7	SNMPv3	85
7.1	Background	85
7.2	SNMPv3 documentation	86
7.3	SNMPv3 architecture	89
7.4	SNMPv3 message formats	94
7.5	SNMPv3 MIB modules	101
7.6	SNMPv1, SNMPv2 and SNMPv3 coexistence	111