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# How to Configure and Control the Digicast MENCAP IP Encapsulator with SNMP

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## Background

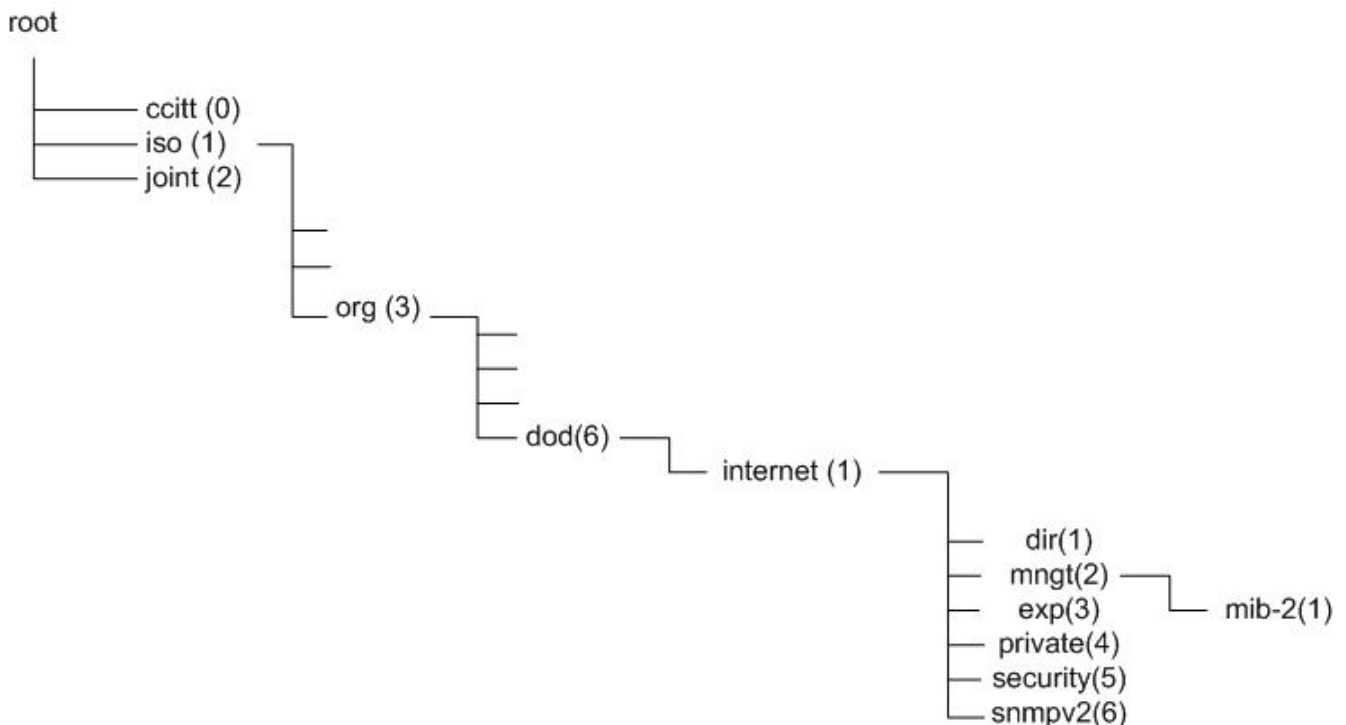
The Digicast product line may be managed in numerous ways: Web (Hypertext Transport Protocol), terminal, Telnet and via the Simple Network Management Protocol (SNMP). SNMP is an IP management tool that can be used to provide remote management for communications products. Digicast products can be configured and monitored with the SNMP protocol. The SNMP protocol is a manager / agent-based design, where a manager oversees multiple agents (or remotes). SNMP is broken down into multiple types and they will be discussed in this paper, and described as they are used on the Digicast products.

Unlike connection-oriented protocols, HyperText Transport Protocol (HTTP) for Web browsers, Telnet for remote terminal access and File Transport Protocol (FTP), which are all supported on the Digicast products, the SNMP protocol is based on a connectionless-oriented design where data is exchanged between the manager and agent in a “best effort” manner – if a packet is lost, it will not be retransmitted. SNMP uses a packet structure known as a Protocol Data Unit (PDU) that uses the User Datagram Protocol (UDP) for sending information over an IP-enabled network.

There are currently three versions of SNMP in existence. SNMP version 1 (SNMPv1) was the first version and is the most widely used today. However, SNMPv1 has serious security problems which resulted in SNMP version 2 (SNMPv2) being created. SNMPv2 and SNMPv2c provide an improved Management Information Base (MIB), a modified PDU and enhanced security features. Lastly, SNMP version 3 (SNMPv3) was introduced to address additional security shortcomings and complexity issues existent in SNMPv2. However, SNMPv3 has not been widely accepted, and most equipment vendors only support SNMPv2c, which is backwards compatible with SNMPv1.

SNMP can further be divided into more areas that involve the MIB and polled verses unsolicited messages known as traps. The “MIB” is a file that is used by the SNMP manager to identify available Object Identifiers (OIDs), otherwise known as variables that can be set or retrieved on the agent device. Two types of MIBs will be discussed in this paper – MIB II and private MIB.

The SNMP MIB-II, as defined by Request for Comments (RFC) 1213, and is a compilation of OIDs fashioned in a hierarchical structure as shown below:

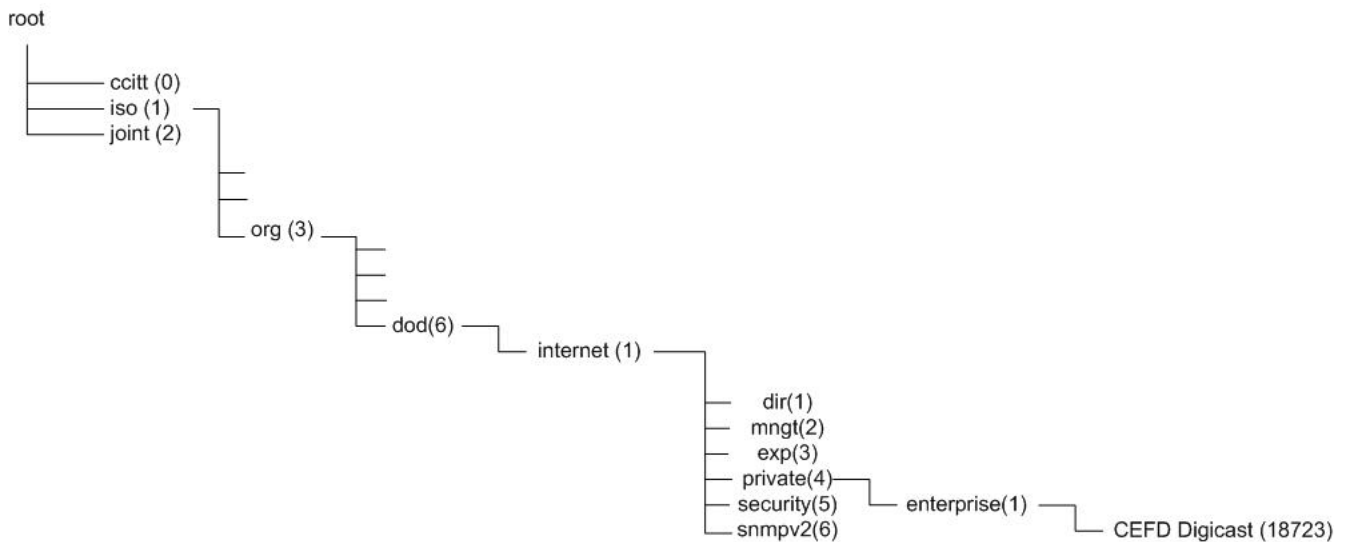


The resulting notation used inside the MIB is represented in dotted notation as follows:

**1.3.6.1.2.1.**  
**1 = iso**  
**3 = org**  
**6 = dod**  
**1 = internet**  
**2 = mngt**  
**1 = MIB II**  
**etc.**

Any remaining digits to the right of the last digit shown are sub elements and represent the actual variables in the MIB.

Comtech EF Data's Digicast private enterprise number is 18732. Therefore, the private MIB for Comtech EF Data's Digicast products is as follows:



**1.3.6.1.4.1.18723.**

**1 = iso**  
**3 = org**  
**6 = dod**  
**1 = internet**  
**4 = private**  
**1 = enterprise**  
**18723 = Comtech EF Data's Digicast Enterprise Number**  
**etc.**

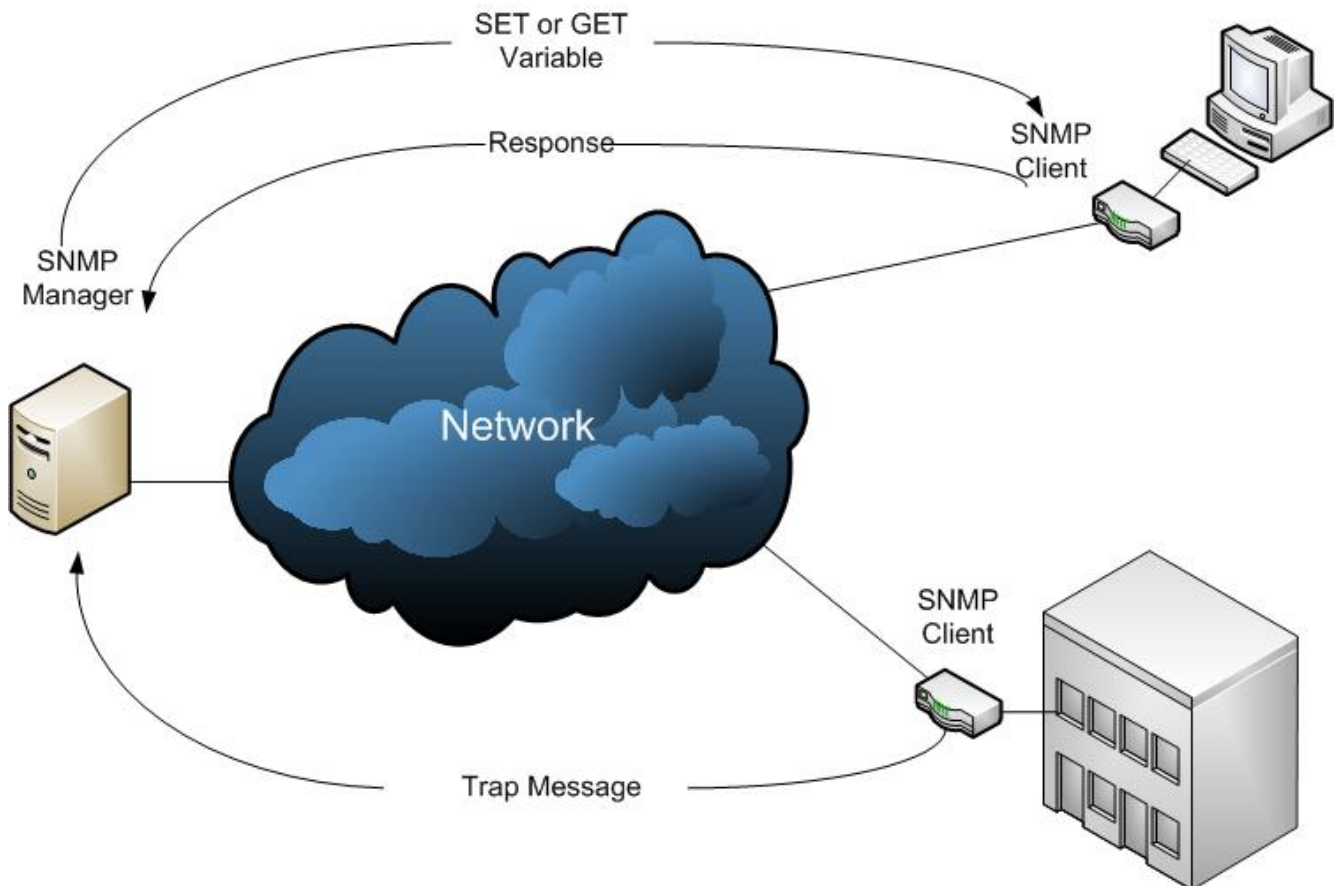
## Important Terms to Know

First, we need to identify the major components of SNMP:

- SNMP Manager – The manager and collection point for SNMP-enabled remote agents.
- SNMP Agent – The agent (remote) that is managed by an SNMP manager.
- PDU – Protocol Data Unit is the message that carries all SNMP messages over a network.

- MIB – Message Information Base is the file that defines all the supported OIDs at the agent.
- MIB II – Message Information Base II which is a MIB that is supported by most PC and communications products. MIB II is described in Request for Comments RFC 1213.
- Private MIB – The manufacturer created and defined MIB describing the OIDs that may be configured (SET) or obtained (GET) from an agent product.
- OID – Object Identifier is the variable on the agent that can be configured (SET) or obtained (GET).
- Get – Obtain an element (OID) of information from an agent.
- GetNext – Obtains the next element (OID) of information from a agent.
- Set – Set an element (OID) of information on an agent.
- GetResponse – Requests a response from the agent for information.
- Trap –an unsolicited message sent to the SNMP server from the SNMP Agent
- R/O Community – The community string for read only access to the MIB elements.
- R/W Community – The community string for read/write access to the MIB elements.

The following image depicts all of these terms and where they apply:



## MIB II OIDs on the Digicast MENCAP IP Encapsulator Product

The following describes how MIB II elements (OIDs) can be used to obtain (GET) information from a Digicast MENCAP product:

The MIB-II elements are broken down into sections as follows:

MIB-II Number	Type	Description
MIB-II 1	system	General information about device for administration purposes
MIB-II 2	interfaces	Keeps track of each interface on device
MIB-II 3	at	Address translation (only for backward compatibility)
MIB-II 4	ip	Tracks IP (Internet Protocol) aspects
MIB-II 5	icmp	Tracks ICMP (Internet Control Message Protocol) aspects
MIB-II 6	tcp	Tracks TCP (Transmission Control Protocol) aspects
MIB-II 7	udp	Tracks UDP (User Datagram Protocol) aspects
MIB-II 8	egp	Tracks EGP (Exterior Gateway Protocol) aspects
MIB-II 9	(no longer used)	
MIB-II 10	transmission - currently not used	
MIB-II 11	snmp	Tracks SNMP aspects

Supported MIB-II OIDs on the Digicast MENCAP IP Encapsulator product are as follows:

MIB-II Number	Type	Sub Type	OID	Description	Supported
mib-II 1	system		1.3.6.1.2.1.1	General information about device for administration purposes	
		sysDescr	1.3.6.1.2.1.1.1	System Description	Yes
		sysObjectID	1.3.6.1.2.1.1.2	System Object ID	Yes
		sysUpTime	1.3.6.1.2.1.1.3	System Up Time	Yes
		sysContact	1.3.6.1.2.1.1.4	System Contact	Yes
		sysName	1.3.6.1.2.1.1.5	System Name	Yes
		sysLocation	1.3.6.1.2.1.1.6	System Location	Yes
		sysServices	1.3.6.1.2.1.1.7	System Services	Yes
mib-II 2	interfaces		1.3.6.1.2.1.2	Keeps track of each interface on device	
		ifNumber	1.3.6.1.2.1.2.1	Interface Number	Yes
		ifTable	1.3.6.1.2.1.2.2	Interface Table	Yes
mib-II 3	at		1.3.6.1.2.1.3	Address translation (only for backward compatibility)	
		atTable	1.3.6.1.2.1.3.1	Address Translation	No
mib-II 4	ip		1.3.6.1.2.1.4	Tracks IP (Internet Protocol) aspects	
		ipForwarding	1.3.6.1.2.1.4.1	IP Forwarding Enabled	Yes
		ipDefaultTTL	1.3.6.1.2.1.4.2	IP Default Time-to-Live	Yes
		ipInReceives	1.3.6.1.2.1.4.3	IP In Received	Yes

		ipInHdrErrors	1.3.6.1.2.1.4.4	IP In Header Errors	Yes
		ipInAddrErrors	1.3.6.1.2.1.4.5	IP In Address Errors	Yes
		ipForwDatagrams	1.3.6.1.2.1.4.6	IP Forwarded Datagrams	Yes
		ipInUnknownProtos	1.3.6.1.2.1.4.7	IP In Unknown Protocol	Yes
		ipInDiscards	1.3.6.1.2.1.4.8	IP In Discards	Yes
		ipInDelivers	1.3.6.1.2.1.4.9	IP In Deliveries	Yes
		ipOutRequests	1.3.6.1.2.1.4.10	IP Out Requests	Yes
		ipOutDiscards	1.3.6.1.2.1.4.11	IP Out Discards	Yes
		ipOutNoRoutes	1.3.6.1.2.1.4.12	IP Out No Route	Yes
		ipReasmTimeout	1.3.6.1.2.1.4.13	IP Reassembly Timeouts	Yes
		ipReasmReqds	1.3.6.1.2.1.4.14	IP Reassembly Reqs	Yes
		ipReasmOKs	1.3.6.1.2.1.4.15	IP Reassembly Okays	Yes
		ipReasmFails	1.3.6.1.2.1.4.16	IP Reassembly Fails	Yes
		ipFragOKs	1.3.6.1.2.1.4.17	IP Fragmentation Okay	Yes
		ipFragFails	1.3.6.1.2.1.4.18	IP Fragmentation Fails	Yes
		ipFragCreates	1.3.6.1.2.1.4.19	IP Fragmentation Creates	Yes
		ipAddrTable	1.3.6.1.2.1.4.20	IP Address Table	Yes
		ipRouteTable	1.3.6.1.2.1.4.21	IP Route Table	Yes
		ipNetToMediaTable	1.3.6.1.2.1.4.22	IP Net to Media Table	Yes
		ipRoutingDiscards	1.3.6.1.2.1.4.23	IP Routing Discards	Yes
mib-II 5	icmp		1.3.6.1.2.1.5	Tracks ICMP (Internet Control Message Protocol) aspects	
		icmpInMsgs	1.3.6.1.2.1.5.1	ICMP In Messages	Yes
		icmpInErrors	1.3.6.1.2.1.5.2	ICMP In Errors	Yes
		icmpInDestUnreachs	1.3.6.1.2.1.5.3	ICMP In Dest Unreachable	Yes
		icmpInTimeExcds	1.3.6.1.2.1.5.4	ICMP In Time Exceeds	Yes
		icmpInParmProbs	1.3.6.1.2.1.5.5	ICMP In Parm Problems	Yes
		icmpInSrcQuenchs	1.3.6.1.2.1.5.6	ICMP In Source Quench	Yes
		icmpInRedirects	1.3.6.1.2.1.5.7	ICMP In Redirects	Yes
		icmpInEchos	1.3.6.1.2.1.5.8	ICMP In Echoes	Yes
		icmpInEchoReps	1.3.6.1.2.1.5.9	ICMP In Echo Reps	Yes
		icmpInTimestamps	1.3.6.1.2.1.5.10	ICMP In Time Stamps	Yes
		icmpInTimestampReps	1.3.6.1.2.1.5.11	ICMP In Time Stamp Reps	Yes
		icmpInAddrMasks	1.3.6.1.2.1.5.12	ICMP In Address Masks	Yes
		icmpInAddrMaskReps	1.3.6.1.2.1.5.13	ICMP In Address Mask Reps	Yes
		icmpOutMsgs	1.3.6.1.2.1.5.14	ICMP Out Messages	Yes
		icmpOutErrors	1.3.6.1.2.1.5.15	ICMP Out Errors	Yes
		icmpOutDestUnreachs	1.3.6.1.2.1.5.16	ICMP Out Dest Unreachable	Yes
		icmpOutTimeExcds	1.3.6.1.2.1.5.17	ICMP Out Time Exceeds	Yes
		icmpOutParmProbs	1.3.6.1.2.1.5.18	ICMP Out Parm Problems	Yes
		icmpOutSrcQuenchs	1.3.6.1.2.1.5.19	ICMP Out Source Quench	Yes
		icmpOutRedirects	1.3.6.1.2.1.5.20	ICMP Out Redirects	Yes

		icmpOutEchos	1.3.6.1.2.1.5.21	ICMP Out Echoes	Yes
		icmpOutEchoReps	1.3.6.1.2.1.5.22	ICMP out Echo Reps	Yes
		icmpOutTimestamps	1.3.6.1.2.1.5.23	ICMP Out Time Stamps	Yes
		icmpOutTimestampReps	1.3.6.1.2.1.5.24	ICMP Out TimeStamp Reps	Yes
		icmpOutAddrMasks	1.3.6.1.2.1.5.25	ICMP Out Addr Masks	Yes
		icmpOutAddrMaskReps	1.3.6.1.2.1.5.26	ICMP Out Address Mask Rep	Yes
mib-II 6	tcp		1.3.6.1.2.1.6	Tracks TCP (Transmission Control Protocol) aspects	
		tcpRtoAlgorithm	1.3.6.1.2.1.6.1	TCP Retrans Algorithm	Yes
		tcpRtoMin	1.3.6.1.2.1.6.2	TCP Retrans Min	Yes
		tcpRtoMax	1.3.6.1.2.1.6.3	TCP Retrans Max	Yes
		tcpMaxConn	1.3.6.1.2.1.6.4	TCP Max Conn	Yes
		tcpActiveOpens	1.3.6.1.2.1.6.5	TCP Active Conn Open	Yes
		tcpPassiveOpens	1.3.6.1.2.1.6.6	TCP Passive Conn Open	Yes
		tcpAttemptFails	1.3.6.1.2.1.6.7	TCP Attempts Failed	Yes
		tcpEstabResets	1.3.6.1.2.1.6.8	TCP Established Resets	Yes
		tcpCurrEstab	1.3.6.1.2.1.6.9	TCP Current Connections	Yes
		tcpInSegs	1.3.6.1.2.1.6.10	TCP In Segments	Yes
		tcpOutSegs	1.3.6.1.2.1.6.11	TCP Out Segments	Yes
		tcpRetransSegs	1.3.6.1.2.1.6.12	TCP Retransmitted Segments	Yes
		tcpConnTable	1.3.6.1.2.1.6.13	TCP Connection Table	Yes
		tcpInErrs	1.3.6.1.2.1.6.14	TCP In Errors	Yes
		tcpOutRsts	1.3.6.1.2.1.6.15	TCP Out Resets	Yes
mib-II 7	udp		1.3.6.1.2.1.7	Tracks UDP (User Datagram Protocol) aspects	
		udpInDatagrams	1.3.6.1.2.1.7.1	UDP In Datagrams Received	Yes
		udpNoPorts	1.3.6.1.2.1.7.2	UDP No Ports Available	Yes
		udpInErrors	1.3.6.1.2.1.7.3	UDP In Errors	Yes
		udpOutDatagrams	1.3.6.1.2.1.7.4	UDP Out Datagrams Sent	Yes
		udpTable	1.3.6.1.2.1.7.5	UDP Table	No
mib-II 8	egp			Tracks EGP (Exterior Gateway Protocol) aspects	No
mib-II 9					
mib-II 10					
mib-II 11	snmp		1.3.6.1.2.1.11	Tracks SNMP aspects	
		snmpInPkts	1.3.6.1.2.1.11.1	SNMP In Packets	Yes
		snmpOutPkts	1.3.6.1.2.1.11.2	SNMP Out Packets	Yes
		snmpInBadVersions	1.3.6.1.2.1.11.3	SNMP Bad Version Numbers	Yes
		snmpInBadCommunityNames	1.3.6.1.2.1.11.4	SNMP In Bad Comm Names	Yes

		snmpInBadCommunityUses	1.3.6.1.2.1.11.5	SNMP In Bad Comm Users	Yes
		snmpInASNParseErrs	1.3.6.1.2.1.11.6	SNMP In ASN Parse Errors	Yes
		snmpInTooBigs	1.3.6.1.2.1.11.8	SNMP In too Big	Yes
		snmpInNoSuchNames	1.3.6.1.2.1.11.9	SNMP In No Such Name	Yes
		snmpInBadValues	1.3.6.1.2.1.11.10	SNMP In Bad Values	Yes
		snmpInReadOnlys	1.3.6.1.2.1.11.11	SNMP In Read Onlys	Yes
		snmpInGenErrs	1.3.6.1.2.1.11.12	SNMP In Gen Errors	Yes
		snmpInTotalReqVars	1.3.6.1.2.1.11.13	SNMP In Total Req Variables	Yes
		snmpInTotalSetVars	1.3.6.1.2.1.11.14	SNMP In Total Set Variables	Yes
		snmpInGetRequests	1.3.6.1.2.1.11.15	SNMP In Get Requests	Yes
		snmpInGetNexts	1.3.6.1.2.1.11.16	SNMP IN Get Nexts	Yes
		snmpInSetRequests	1.3.6.1.2.1.11.17	SNMP In Set Requests	Yes
		snmpInGetResponses	1.3.6.1.2.1.11.18	SNMP In Get Responses	Yes
		snmpInTraps	1.3.6.1.2.1.11.19	SNMP In Traps	Yes
		snmpOutTooBigs	1.3.6.1.2.1.11.20	SNMP Out Too Bigs	Yes
		snmpOutNoSuchNames	1.3.6.1.2.1.11.21	SNMP Out No Such Name	Yes
		snmpOutBadValues	1.3.6.1.2.1.11.22	SNMP Out Bad Values	Yes
		snmpOutGenErrs	1.3.6.1.2.1.11.24	SNMP Out Gen Errors	Yes
		snmpOutGetRequests	1.3.6.1.2.1.11.25	SNMP Out Get Requests	Yes
		snmpOutGetNexts	1.3.6.1.2.1.11.26	SNMP Out Get Nexts	Yes
		snmpOutSetRequests	1.3.6.1.2.1.11.27	SNMP Out Set Requests	Yes
		snmpOutGetResponses	1.3.6.1.2.1.11.28	SNMP Out Get Responses	Yes
		snmpOutTraps	1.3.6.1.2.1.11.29	SNMP Out Traps	Yes
		snmpEnableAuthenTraps	1.3.6.1.2.1.11.30	SNMP Enable Auth Traps	Yes

The MIB-II Traps are broken down as follows:

Trap Name	Description
dniColdStart	Cold start: The unit is starting up from a down state
dniWarmStart	Warm Start: The unit is recovering from a reset incident
dniLinkDown	Link Down: The MENCAP has a link down
dniLinkUp	Link Up: The MENCAP has a link up
dniAuthFail	Authentication Failure: An SNMP message received could not be authenticated

## Private MIB OIDs on the MENCAP Product

The following describes how the Enterprise (Private) MIB elements (OIDs) can be used to obtain (GET) information or configure (SET) a parameter on the Digicast MENCAP product:

The Enterprise MIB elements (OIDs) are broken down as follows:

OID Number	OID	Description	GET or SET
<b>1.3.6.1.4.1.18723.2.1</b>	<b>dniMencapModule</b>	<b>MIB Module for Mencap 50 DVB IP Encapsulator</b>	
<b>1.3.6.1.4.1.18723.2.2</b>	<b>dniAdminParam</b>	<b>Admin Menu for Mencap 50</b>	
1.3.6.1.4.1.18723.2.2.1	dniMencapAdmin	Administrative Functions	GET
1.3.6.1.4.1.18723.2.2.2	dniAdminUserName	User Name	GET/SET
1.3.6.1.4.1.18723.2.2.3	dniAdminPW	Password	GET/SET
1.3.6.1.4.1.18723.2.2.4	dniAdminReset	Reset Unit	GET/SET
1.3.6.1.4.1.18723.2.2.6	dniAdminEnableTelnet	Enable Telnet = Yes or No	GET/SET
1.3.6.1.4.1.18723.2.2.7	dniAdminEnforceEgressQoS	Enforce QoS on Egress Clock = Yes or No	GET/SET
1.3.6.1.4.1.18723.2.2.8	dniAdminUnitName	Unit Name	GET/SET
1.3.6.1.4.1.18723.2.2.9	dniAdminOSVersion	Operating System Version	GET
1.3.6.1.4.1.18723.2.2.10	dniAdminAppVersion	Application Version	GET
1.3.6.1.4.1.18723.2.2.11	dniAdminFPGAVersion	FPGA Version	GET
1.3.6.1.4.1.18723.2.2.12	dniAdminSNMPTrapReceiverIpAddr	IP Address of the SNMP Trap Receiver	GET/SET
<b>1.3.6.1.4.1.18723.2.3</b>	<b>dniMencapEgress</b>		
1.3.6.1.4.1.18723.2.3.1	dniEgressParam	Egress Clock Configuration	GET
1.3.6.1.4.1.18723.2.3.2	dniEgressClockRate	Egress Clock Rate in mbps (0.1 - 73.0)	GET/SET
1.3.6.1.4.1.18723.2.3.3	dniEgressFraming	Framing mode: 188 or 204	GET/SET
1.3.6.1.4.1.18723.2.3.4	dniEgressSource	Clock Source (RS422 only)	GET/SET
<b>1.3.6.1.4.1.18723.2.4</b>	<b>dniMencapNet</b>		
1.3.6.1.4.1.18723.2.4.1	dniNetworkParam	Network Configuration	GET
1.3.6.1.4.1.18723.2.4.2	dniNetworkMAC	MAC Address	GET
1.3.6.1.4.1.18723.2.4.3	dniNetworkIP	IP Address	GET/SET
1.3.6.1.4.1.18723.2.4.4	dniNetworkSubnet	Subnet Mask	GET/SET
1.3.6.1.4.1.18723.2.4.5	dniNetworkGateway	Default Gateway	GET/SET
<b>1.3.6.1.4.1.18723.2.5</b>	<b>dniMencapRoute</b>		
<b>1.3.6.1.4.1.18723.2.5.1</b>	<b>routeTable</b>		

<b>1.3.6.1.4.1.18723.2.5.1.1</b>	<b>routeEntry</b>		
1.3.6.1.4.1.18723.2.5.1.1.1.1 through 1.3.6.1.4.1.18723.2.5.1.1.1.10000	routeIndex	Route Index	GET
1.3.6.1.4.1.18723.2.5.1.1.2.1 through 1.3.6.1.4.1.18723.2.5.1.1.2.10000	routeName	Route Name	GET/SET
1.3.6.1.4.1.18723.2.5.1.1.3.1 through 1.3.6.1.4.1.18723.2.5.1.1.3.10000	vlan	VLAN, All, None, 1-4095	GET/SET
1.3.6.1.4.1.18723.2.5.1.1.4.1 through 1.3.6.1.4.1.18723.2.5.1.1.4.10000	ipAddress	IP Address	GET/SET
1.3.6.1.4.1.18723.2.5.1.1.5.1 through 1.3.6.1.4.1.18723.2.5.1.1.5.10000	subnetBits	Number of bits in the subnet	GET/SET
1.3.6.1.4.1.18723.2.5.1.1.6.1 through 1.3.6.1.4.1.18723.2.5.1.1.6.10000	pidHex	Hexadecimal value of PID (0x0010 - 0x1FFE)	GET/SET
1.3.6.1.4.1.18723.2.5.1.1.7.1 through 1.3.6.1.4.1.18723.2.5.1.1.7.10000	macAddress	MAC Address of route	GET/SET
1.3.6.1.4.1.18723.2.5.1.1.8.1 through 1.3.6.1.4.1.18723.2.5.1.1.8.10000	routeEnabled	Enable Route Yes or No	GET/SET
<b>1.3.6.1.4.1.18723.2.6</b>	<b>dniMencapRouteAdv</b>		
<b>1.3.6.1.4.1.18723.2.6.1</b>	<b>advrouteTable</b>		
<b>1.3.6.1.4.1.18723.2.6.1.1</b>	<b>advrouteEntry</b>		
1.3.6.1.4.1.18723.2.6.1.1.1.1 through 1.3.6.1.4.1.18723.2.6.1.1.1.10000	arouteIndex	Advanced Route Index	GET
1.3.6.1.4.1.18723.2.6.1.1.2.1 through 1.3.6.1.4.1.18723.2.6.1.1.2.10000	qosMin	QOS Minimum Bandwidth Setting	GET/SET
1.3.6.1.4.1.18723.2.6.1.1.3.1 - through 1.3.6.1.4.1.18723.2.6.1.1.3.10000	qosMax	QOS Maximum Bandwidth Setting	GET/SET
1.3.6.1.4.1.18723.2.6.1.1.4.1 through 1.3.6.1.4.1.18723.2.6.1.1.4.10000	sectionPack	Section Packing Yes or No	GET/SET
1.3.6.1.4.1.18723.2.6.1.1.5.1 through 1.3.6.1.4.1.18723.2.6.1.1.5.10000	ipCopy	IP Copy Yes or No	GET/SET
1.3.6.1.4.1.18723.2.6.1.1.6.1 through 1.3.6.1.4.1.18723.2.6.1.1.6.10000	mode	Valid values are 'Normal' or 'TCPtoUDP	GET/SET
1.3.6.1.4.1.18723.2.6.1.1.7.1 through 1.3.6.1.4.1.18723.2.6.1.1.7.10000	port	TCP to UDP port number (1024 - 65,535)	GET/SET
<b>1.3.6.1.4.1.18723.2.7.1</b>	<b>statsTable</b>		
<b>1.3.6.1.4.1.18723.2.7.1.1</b>	<b>statsEntry</b>		
1.3.6.1.4.1.18723.2.7.1.1.1.1 through 1.3.6.1.4.1.18723.2.7.1.1.1.10000	statsIndex	Stats Index	GET
1.3.6.1.4.1.18723.2.7.1.1.2.1 through 1.3.6.1.4.1.18723.2.7.1.1.2.10000	statsName	Route Name	GET
1.3.6.1.4.1.18723.2.7.1.1.3.1 through 1.3.6.1.4.1.18723.2.7.1.1.3.10000	packetRX	Number of Packets Received on Route	GET
1.3.6.1.4.1.18723.2.7.1.1.4.1 through 1.3.6.1.4.1.18723.2.7.1.1.4.10000	packetDrop	Number of Packets Dropped on Route	GET
1.3.6.1.4.1.18723.2.7.1.1.5.1 through 1.3.6.1.4.1.18723.2.7.1.1.5.10000	minBW	Minimum Bandwidth on Route	GET
1.3.6.1.4.1.18723.2.7.1.1.6.1 through	maxBW	Maximum Bandwidth on	GET

1.3.6.1.4.1.18723.2.7.1.1.6.10000		Route	
1.3.6.1.4.1.18723.2.7.1.1.7.1 through 1.3.6.1.4.1.18723.2.7.1.1.7.10000	avgBW	Average Bandwidth on Route	GET
1.3.6.1.4.1.18723.2.7.1.1.8.1 through 1.3.6.1.4.1.18723.2.7.1.1.8.10000	numPacked	Packets Packed on Route	GET
1.3.6.1.4.1.18723.2.7.2	statsReset	Setting this to a '1' will reset the route statistics for this encapsulator	SET/GET
<b>1.3.6.1.4.1.18723.2.8.1</b>	<b>dniRedunParam</b>		
1.3.6.1.4.1.18723.2.8.2	dniRedunMode	Disabled or Backup or Primary	SET/GET
1.3.6.1.4.1.18723.2.8.3	dniRedunState	Redundancy State	GET
1.3.6.1.4.1.18723.2.8.4	dniRedunOtherIP	IP Address of other unit	GET/SET
1.3.6.1.4.1.18723.2.8.5	dniRedunOtherMac	MAC Address of other unit	GET/SET
<b>1.3.6.1.4.1.18723.2.9.1</b>	<b>dniPSIPParam</b>	<b>PSI Functions</b>	<b>GET</b>
1.3.6.1.4.1.18723.2.9.2	dniPSIEnable	Enable or Disable PSI	GET/SET
1.3.6.1.4.1.18723.2.9.3	dniPSIRate	Rate * .1 Second (1-5)	GET
1.3.6.1.4.1.18723.2.9.4	DniPSIPidBase	PMT PID Base in Hex (0x10 - 0x1FFE)	GET/SET
1.3.6.1.4.1.18723.2.9.5	dniPSItsId	Transport Stream ID (1-65,535)	GET/SET
1.3.6.1.4.1.18723.2.9.6	dniPSInetId	Network ID (1-65,535)	GET/SET
1.3.6.1.4.1.18723.2.9.7	dniPSInirate	NIT Rate in Seconds (1-65,535)	GET/SET
1.3.6.1.4.1.18723.2.9.8	dniPSITabletype	Table Type is MPEG or DVB	GET/SET
1.3.6.1.4.1.18723.2.9.9	dniPSInittype	NIT Type is DVB-C, DVB-S or DVB-T	GET/SET
1.3.6.1.4.1.18723.2.9.100	dniPSIDVBCfreq	DVB-C Frequency (MHz)	GET/SET
1.3.6.1.4.1.18723.2.9.101	dniPSIDVBCsymbol	DVB-C Symbol Rate (MHz)	GET/SET
1.3.6.1.4.1.18723.2.9.102	dniPSIDVBCmodulation	DVB-C Modulation (16 QAM, 32 QAM, 64 QAM, 128 QAM, 256 QAM)	GET/SET
1.3.6.1.4.1.18723.2.9.103	dniPSIDVBCfecinner	DVB-C FEC Inner (1/2, 2/3, 3/4, 5/6, 7/8, 8/9, None)	GET/SET
1.3.6.1.4.1.18723.2.9.104	dniPSIDVBCfecouter	DVB-C FEC Outer (None, Reed Solomon)	GET/SET
1.3.6.1.4.1.18723.2.9.200	dniPSIDVBSfreq	DVB-S Frequency (MHz)	GET/SET
1.3.6.1.4.1.18723.2.9.201	dniPSIDVBSsymbol	DVB-S Symbol Rate (MSPS)	GET/SET
1.3.6.1.4.1.18723.2.9.202	dniPSIDVBSorbital	DVB-S Orbital Position (degrees)	GET/SET
1.3.6.1.4.1.18723.2.9.203	dniPSIDVBSmodulation	DVB-S Modulation (QPSK, 8PSK, 16 QAM)	GET/SET
1.3.6.1.4.1.18723.2.9.204	dniPSIDVBSpolarization	DVB-S polarization (linear-horizontal, linear-vertical, circular-left, circular-right)	GET/SET

1.3.6.1.4.1.18723.2.9.205	dniPSIDVBSfecinner	DVB-C FEC Inner (1/2, 2/3, 3/4, 5/6, 7/8, 8/9, None)	GET/SET
1.3.6.1.4.1.18723.2.9.206	dniPSIDVBSwesteast	DVB-S West/East (East or West)	GET/SET
1.3.6.1.4.1.18723.2.9.300	dniPSIDVBTfreq	DVB-T Frequency (0-42,949,672,950)	GET/SET
1.3.6.1.4.1.18723.2.9.301	dniPSIDVBTbandwidth	DVB-T Bandwidth (6, 7 or 8 MHz)	GET/SET
1.3.6.1.4.1.18723.2.9.302	dniPSIDVBTconstellation	DVB-T Constellation (QPSK, 16 QAM, 64 QAM)	GET/SET
1.3.6.1.4.1.18723.2.9.303	dniPSIDVBThierarchy	DVB-T hierarchy (non-hierarchical, a=1, a=2, a=4)	GET/SET
1.3.6.1.4.1.18723.2.9.304	dniPSIDVBThp	DVB-T Code Rate HP (1/2, 2/3, 3/4, 5/6, 7/8)	GET/SET
1.3.6.1.4.1.18723.2.9.305	dniPSIDVBTlp	DVB-T Code Rate LP (1/2, 2/3, 3/4, 5/6, 7/8)	GET/SET
1.3.6.1.4.1.18723.2.9.306	dniPSIDVBTguardinterval	DVB-T Guard Interval (1/32, 1/16, 1/8, 1/4)	GET/SET
1.3.6.1.4.1.18723.2.9.307	dniPSIDVBTtransmissionmode	DVB-T Transmission Mode (2K, 8K)	GET/SET
1.3.6.1.4.1.18723.2.9.308	dniPSIDVBTotherFrequencyFlag	DVB-T Other Frequency Flag (Yes or No)	GET/SET
<b>1.3.6.1.4.1.18723.2.10.1</b>	<b>dniIGMPParam</b>	<b>IGMP Functions</b>	
1.3.6.1.4.1.18723.2.10.2	dniIGMPEnable	Enable or Disable IGMP	GET/SET
1.3.6.1.4.1.18723.2.10.3	dniIGMPVersion	IGMP Version (1 or 2)	GET/SET
1.3.6.1.4.1.18723.2.10.4	dniIGMPReport	IGMP Reporting Period (10-60 seconds)	GET/SET
<b>1.3.6.1.4.1.18723.2.11.1</b>	<b>dni325MParam</b>	<b>SMPTE 325M Functions</b>	
1.3.6.1.4.1.18723.2.11.2	dni325MEnable	Enable or Disable SMPTE 325M	GET/SET
1.3.6.1.4.1.18723.2.11.3	dni325MPort	325M Listen Port (1024 - 65,535)	GET/SET
1.3.6.1.4.1.18723.2.11.4	dni325MPID	325M Listen PID (0x10 - 0x1FFE)	GET/SET
<b>1.3.6.1.4.1.18723.2.12.1</b>	<b>dniPromiscuousRouteParam</b>	<b>Promiscuous Route Configuration</b>	
1.3.6.1.4.1.18723.2.12.2	dniPromiscuousRouteEnable	Enable (Yes or No)	GET/SET
1.3.6.1.4.1.18723.2.12.3	dniPromiscuousRoutePid	PID in hex (0x0010-0x1ffe)	GET/SET
1.3.6.1.4.1.18723.2.12.4	dniPromiscuousRouteSectionPack	Section pack (Yes or No)	GET/SET
1.3.6.1.4.1.18723.2.12.5	dniPromiscuousRouteGuaranteedBandwidth	Guaranteed bandwidth in Mbps	GET/SET
1.3.6.1.4.1.18723.2.12.6	dniPromiscuousRouteMaximumBandwidth	Maximum bandwidth in Mbps	GET/SET
1.3.6.1.4.1.18723.2.12.7	dniPromiscuousRouteVlan	Route VLAN traffic (Yes or No)	GET/SET
<b>1.3.6.1.4.1.18723.2.13.1</b>	<b>dniAggregateParam</b>	<b>Aggregate Statistics</b>	
1.3.6.1.4.1.18723.2.13.2	dniAggregateRxStats	Received	GET/SET

1.3.6.1.4.1.18723.2.13.3	dniAggregateDropStats	Dropped	GET
1.3.6.1.4.1.18723.2.13.4	dniAggregateEthDrobStats	Ethernet dropped	GET
1.3.6.1.4.1.18723.2.13.5	dniAggregateMinStats	Min	GET
1.3.6.1.4.1.18723.2.13.6	dniAggregateMaxStats	Max	GET
1.3.6.1.4.1.18723.2.13.7	dniAggregateAveStats	Average	GET

The Enterprise Traps are broken down as follows:

Trap Name	Description
dniColdStart	Cold start: The unit is starting up from a down state
dniWarmStart	Warm Start: The unit is recovering from a reset incident
dniLinkDown	Link Down: The unit has lost its signal
dniLinkUp	Link Up: The signal has been reestablished
dniAuthFail	Authentication Failure: A message received could not be authenticated
dniMencapSoftwareReset	A reset of the unit has been initiated by a user from the unit's software
dniMencapAlarmDroppingPackets	Alarm indicating that the encapsulator is dropping packets
dniMencapAlarmClearedPackets	The encapsulator is no longer dropping packets
dniMencapRedundancyPrimaryOn	The primary encapsulator is now online
dniMencapRedundancyBackupOn	The backup encapsulator is now online

## Required SNMP Information for Configuring the Digicast MENCAP Product

To set up the Digicast MENCAP IP Encapsulator for SNMP, the following information must be known:

1. What version of SNMP is desired?	<input type="checkbox"/> SNMPv1 <input type="checkbox"/> SNMPv2c <input type="checkbox"/> SNMPv3 (Not Supported)
2. What SNMP Manager will be used (informational only)?	_____
3. What is the IP address of the SNMP Manager?	____.____.____.____
4. What is the desired R/O Community String?	_____
5. What is the desired R/W Community String?	_____

# Setting up the Digicast MENCAP Product for SNMP

The information gathered in the previous section allows the user to enter the proper parameters into the Digicast MENCAP IP Encapsulator product to make it operational via the Web interface.

Comtech EF Data										
Digicast CME-5100										
<a href="#">Home</a>	<a href="#">Admin</a>	<a href="#">Network</a>	<a href="#">Egress</a>	<a href="#">PSI</a>	<a href="#">SMPTE-325M</a>	<a href="#">Routing</a>	<a href="#">Advanced Routing</a>	<a href="#">IGMP</a>	<a href="#">Redundancy</a>	<a href="#">Stats</a>

Administrative Configuration	
Unit Name:*	<input type="text" value="ME3"/>
OS Version:	eCOS 2.0
App Version:	1.7.2a13
FPGA Version:	2003.11.11 (ASD)
User Name:*	<input type="text" value="dni"/>
Password:*	<input type="password"/>
Confirm Password:*	<input type="password"/>
System Contact:*	<input type="text" value="www.digicastnet.com"/>
System Location:*	<input type="text" value="comtech"/>
SNMP R/O Community:*	<input type="text"/>
SNMP R/W Community:*	<input type="text"/>
SNMP server IP address:*	<input type="text" value="192.168.141.13"/>
Enable Telnet:*	<input checked="" type="checkbox"/>
Enforce QoS Egress BW Rules:*	<input checked="" type="checkbox"/>
<input type="button" value="Submit"/> <input type="button" value="Cancel"/> <input type="button" value="Save Config"/>	
Enter settings, press submit to make changes	
* Indicates a required field	

Update Firmware	
Unit TFTP Server IP Address:*	<input type="text"/>
Image Type:*	<input type="text" value="Application"/>
Enter server IP and select type, then press submit to make changes	
* Indicates a required field	
<input type="button" value="Update"/> <input type="button" value="Reset Unit"/>	

There are three values that must be enabled to fully utilize all of the SNMP capabilities of the Encapsulator:

**SNMP R/W Community:** The community string provided for reading and writing to the private MIB elements on the agent. The SNMP R/W Community is a value that can be entered into the Web interface, but cannot be read back - the value entered will not be displayed to the user when entering the information or displaying the Web page. The default value for this field is "private".

**SNMP R/O Community:** The community string provided for reading the private MIB elements on the agent. The SNMP R/O Community is a value that can be entered into the Web interface, but cannot be read back – the value entered will not be displayed to the user when entering the information or displaying the Web page. The default value for this field is "public".

**SNMP Server IP Address:** The IP address of the SNMP server where the agent directs traps.

## Conclusion

Setting up the Digicast MENCAP IP Encapsulator product is simple to accomplish, but a minimum number of parameters must be known. Once the unit is configured, the unit should continue to operate for many years with little to no user intervention. Should you require assistance in configuring the product, please contact Comtech EF Data Customer Support Center at:

Telephone: +1.480.333.2433  
Web: <http://www.comtechedata.com/support.asp>  
E-mail: [cdmipsupport@comtechedata.com](mailto:cdmipsupport@comtechedata.com)