CHAPTER 2

Enterprise-Specific MIB

When you use the enterprise-specific MIB, it is important to understand the FastHub hardware configuration terminology. The FastHub is a stackable repeater system supporting hot-insertable repeater enclosures called *units*. A FastHub base unit has a group of 16 100BaseT ports. Each base unit can accept hot-insertable *modules*. There are two modules: the network management module (NMM) and the 100BaseTX/16 port expansion module. The NMM is also known as the Supervisor. The base group of ports and the 100BaseTX/16 port expansion module ports are each equivalent to an RFC-1516 group of ports.

When FastHub units are *interconnected* using the expansion cable, all units appear to the rest of the network and to the NMM as one single logical repeater. You need one NMM per four interconnected units (hub stack). A second NMM can be installed to serve as a backup to the primary NMM.

When one FastHub is *cascaded* to another FastHub through the 100BaseT ports, using a Category 5 UTP straight-through or multimode fiber-optic cable, the two units appear to the rest of the network as two logical repeaters. You need one NMM per unit.

The enterprise-specific MIB allows you to access unique features and management functions described in this chapter. The enterprise-specific MIB complements the standard RFC-1516 Repeater MIB. Enterprise-specific MIB objects are divided into the following groups:

- mrStack
- mrSupervisorLog
- mrRemotePowerSupply
- mrStackUnit
- mrNetMgmt
- mrUpgrade

mrStack

The mrStack group manages the stackable functionalities of the FastHub.

mrStackUnitCapacity (integer)

This read-only MIB object displays the maximum number of units that can be stacked (interconnected) in the system and managed as one logical repeater.

Default Value: 4

mrStackNumberofUnitsPresent (integer)

This read-only MIB object displays the current number of units in the hub stack.

Default Value: 1

mrStackSelectPrimarySupervisorUnit (integer)

In a multi-unit hub stack with more than one Supervisor module (NMM) installed, this object selects which unit, and hence, which Supervisor module, should have the primary management role. The value specified is a unit number that corresponds to an integer index into the mrStackUnitTable. Once a primary management unit has been chosen, the remaining Supervisor modules, if any, automatically assume the standby role.

Default Value: Unit index where primary NMM is located.

mrStackPOSTSelect (integer)

This read-write MIB object sets the type of NMM power-on self-test (POST) that runs at power up. Setting this object to normal (1) runs the complete (and lengthy) version of the POST. The abbreviated (2) setting shortens some of the RAM tests, reducing the startup time.

Valid Values: Normal (1)

	Abbreviated	(2)
Default Value:	Normal	(1)

mrStackReset (integer)

Setting this read-write MIB object to reset (1) causes a complete reset of the FastHub hardware and the NMM, but does not run the POST. All FastHub configuration parameters are retained, and all network related statistics in the system are cleared. Setting this object to noReset (2) has no effect.

Valid Values:	Reset	(1)
	NoReset	(2)
Default Value:	NoReset	(2)

mrStackDefaultReset (integer)

Setting this read-write MIB object to reset (1) causes a complete reset of the FastHub hardware and the NMM, but does not run the POST. All FastHub configuration parameters revert to their default factory settings, and all network related statistics in the system are cleared. Setting this object to noReset (2) has no effect.

Valid Values:	Reset	(1)
	NoReset	(2)
Default Value:	NoReset	(2)

mrStackClearStatistics (integer)

Setting this read-write MIB object to clear (1) resets all network related statistics to zero. Interface statistics are kept in the various interface transmission MIBs and RMON MIB. Setting this object to noClear (2) results in no action.

Valid Values:	clear	(1)
	noClear	(2)
Default Value:	noClear	(2)

mrSupervisorLog

The FastHub implements a system log containing entries for system state changes, user console access, and unusual events detected by the NMM SNMP agent.

mrSupervisorClearLogTable (integer)

Setting this read-write MIB object to clear (1) clears all current entries in the mrSupervisorLogTable. Subsequent attempts to clear the table result in noSuchName (if there are no newly created entries after the clear action). Setting to noClear (1) results in no action.

Valid Values:	clear	(1)
	noClear	(2)
Default Value:	noClear	(2)

mrSupervisorLogTable

The mrSupervisorLogTable provides read access to the supervisor log. Each table entry, identified by a unique index, holds one DisplayString object containing the logged information. The entire table can be retrieved one entry at a time using the get-next operation. The table can be cleared using the object sysConfigClearLogTable.

mrSupervisorLogIndex (integer)

A read-only value identifying a unique entry in the mrSupervisorLogTable.

mrSupervisorLogTime (DisplayString)

A read-only text string displaying the date and time this log entry was created.

mrSupervisorLogInfo (DisplayString)

A read-only free-formatted display string displaying descriptive text about a specific system state change.

mrStackUnit

Each FastHub unit houses one or more groups of repeater ports as described in RFC 1516. The mrStackUnitTable describes the units and identifies their associated RFC-1516 groups. Also included in mrStackUnit are objects that provide status information about a redundant power supply (RPS).

mrStackUnitTable

mrStackUnitIndex (integer)

This read-only MIB object displays the unit ID of a physical unit in the hub stack.

MrStackUnitPresent (integer)

This read-only MIB object displays true (1) if the unit identified by mrStackUnitIndex is present in the hub stack. Otherwise, the object displays false (2).

Valid Values:	true	(1)
	false	(2)
Default Value:	false	(2)

mrStackUnitFirstGroupIndex (integer)

This read-only MIB object displays a value corresponding to an RFC-1516 group index. It identifies the first of the one or more repeater groups present in this unit. All groups belonging to the same FastHub unit are indexed using consecutive integer values.

mrStackUnitLastGroupIndex (integer)

This read-only MIB object displays a value corresponding to an RFC-1516 group index. It identifies the last of the one or more repeater groups present in this unit. All groups belonging to the same FastHub unit are indexed using consecutive integer values.

mrStackUnitSupervisorPresent (integer)

This read-only MIB object displays true (1) if an NMM is installed in the unit. The object displays false (2) if the unit does not have an NMM.

Valid Values:	true	(1)
	false	(2)
Default Value:	false	(2)

mrStackUnitSupervisorMajorVersion (integer)

This read-only MIB object displays the major firmware version number of the NMM. This object displays 0 if the unit does not have an NMM.

Default Value: 0

mrStackUnitSupervisorMinorVersion (integer)

This read-only MIB object displays the minor firmware version number of the NMM. This object displays 0 if the unit does not have an NMM.

Default Value: 0

mrStackUnitSupervisorBootstrapMajorVersion (integer)

This read-only MIB object displays the major bootstrap version number of the NMM. This object displays 0 if the unit does not have an NMM.

Default Value: 0

mrStackUnitSupervisorBootstrapMinorVersion (integer)

This read-only MIB object displays the minor bootstrap version number of the NMM. This object returns 0 if the unit does not have an NMM.

Default Value: 0

mrStackUnitPOSTResult (octet string)

This read-only MIB object displays a bit array in which the presence of a particular bit indicates the failure of a particular POST. Each octet within the value of this object specifies a set of eight POST tests: the first octet specifies tests 1 through 8, the second octet specifies tests 9 through 16, and so on. Within each octet, the most significant bit represents the lowest numbered test, and the least significant bit represents the highest numbered test. Thus, each POST test is represented by a single bit within the value of this object. If that bit has a value of 1, then that test has failed. The test has passed if the bit has a value of 0.

Test Number	POST Test
1	CPU RAM
2	console port
3	Ethernet address
4	timer interrupt
5	real-time clock
6	nonvolatile RAM (NVRAM)
7	Supergator RAM

8	Supergator address RAM	
9	port loopback	
Default Value:	string of length 0	

mrStackUnitSupervisorIsPrimary (integer)

This read-only MIB object displays a false (2) if there is no NMM installed. If the current unit has an NMM installed (mrStackUnitSupervisorPresent is true), this object indicates whether the NMM is acting as the primary management Supervisor.

Valid Values:	true	(1)
	false	(2)
Default Value:	false	(2)

mrStackUnitExpansionModulePresent (integer)

This read-only MIB object displays true (1) if a port expansion module is installed in the unit. This object displays false (2) if the unit does not have a port expansion module.

Valid Values:	true	(1)
	false	(2)
Default Value:	false	(2)

mrStackUnitPortVisualIndicatorSelect (integer)

This read-only MIB object displays what is currently selected as the port LEDs indication mode. The portStatus (1) mode uses the port LEDs to indicate port link and activity status. The unitNumber (2) mode shows the position of the unit in the stack (the unit number). The utilization (3) mode uses the port LEDs to display the hub or hub stack bandwidth utilization.

Valid Values:	portStatus	(1)

	unitNumber	(2)
	utilization	(3)
Default Value:	portStatus	(1)

mrStackUnitBasePortVisualIndicatorGreenMap (octet string)

This read-only MIB object displays a bit array where the presence of a particular bit indicates that a green port LED is on.

Each octet within the value of this object specifies a set of eight port LEDs: the first octet specifies LEDs for ports 1 through 8, the second octet specifies LEDs 9 through 16, and so on. Within each octet, the most significant bit represents the lowest numbered LED, and the least significant bit represents the highest numbered LED. Thus, each LED is represented by a single bit within the value of this object.The LED is on if the bit has a value of 1; the LED is off if its bit value is 0.

Default Value: String of length 0

mrStackUnitBasePortVisualIndicatorAmberMap (octet string)

This read-only MIB object displays a bit array where the presence of a particular bit indicates that an amber port LED is on.

Each octet within the value of this object specifies a set of eight port LEDs: the first octet specifies LEDs for ports 1 through 8, the second octet specifies LEDs 9 through 16, and so on. Within each octet, the most significant bit represents the lowest numbered LED, and the least significant bit represents the highest numbered LED. Thus, each LED is represented by a single bit within the value of this object.The LED is on if the bit has a value of 1; the LED is off if its bit value is 0.

Default Value: String of length 0

mrStackUnitExpansionPortVisualIndicatorGreenMap (octet string)

This read-only MIB object displays a bit array where the presence of a particular bit indicates that a green port LED is on for a port on the port expansion module.

Each octet within the value of this object specifies a set of eight port LEDs: the first octet specifies LEDs for ports 1 through 8, the second octet specifies LEDs 9 through 16, and so on. Within each octet, the most significant bit represents the lowest numbered LED, and the least significant bit represents the highest numbered LED. Thus, each LED is represented by a single bit within the value of this object.The LED is on if the bit has a value of 1; the LED is off if its bit value is 0.

Default Value: String of length 0

mrStackUnitExpansionPortVisualIndicatorAmberMap (octet string)

This read-only MIB object displays a bit array where the presence of a particular bit indicates that an amber port LED is on for a port on the port expansion module.

Each octet within the value of this object specifies a set of eight port LEDs: the first octet specifies LEDs for ports 1 through 8, the second octet specifies LEDs 9 through 16, and so on. Within each octet, the most significant bit represents the lowest numbered LED, and the least significant bit represents the highest numbered LED. Thus, each LED is represented by a single bit within the value of this object. The LED is on if the bit has a value of 1; the LED is off if its bit value is 0.

Default Value: String of length 0

mrStackUnitActivityVisualIndicator (integer)

This read-only MIB object displays the value true (1) when the unit's group activity LED is on. Otherwise, it has the value false (2).

Valid Values:	true	(1)
	false	(2)
Default Value:	false	(2)

mrStackUnitCollisionVisualIndicator (integer)

This read-only MIB object displays the value true (1) when the unit's group collision LED is on. Otherwise, it has the value false (2).

Valid Values:	true	(1)
	false	(2)
Default Value:	false	(2)

mrStackUnitRpsStatus (integer)

This read-only MIB object displays the status of the redundant power supply (RPS) connected to the unit. This MIB object returns notPresent (1) when there is no RPS connected to the unit. It returns connectedFunctional (2) if there is an RPS supplying power to the unit. It returns connectedNotFunctional (3) if the RPS is connected but down. It returns functionalPrimaryFailed (4) if the internal power supply failed and the RPS is supplying power to the unit.

Valid Values:	notPresent	(1)
	connectedFunctional	(2)
	connectedNotFunctional	(3)
	functionalPrimaryFailed	(4)
Default Value:	notPresent	(1)

mrStackUnitRPSVisualIndicator (integer)

This read-only MIB object has one of the following values:

Valid Values:	off	(1)	no RPS present
	green	(2)	RPS healthy
	amber	(3)	RPS not healthy
Initial Value:	off	(1)	

mrNetMgmt

Objects related to the use and control of the FastHub NMM SNMP agent in-band and out-of-band management functions are defined in this group. These include the mrNetMgmtSetClientTable, which contains the Set Client IP address list, and the mrNetMgmtTrapClientTable, which configures the IP addresses and SNMP community strings for the management workstations that receive and process traps.

mrNetMgmt scalars

mrNetMgmtIpAddress (IpAddress)

This read-write MIB object specifies the NMM IP address. The FastHub can automatically discover a value for this object using BOOTP, DHCP, or RARP. The object value is also duplicated in the MIB-II ipAddrTable. A write to this object takes effect immediately, replacing the previous address, if any.

Default Value: 0.0.0.0 or no address

mrNetMgmtIpSubnetMask (IpAddress)

This read-write MIB object specifies the NMM IP subnet mask. The firmware can automatically discover a value for this object using BOOTP, DHCP, or RARP. The object value is also duplicated in the MIB-II ipAddrTable. A write to this object takes effect immediately, replacing the previous subnet mask, if any.

Default Value: 0.0.0.0 or no mask

mrNetMgmtDefaultGateway (IpAddress)

This read-write MIB object specifies the IP address of a default gateway. A write to this object takes effect immediately, replacing the previous address, if any.

Default Value: 0.0.0.0 or no gateway address

mrNetMgmtEnableAuthenTraps (integer)

This read-write MIB object specifies whether the SNMP agent is allowed to generate authenticationFailure traps. The value of this object overrides any configuration information; as such, it provides a means whereby all authenticationFailure traps can be disabled (2). This object manipulates the same value for the MIB-II snmpEnableAuthenTraps object instance.

Valid Values:	enabled	(1)
	disabled	(2)
Default Value:	enabled	(1)

mrNetMgmtEnableRIP (integer)

This read-write MIB object specifies whether the NMM SNMP agent runs the Routing Information Protocol listener to automatically discover IP gateways.

Valid Values:	enabled	(1)
	disabled	(2)
Default Value:	enabled	(1)

mrNetMgmtConsoleInactTime (integer [0 to 65500])

This read-write MIB object specifies the number of seconds (minimum of 30) that the management console can go with no activity before ending a session. Once a session has ended, you must reenter the management console password to regain access. A value of zero indicates no timeout.

Default Value: 0

mrNetMgmtConsolePasswordThreshold (integer [0 to 65500])

This read-write MIB object specifies the number of consecutive invalid password attempts allowed before the management console is shut down for a configured duration. A zero value permits unlimited attempts.

Default Value: 3

mrNetMgmtConsoleSilentTime (integer [0 to 65500])

This read-write MIB object specifies the number of minutes during which the management console is unavailable after repeated failed attempts to log on. A zero value specifies no silent time.

Default Value: 0

mrNetMgmtModemInitString (octet string)

This read-write MIB object specifies a string of up to 48 characters to configure a modem connected to the RS-232 port. Specify this string if the modem is not Hayes-compatible. Only the initialization commands need to be specified (that is, do not specify any modem prefix string, such as the AT attention sequence, or any suffix, such as the CR character). This string takes effect after every line hang-up.

Default Value: String of length 0

mrNetMgmtModemDialString (octet string)

This read-write MIB object specifies a string of up to 48 characters used to establish a modem connection with a remote site. Only the phone number needs be specified (that is, do not specify any dial prefix string such as ATDT). Leave this string empty (the default value) if the dial-out capability is not desired. This string takes effect after every line hang-up.

Default Value: String of length 0

mrNetMgmtModemDialDelay (integer [0 to 65500])

This read-write MIB object specifies a delay in seconds between every dial-out failure. The value zero indicates an infinite delay (no retry after the first failure). Normally, the FastHub attempts a dial-out if the mrNetMgmtModemDialString object is non-empty. If the dial-out fails and auto-answer is disabled on this system, the firmware retries the dial-out after this delay has passed. If auto-answer is enabled and the first dial-out attempt fails, the system immediately goes into auto-answer mode.

Default Value: 300

mrNetMgmtModemAutoAnswer (integer)

This read-write MIB object specifies whether the system should be in auto-answer mode and only accept incoming calls.

Note The system always attempts a dial-out first if mrNetMgmtModemDialString is non-empty.

Valid Values:	enabled	(1)
	disabled	(2)
Default Value:	enabled	(1)

mrNetMgmtDomainServer1IPAddress

This read-write MIB object specifies the IP address of a domain name server that the FastHub uses to resolve domain names to IP addresses. A set on this object takes effect the next time the FastHub has to resolve a domain name.

Default Value: 0.0.0.0 or no address

mrNetMgmtDomainServer2IPAddress

This read-write MIB object specifies the second IP address of a domain name server that the FastHub uses to resolve domain names to IP addresses. A set on this object takes effect the next time the FastHub has to resolve a domain name.

Default Value: 0.0.0.0 or no address

mrNetMgmtDefaultSearchDomain

This read-write MIB object specifies a string of up to 63 characters to identify a default domain search path. When the FastHub needs to resolve a domain name that is not fully specified, it appends this default domain path to the name and continues the resolution attempt.

Default Value: String of length 0

mrNetMgmtSetClientTable

A table of four entries, each containing the name or IP address of a management workstation permitted to issue Set requests. Such a management workstation is called a Set Client. The table is considered empty when all names or addresses are empty (the default), in which case, any Set request with a valid Set community string is allowed. If at least one name or address is specified, an incoming Set request must match its source IP address with one of the addresses in the table before the Set is allowed.

mrNetMgmtSetClientIndex (integer [1 to 4])

This read-only MIB object displays the identifier of a particular table entry.

mrNetMgmtSetClientName (DisplayString)

This read-write MIB object specifies the Set Client name or IP address.

Default Value: String of length 0

mrNetMgmtSetClientStatus (integer)

Setting this read-write MIB object to the value invalid (2) invalidates the corresponding entry. That is, it disassociates the name or IP address identified with the entry from the table. It is an implementation-specific matter as to whether the agent removes an invalidated entry from the table. Accordingly, management workstations must be prepared to receive tabular information from agents that corresponds to entries not currently in use.

Valid Values:	other	(1)	none of the following
	invalid	(2)	an invalid entry
	permanent	(3)	a valid entry that is in use
Default Value:	permanent	(3)	

mrNetMgmtTrapClientTable

A table of four entries containing a list of management workstations that are to receive traps generated from this agent. Such management workstations are called trap clients. An entry having an empty name or address or an empty community string is considered invalid and is ignored.

mrNetMgmtTrapClientIndex (integer [1 to 4])

This read-only MIB object displays the identifier of a particular table entry.

mrNetMgmtTrapClientName (DisplayString)

This read-write MIB object specifies the trap client's name or IP address.

Default Value: String of length 0

mrNetMgmtTrapClientComm (text string)

This read-write MIB object specifies the community string (up to 32 characters) used for traps sent to this trap client.

Default Value: String of length 0

mrNetMgmtTrapClientStatus (integer)

Setting this read-write MIB object to the value invalid (2) invalidates the corresponding entry. That is, it disassociates the name or community string identified with that entry from the table. It is an implementation-specific matter as to whether the agent removes an invalidated entry from the table. Accordingly, management workstations must be prepared to receive tabular information from agents that corresponds to entries not currently in use.

Valid Values:	other	(1)	none of the following
	invalid	(2)	an invalid entry
	permanent	(3)	a valid entry that is in use
Default Value:	permanent	(3)	

mrUpgrade

The mrUpgrade group controls and monitors all FastHub in-band firmware upgrade operations. It also provides information about the flash read-write nonvolatile memory (FLASH) containing the primary NMM firmware.

mrUpgradeFlashSize (integer)

This read-only MIB object displays the size in kilobytes of FLASH memory installed in the system. For example: 128 equals 131, 072 bytes (128 x 1024 bytes).

Default Value: 1024 (one megabyte)

mrUpgradeLastUpgradeTime (text string [0 to 80])

This read-only MIB object displays a string containing the date and time of the last upgrade of the primary NMM firmware. The string is in NetASCII and conforms to the following format:

```
'Wed Dec 27 15:19:15 1995'
```

Default Value: String of length 0

mrUpgradeLastUpgradeSource (IpAddress)

This read-only MIB object displays the IP address of the TFTP server or client that last sent an NMM firmware image to upgrade the FLASH memory contents. If the last upgrade was from the NMM console port, this object contains 0.0.0.0.

Default Value: 0.0.0.0

mrUpgradeLastUpgradeStatus (integer)

This read-only MIB object provides the status of the last upgrade.

Valid Values:	none	(1)	no upgrade has been done
	inProgress	(2)	upgrade still in progress
	success	(3)	last upgrade was successful
	failure	(4)	last upgrade failed
Default Value:	none (1)	(1)	

mrUpgradeTFTPServerAddress (text string)

This read-write MIB object specifies the TFTP server from which a firmware file can be downloaded using the built-in TFTP protocol. This is the in-band, FastHub-directed upgrade method. Initiate the download by setting the mrUpgradeTFTPInitiate to upgrade (1) or by using the out-of-band management Firmware Menu.

If the first non-blank character in mrUpgradeTFTPServerAddress is a NetASCII numeral, the name is assumed to be an IP address. Otherwise, the name is assumed to be a fully qualified Domain Name Server (DNS) name, and the DNS protocol resolves it to an IP address.

Default Value: String of length 0

mrUpgradeTFTPLoadFilename (text string [0 to 80])

This read-write MIB object specifies the name of the file containing a firmware upgrade image on the host whose address is given by mrUpgradeTFTPServerAddress.

Default Value: String of length 0

mrUpgradeTFTPInitiate (integer)

Setting this read-write MIB object to upgrade (1) causes the FastHub to download a firmware file with the name given by mrUpgradeTFTPLoadFilename from the server with the address given by mrUpgradeTFTPServerAddress. For the upgrade to proceed, both mrUpgradeTFTPServerAddress and mrUpgradeTFTPLoadFilename must not be empty. When read, the object always returns noUpgrade (2). Setting this object to noUpgrade (2) results in no action.

Valid Values:	upgrade	(1)
	noUpgrade	(2)
Default Value:	noUpgrade	(2)

mrUpgradeTFTPAccept (integer)

This read-write MIB object enables or disables TFTP write requests. When disabled (2), the FastHub refuses TFTP write requests from management workstations. When enabled (1), you can use the TFTP protocol to send a firmware file to upgrade the current primary NMM firmware. This is the in-band, workstation-directed upgrade method.

Valid Values:	enabled	(1)
	disabled	(2)
Default Value:	enabled	(1)

Enterprise-Specific Traps

logonIntruder

A user is repeatedly trying to log on to the management console using an invalid password. The number of attempts exceeds the preset limit given in mrNetMgmtConsolePasswordThreshold. Depending on how the object mrNetMgmtConsoleSilentTime is configured, the FastHub can shut down the management console following the generation of this trap.

hubStackDiagnostic

The FastHub issues this trap when its POST code does not pass all tests. Some failures are catastrophic and can prevent the generation of this trap.

powerSupplyFailure

The PowerSupplyFailure trap is issued when either the FastHub internal power supply or the RPS fails.

ipAddressChange

The ipAddressChange trap is issued when the FastHub NMM SNMP agent is unable to complete its DHCPDISCOVER/DHCPREQUEST process, when it fails to extend the lease for the current address, or when it accepts an address change from the user.