E3 Optical Multiplexer SNMP Agent Description



General

The installed on the multiplexer SNMP agent allows the monitoring of the equipment through an Ethernet connection.

List of abbreviations

AIS	Alarm Indication Signal
FAS	Frame Alignment Signal
LOF	Loss Of Frame alignment signal
LOMF	Loss Of MultiFrame alignment signal
LOOP	Parasitic LOOPback detected
LOS	Loss Of input Signal
RAI	Remote Alarm Indication signal
TI	Trace Identifier
TIM	Trace Identification Mismatch

Additional features

In ECoCoMS' E3 optical multiplexer additional features are included. These features are obtained by using bit 12 of E3 FAS (reserved for national use) and organizing a multiframe over it. In the multiframe both equipment – the local one and the remote one, can exchange information which allows to:

- 1. Monitor the remote E3 interface from the local host;
- 2. Monitor the remote E1 interfaces from the local host;
- 3. View bit errors on the local and remote E3 interfaces from the local host;
- 4. Insert trace identifiers to the local and remote equipment;
- 5. Compare the expected TI with the received TI and generate TIM alarm;
- 6. Detect LOOP if the received TI is equal to the transmitted TI.

The monitoring of the remote unit reduces the number of trap receiver IP addresses.

The detection of parasitic loopback gives the advantage of the ECoCoMS' E3 optical multiplexer to operate over single fiber using a simple optical splitter.

Description

Initially the units are configured with the following IP address: 192.168.10.1 or 192.168.10.2. To establish your first connection to the unit you have to configure your network connection in the following way, for example:

Internet Protocol (TCP/IP) Properties 🛛 🔹 💽									
General									
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.									
🔘 Obtain an IP address automaticall	y								
• Use the following IP address:									
IP address:	192.168.10.3								
Subnet mask:	255.255.255.0								
Default gateway:	192.168.10.10								

Please, make sure that no other devices in your network have the same IP addresses, or for the initial setup of the unit connect only one single computer to its LAN port.

After this you have to download the file **e3control.mib** from ECoCoMS website following the link http://www.ecocoms.com/home/bg/services/software#e3/o-mib.

Then you have to copy this file in the appropriate directory of your SNMP based Network Management System.

An example of how to proceed further is given using iReasoning MIB Browser. At startup the browser shows the following:

🍀 iReasoning MIB Browser									
File	Edit	Operatio	ns	Tools	Help				
. 8	🛛 Lo	ad MIBs	Ctr	1+L					
	Un	Load MIBs	;						
4	🌲 Ex	it							

Here you have to load **e3control.mib**, which is already in the directory named **mibs** of this browser main directory.

🍪 i	Reasoning MIB B	Browser
File	Edit Operations	Tools Help
Addres	ss:	
SNMP	MIBs	
	MIB Tree	
	🍪 Open	
	Look in:	: 📔 mibs 💌 🦻 📁 📰 📰
		📻 e3control.mib 📻 eco_o
	My Recent	<) >
	Documents	File name: ontrol.mib Open
		Files of type: All 🗸 Cancel

Step 1: Now you are ready to enter the IP address of the unit to be monitored, as shown below:

🤪 iReasoning MIB B	rowser				— Type 192.168.10.1 here, and
File Edit Operations	Tools Help				<pre>pres Advanced button</pre>
Address: 192.168.10.1			~	Advanced.	
SNMP MIBs				Result Tabl	
MIB Tree					
Ecocoms.iso.org.d	od.internet.private.er	nterprises.ecocoms.embedded.	.op		
uer e3	😽 Advanced				
🕀 🦳 e1					
🗉 🧰 errors	Address	192.168.10.1			
🗄 🗠 🧰 setup	Port	161			Type public here
	Read Community	•••••			Type private here
	Write Community	••••••			- Set SNMP version to 1
	SNMP Version	1 ~			
	SNMPv3				
	USM User				
	Auth Alogrithm	MD5			
	Auth Password				
	Privacy Alogrithm	DES			
	Privacy Password				
	Context Name				
		Ok Cancel			

Step 2: Now you can proceed to setup the unit according to its further connection in your NMS. Open the setup tree:

🍪 iReasoning MIB Browser	
File Edit Operations Tools Help	
Address: 192.168.10.1	r F
SNMP MIBs	F
MIB Tree	
🚊 🗁 🗁 Ecocoms.iso.org.dod.internet.private.enterprises.ecocoms.embedded.opl	
🖶 🗁 product	
👜 🛅 e3	
🕀 — 🛅 e1	
🖶 🗝 🛅 errors	
😑 🗁 setup	
- · ·	

You can check your connectivity by right mouse button on host IP and selecting Get

🍓 iReas	oning M	lB Browser										
File Edit	Operatio	ns Tools Help	u	7					~			
Address: 19	2.168.10.	1	~	Advanced	OID:	.1.3.6.1.4.1.19424.1.167.5.1	л 🗸 (Operations:	Get Next	~	~	Go
SNMP MIBs				Result Table	i ii	1						
MIB TI 	ree coms.iso.o product e3 e1 errors setup	rg.dod.internet.p a Find in subtree	private.ent		N	ame/OID			Value			¥1 □ ●
	😑 gat	Expand subtree										
	🔶 res	Graph View	Ctrl+R									
	😑 trap	Get	Ctrl+G									
		Get Next	Ctrl+N									
<	100	Get Subtree	Ctrl+E									
Name	hostIP	Set	Ctrl+S									
OID	.1.3.6	Walk	Ctrl+W									
Syntax	IpAddr	Table View	Ctrl+T									
Access	read-write	e										
Status Defval	mandato	ry										

You should get the default IP address of the unit: 192.168.10.1. If you do not get it, please repeat thoroughly everything from the beginning of the description.

In the same manner selecting Set you can setup the desired new IP address of the unit.

😸 iReas	oning MI	B Browser										
File Edit	Operatio	ns Tools Help			-						-	
Address: 19	2.168.10.	1	~	Advanced	OID:	.1.3.6.1.4.1.19424.1.167.5.1.	•	Operations:	Get Next	~	ø	Go
SNMP MIBs				Result Table								
MIB Tree Cocoms.iso.org.dod.internet.private.ent Cocoms.iso.org.dod.internet					N	iame/OID			Value			× •
	 trap resi 	Graph View	Ctrl+R	-								
	- trap	Get Next	Ctrl+N									
<	100	Get Subtree	Ctrl+E									
Name	hostIP	Set	Ctrl+S									
OID	.1.3.6	Walk	Ctrl+W									
Syntax	IpAddr	Table View	Ctrl+T									
Access	read-writ	e .v										

For example typing 10.10.10 in the Value of the SNMP SET

😵 iReas	oning MIB Brov	wser										
File Edit	Operations Too	ols Help										
Address: 19	92.168.10.1		~	Advanced	OID:	.1.3.6.1.4.1.19424.1.167.5.1	,I 🗸	Operations:	Get Next			
SNMP MIBs				Result Table	э	1						
MIB T	'ree coms iso ora dod i	oternet orivati	e ent		N	• ame/OID			Value			
i u u u u u u u u u u u u u u u u u u u	product	ncomocipiirad	oronic									
÷	e3											
÷	e1											
÷	errors	-										
÷	setup	😸 SNMP S	SET									
	hostIP		200012						_			
		OTD	1.2	6 1 4 1 19424 1 167 5 1 0								
	gateIP	010	.1.5.	.0.1.4.1.19424.1.107.3.1.0								
	trapReciever.	Data Type	Ip Ac	ddress 🛛 😪								
		Value	10.1	0.10.10								
9.550	. 🔶 crap-ueiay	Valac	10.1	5.10.10			_					
					_				-			
						Ok Cancel						
Name	hostIP		_									
OID	.1.3.6.1.4.1.19424.1.167.5.1											
Syntax	/ntax IpAddress											
Access	ess read-write											
Status	mandatory											
DefVal												

This value of the hostIP address is only an example - you can type any valid IP address in this field. After that you shall type the same address in the browser **Address** and repeat the described in Step 1.

👶 iRea	soning l	MIB Browser										
File Edit	: Operat	tions Tools He	lp	-						<i></i>		_
Address: 1	92.168.1	0.1	~	Advanced	OID:	1.3.6.1.4.1.19424	1.1.167.5.3.0	~	Operations:	Get Next	~	G
SNMP MIB	s			Result Table	е							
	Tree ocoms.iso product e3 e1 errors setup	.org.dod.internet tIP	private.ent		N	iame/OID	1			Value		
		Find in subtree Expand subtree	e celup									
<	400	Get Get Next	Ctrl+G Ctrl+N									
Name OTD	gateI	Get Subtree	Ctrl+E									
Syntax	IDAdo	Set	Ctrl+S									
Access	read-	Walk	Ctrl+W									
Status DefVal	mand	Table View	Ctrl+T									

Step 3: In the same way you can change the **gateIP** address

And the **trapReceiverIP**, which shall coincide with the IP address of your PC, as shown below:

😣 iReas	oning MIB Browser											
File Edit	Operations Tools Help											
Address: 19	92.168.10.1	Advanced	OID:	1.3.6.1.4.	1.19424.1.	167.5.4.0	~ (Operations:	Get Next	~	G	🕨 Go
SNMP MIBs		Result Tab	e									
	ree coms.iso.org.dod.internet.private.en/ product e3 e1 errors setup bostIP gateIP trapRecieverIP reset trap-delay	OID Data Type Value	N ET .1.3.6. Ip Addi 192.16	Jame/OID 1.4.1.1942 ress 8.10.3	4.1.167.5.	4.0			Value			
<						Car	ncel]				
Name	trapRecieverIP		_								_	
OID	.1.3.6.1.4.1.19424.1.167.5.4											
Syntax	IpAddress											
Access	read-write											

Once everything in the IP connection is settled the monitoring of the unit is in progress. Here some examples of the monitoring possibilities are shown:

😽 iReaso	oning MI	B Browser				
File Edit	Operation	ns Tools Help				
Address: 192	2.168.10.1	l	*	Advanced	OID:	1.3.6.1.4.1.19424.1.167.2.1.
SNMP MIBs				Result Table		
∰ MIB Tr = (=) Ecoc = (=) (= (=) (ee oms.iso.or product e3	g.dod.internet.priv	vate.ent		N	ame/OID
	e3-loc e3-loc e3-loc e3-rei	Find in subtree Expand subtree)			
	😑 e3-rei	Graph View	Ctrl+R	Ł		
	e1	Get	Ctrl+G	5		
÷ 🫅	errors	Get Next	Ctrl+N	J		
: 🗀 ··· ا	setup	Get Subtree	Ctrl+E			
		Set	Ctrl+S	5		
1		Walk	Ctrl+W	v		
		Table View	Ctrl+T			
Name	e3-localSi	atus				
OID	.1.3.6.1.4	4.1.19424.1.167.2	.1			

Getting the status of the E3 interfaces:

😽 iReasoning MIB Browser												
File Edit Operations Tools Help							(c).					
Address: 192.168.10.1	V Adv	Ivanced	OID:	1.3.6.1.4.1.19424	.1.167.2.5.0	~	Operations:	Get Next	*	~		
SNMP MIBs	R	Result Table										
	ant	Name/OID						Value				
Ecocomistisotorg.dod.internet.private	enc e3	e3-localStatus.0					RROR					
	e3	e3-localTI.0										
e3-localStatus	e3	e3-remoteStatus.0					NO_ERROR					
	e3	e3-recievedRemoteTI.0					optb					
	e3	e3-expectedRemoteTI.0				ptb						
e3-expectedRemoteTI												
🗄 🖰 setup												
<	>											
Name e3-expectedRemoteTI												
OID .1.3.6.1.4.1.19424.1.167.2.5												
Syntax DisplayString (SIZE (4))												

You must set up the TI of the units, which can be settled only locally. You dispose of 4 characters to shortly describe your line, and be sure that both units in the point to point connection have different TIs.

🍓 iRea	asoning MIB B	Frowser						
File Edi	it Operations	Tools Help			122	10		
Address:	192.168.10.1	Trap Receiver	OID:	1.3.6.1.4.1.19424.1.167.2.5.0	Operations:	Get Next	~ 6	Þ Go
SNMP MIE	Bs	Trap Sender	э					
MIB	Tree cocoms.iso.ora.c	Ping	N	ame/OID		Value		×
	product	Trace Route						
		Network Discovery						
	e3-localT]	Compare Devices Ctrl+D						
	e3-reciev	Log Window						
	e1 errors	Options						
<u>_</u>	j secup							
<	III)	5						
Name	e3-expected	RemoteTI						

From the Tools menu of the browser you can start the Trap Receiver, as shown:

After shortly interrupting one of the transmission fibres, the following traps arrived:

1. Local Alarm RAI:

🍪 Trap Reco	eiver			\mathbf{X}	×			
Vi 🕨 🥯	*							
Description		Source	Time					
Specific: 6; .iso.o	rg.dod.internet.private.enterprises.ecocoms	192.168.10.1	Fri Oct 05 12:25:34 EEST 2007		-			
Specific: 6; .iso.o	rg.dod.internet.private.enterprises.ecocoms	192.168.10.1	Fri Oct 05 12:25:32 EEST 2007					
Specific: 6; .iso.o	rg.dod.internet.private.enterprises.ecocoms	192.168.10.1	Fri Oct 05 12:25:31 EEST 2007					
Specific:	Ď			<u>^</u>				
Generic:	enterpriseSpecific							
Variable Bin	dings:							
Name: Value:	Name: .iso.org.dod.internet.private.enterprises.ecocoms.embedded.optic-controller.e3.e3-localStatus.0 Value: (Integer)RAI							
				$\mathbf{\mathbf{v}}$				

2. Remote Alarm LOS:

🍪 Trap Re	ceiver							
Vi 🔊	2 2							
Description		Source	Time					
Specific: 6; .iso	.org.dod.internet.private.enterprises.ecocoms	192.168.10.1	Fri Oct 05 12:25:34 EEST 2007					
Specific: 6; .iso	.org.dod.internet.private.enterprises.ecocoms	192.168.10.1	Fri Oct 05 12:25:32 EEST 2007					
Specific: 6; .iso	.org.dod.internet.private.enterprises.ecocoms	192.168.10.1	Fri Oct 05 12:25:31 EEST 2007					
AT								
Generic:	enterpriseSpecific							
Variable Bi	indings:							
Name:	.iso.org.dod.internet.private.enterprises.ecc	ocoms.embedded.optic-(controller.e3.e3- <mark>remoteStatus</mark>	.0				
Value:	Value: (Integer)LOS							
<				>				

3. Remote Excessive Errors (during input signal recovery):

😣 iReasoning	g MIB Browser				
File Edit Oper	rations Tools Help				
Address: 192.168	.10.1	Advanced OID: .1.3.6	5.1.4.1.19424.1.167.5	Operations: Get Next	🖌 🥵 📀
SNMP MIBs		Result Table			
MIB Tree	🁙 Trap Receiver				🔀 🔀
🖶 🗁 produ 🚍 🗝 🧰 e3	📔 🕒				
	Description		Source	Time	
e	Specific: 6; .iso.org.dod.inte	rnet.private.enterprises.ecocon	ns 192,168,10,1	Fri Oct 05 12:25:34 EES	2007
	Specific: 6; .iso.org.dod.inte	rnet.private.enterprises.ecocon	ns 192.168.10.1	Fri Oct 05 12:25:32 EES	f 2007
	Specific: 6; .iso.org.dod.inte	rnet.private.enterprises.ecocon	ns 192.168.10.1	Fri Oct 05 12:25:31 EES	f 2007
⊞…i e1 ⊞…i error: ⊞…i setup	A Departure &				
	specific. 0				
<	Generic: enterpris	eSpecific			
Name setu					
OID .1.3					
Syntax	Variable Bindings:				
Access					
Status	Name: .iso.org.(10d.internet.private.enterpri	ses.ecocoms.embedded.	optic-controller.errors.erc-r	emote.0
DefVal					
	Value: (Integer)	22			
Descr					<u> </u>

Getting the status of the E3 interfaces:

In the same manner the status of the E1 interfaces could bi get. Some illustrative screenshots are given below:

😣 iReas	oning MIB Browser										
File Edit	Operations Tools Help		<i></i>					~			
Address: 19	92.168.10.1	~	Advanced	OID:	.1.3.6.1.4.1.19424.1.167.3	~	Operations:	Get Next	~	<i>~</i>	Go
SNMP MIBs			Result Table		1						
	ree coms.iso.org.dod.internet.private.e product e3 e1 e1-local e1-remote errors setup	ent		N	ame/OID			Value			
<	<u> </u>	>									
Name	el										
OID	.1.3.6.1.4.1.19424.1.167.3										
Syntax											
Access											
Status											

🍪 iReasoning MIB Browser										X
File Edit Operations Tools Help										
Address: 192.168.10.1	~	Advanced	OID:	.1.3.6.1.4.1.19424.1.167.3.1	~	Operations:	Get Next	~	~	Go
SNMP MIBs		Result Table								
⊟ in e1-local in in tx1	-		N	ame/OID			Value			×
⊞ 🫅 tx2	- 11									
⊞ <u>[]</u> tx4										
⊞ 🦳 tx5 ⊕ 🦳 tx6										STOP
🖶 🧰 tx7										
⊞ 🗀 tx9										
⊞ 🦳 tx10										
i tx12										
i										
⊞ — 🔂 tx15										
⊞…) tx16 ⊞…) c1-remote										
	× *									

🍪 iRe	asoning MIB Browser									
File Ed	dit Operations Tools Help									
Address:	192.168.10.1	*	Advanced	OID:	5.1.4.1.19424.	1.167.3.1.1.1.0	🗸 Operati	ions: Get Next	~ (🖈 Go
SNMP M	Bs		Result Table							
	E-C e1-local	-		N	ame/OID			Value		80
~	• •		tx1Error.0			No	D_ERROR			
Name	t×1Error	~								
OID	.1.3.6.1.4.1.19424.1.167									
Syntax	INTEGER {LOS(1), CER(2),									
Access	read-only									
Status	mandatory									
DefVal										
Indexes			1	_				1		_
.iso.org.	dod.internet.private.enterprises.ecoco	oms.	embedded.opt	ic-contr	oller.e1.e1-loca	l.tx1.tx1Error.0		12:31:13 PM	13M of 18	SM 🔒

For the E1 interfaces the possibility to switch off the trap generation is provided for the case that not all of the E1 ports are connected in the beginning:

🍓 iReasoning MIB Bro	wser								. 🗆 🛛
File Edit Operations To	ools Help	77		2	(1)				
Address: 192.168.10.1	~	Advanced	OID:	5.1.4.1.19424.1.167.3.1.1.2.0	~	Operations:	Get Next	~	n 🔁 🔁
SNMP MIBs		Result Table		1					
e1-local	^		N	lame/OID			Value		80
	rror	tx1Error.0		N	IO_ERI	ROR			
Image: Constraint of the second sec	Fap Find in subtree Expand subtree Graph View Get Get Next Get Subtree Set Walk Table View	Ctrl+R Ctrl+G Ctrl+W Ctrl+E Ctrl+S Ctrl+W Ctrl+T							• •••

🥞 iReasoning MIB Browser _ 🗆 🗙 File Edit Operations Tools Help Address: 192.168.10.1 ✓ Advanced... OID: 5.1.4.1.19424.1.167.3.1.1.2.0 ✓ Operations: Get Next GO GO v SNMP MIBs Result Table 😑 🗀 e1-local ^ Name/OID Value 咨 🖻 🗀 tx1 tx1Error.0 FRROP tx1Error D 🗄 🛅 tx2 5109 😟 🚞 tx3 😸 SNMP SET 🗄 🛅 tx4 × OID .1.3.6.1.4.1.19424.1.167.3.1.1.2.0 🗄 🛅 tx7 Y Data Type Integer Value "0"(enable) or "1"(disable) 🗄 🛅 tx10 Ok Cancel 😟 🛅 tx15 ÷. Pry16 < > Name tx1Trap ~ OID .1.3.6.1.4.1.19424.1.167... ... INTEGER (DISABLE(1), EN.. ivnta: read-only Access Status mandatory DefVal v Indexes .iso.org.dod.internet.private.enterprises.ecocoms.embedded.optic-controller.e1.e1-local.tx1.tx1Trap.0 12:34:56 PM 14M of 18M Û

You can enable (type **0** in the **Value** field) or disable (type **1** in the **Value** field) the trap generation as shown below:

Finally you can define the trap delay for the repetition of a permanent failure indication.