IBM Global Console Managers 2x2x16 (GCM16) and 4x2x32 (GCM32)



Receiving SNMP traps from the IBM GCM16 / GCM32 KVM Switches

Preface

This document describes on how to manage an IBM Global 2x2x16 Console Manager (GCM16) – Machine Types and Models 1754-D1X or 1754-HC1, FC 6694 - and IBM Global 4x2x32 Console Manager (GCM32) - Machine Types Models 1754-D2X or 1754-HC2 FC 6695 with SNMP.

This document does not discuss SNMP traps of the IBM Local Console Manager LCM8, Machine Types Models 1754-A1X or 1754-HC3 FC0725, or IBM Local Console Manager LCM16, Machine Types Models 1754-A2X or 1754-HC4 FC0726.

As an example the following traps will be monitored:

- User Authentication Failure
- User Logged In
- User Logged Out
- Power Supply Failure
- Power Supply Restored
- Note: The IBM Global Console Managers, Machine Type 1754, offer a broad variety of traps that can be monitored.

About the Authors

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1 1754 GCM16 / GCM32 SNMP traps

The IBM 1754 GCM16 / GCM32 family of KVM switches generates and sends outs SNMPv1 traps on pre-defined events that occur with the usage of the switches. Table1 provides a reference between the event names that are selectable through the Web User Interface (WEBUI) Local or Web Interface to the SNMP MIB File Variable name and OID Number.

Note: In the official product documentation the WEBUI is referred to as the On-board Web Interface (OBWI). This naming convention will be used throughout this document.

1.1 Event Names - Reference Table

For the corresponding events below, Column 1 is the Event name held in the KVM, Column 2 is the variable name within the SNMP MIB and Column 3 is the events OID information. See <u>Chapter "3.1</u> <u>Configuring the GCM16 / GCM32 for SNMP"</u> on how to configure and access the event names held within the KVM.

Note: The OIDs in the below table are "static". When an OID is used and associated with a TRAP it usually does not get changed. However OIDs may be added or removed with a unit firmware update when new features are added or features are removed with that firmware code.

Local UI / OBWI	Trap Variable Name	OID
name		
Reboot Started	ibmcsRebootStartedTrap	.1.3.6.1.4.1.10418.18.41.0.1
User Logged In	ibmcsUserLoginTrap	.1.3.6.1.4.1.10418.18.41.0.2
User Logged Out	ibmcsUserLogoutTrap	.1.3.6.1.4.1.10418.18.41.0.3
Target Session	ibmcsTargetSessionStartedTrap	.1.3.6.1.4.1.10418.18.41.0.4
Started		
Target Session	ibmcsTargetSessionStoppedTrap	.1.3.6.1.4.1.10418.18.41.0.5
Stopped		
Target Session	ibmcsTargetSessionTerminatedTrap	.1.3.6.1.4.1.10418.18.41.0.6
Terminated		
Image Upgrade	ibmcsImageFileUpgradeStarted	.1.3.6.1.4.1.10418.18.41.0.10
Started		
Image Upgrade	ibmcsImageFileUpgradeResultsTrap	.1.3.6.1.4.1.10418.18.41.0.11
Results		
User Added	ibmcsUserAddedTrap	.1.3.6.1.4.1.10418.18.41.0.12
User Deleted	ibmcsUserDeletedTrap	.1.3.6.1.4.1.10418.18.41.0.13
User Modified	ibmcsUserModifiedTrap	.1.3.6.1.4.1.10418.18.41.0.14
User Locked Out	ibmcsUserLockedTrap	.1.3.6.1.4.1.10418.18.41.0.15
User Unlocked	ibmcsUserUnlockedTrap	.1.3.6.1.4.1.10418.18.41.0.16
User Authentication	ibmcsUserAuthenticationFailureTrap	.1.3.6.1.4.1.10418.18.41.0.17
Failure		
CO Added	ibmcsCOAddedTrap	.1.3.6.1.4.1.10418.18.41.0.18
CO Removed	ibmcsCORemovedTrap	.1.3.6.1.4.1.10418.18.41.0.19
CO Moved	ibmcsCOMovedTrap	.1.3.6.1.4.1.10418.18.41.0.20
	ibmcsTargetDeviceNameChangedTrap	.1.3.6.1.4.1.10418.18.41.0.21
A Cascade Switch	ibmcsCascadeSwitchAddedTrap	.1.3.6.1.4.1.10418.18.41.0.22
has been Installed		
A Cascade Switch	ibmcsCascadeSwitchRemovedTrap	.1.3.6.1.4.1.10418.18.41.0.23
has been Removed		
A Cascade Switch	ibmcsCascadeSwitchNameChangedTrap	.1.3.6.1.4.1.10418.18.41.0.24
Name has Changed		
Configuration File	ibmcsConfigurationFileLoadedTrap	.1.3.6.1.4.1.10418.18.41.0.25
has been Loaded		
User Database File	ibmcsUserDatabaseFileLoadedTrap	.1.3.6.1.4.1.10418.18.41.0.26
has been Loaded		
CO Image Upgrade	ibmcsCOImageUpgradeStarted	.1.3.6.1.4.1.10418.18.41.0.28
Started		
CO Image Upgrade	ibmcsCOImageUpgradeResultTrap	.1.3.6.1.4.1.10418.18.41.0.29
Result		
CO Restarted	ibmcsCORestartedTrap	.1.3.6.1.4.1.10418.18.41.0.30
Virtual Media	ibmcsVirtualMediaSessionStartedTrap	.1.3.6.1.4.1.10418.18.41.0.31
Session Started		
Virtual Media	ibmcsVirtualMediaSessionStoppedTrap	.1.3.6.1.4.1.10418.18.41.0.32
Session Stopped		

Local UI / OBWI name	Trap Variable Name	OID
Virtual Media	ibmcsVirtualMediaSessionTerminatedTrap	.1.3.6.1.4.1.10418.18.41.0.33
Session Terminated		
Virtual Media	ibmcsVirtualMediaSessionReservedTrap	.1.3.6.1.4.1.10418.18.41.0.34
Session Reserved		
Virtual Media	ibmcsVirtualMediaSessionUnreservedTrap	.1.3.6.1.4.1.10418.18.41.0.35
Session Unreserved		
Virtual Media Drive	ibmcsVirtualMediaDriveMapped	.1.3.6.1.4.1.10418.18.41.0.36
Mapped		
Virtual Media Drive	ibmcsVirtualMediaDriveUnmapped	.1.3.6.1.4.1.10418.18.41.0.37
Unmapped		
Virtual Media	ibmcsLocalPortVirtualMediaSessionStartedTrap	.1.3.6.1.4.1.10418.18.41.0.38
Session Started		
Virtual Media	ibmcsLocalPortVirtualMediaSessionStoppedTrap	.1.3.6.1.4.1.10418.18.41.0.39
Session Stopped		
Virtual Media	ibmcsLocalPortVirtualMediaSessionTerminatedTrap	.1.3.6.1.4.1.10418.18.41.0.40
Session Terminated		
Virtual Media Drive	ibmcsLocalPortVirtualMediaDriveMapped	.1.3.6.1.4.1.10418.18.41.0.41
Mapped		
Virtual Media Drive	ibmcsLocalPortVirtualMediaDriveUnmapped	.1.3.6.1.4.1.10418.18.41.0.42
Unmapped		
Virtual Media	ibmcsLocalPortVirtualMediaSessionReservedTrap	.1.3.6.1.4.1.10418.18.41.0.43
Session Reserved		
Virtual Media	ibmcsLocalPortVirtualMediaSessionUnreservedTrap	.1.3.6.1.4.1.10418.18.41.0.44
Session Unreserved		
Screen Resolution	ibmcsScreenResolutionChangedTrap	.1.3.6.1.4.1.10418.18.41.0.45
Changed		
Aggregate Server	ibmcsAggregatedTargetDeviceStatusChangedTrap	.1.3.6.1.4.1.10418.18.41.0.46
Status Changed		
Factory Defaults Set	ibmcsFactoryDefaultsSetTrap	.1.3.6.1.4.1.10418.18.41.0.47
Power Supply	ibmcsPowerSupplyFailureTrap	.1.3.6.1.4.1.10418.18.41.0.48
Failure		
Power Supply	ibmcsPowerSupplyRestoredTrap	.1.3.6.1.4.1.10418.18.41.0.49
Restored		
Power Device	ibmcsPduDeviceOnlineTrap	.1.3.6.1.4.1.10418.18.41.0.50
Online		
Power Device	ibmcsPduDeviceOfflineTrap	.1.3.6.1.4.1.10418.18.41.0.51
Offline		
Power Device Outlet	ibmcsPduOutletOnCommandTrap	.1.3.6.1.4.1.10418.18.41.0.52
On Command		
Power Device Outlet	ibmcsPduOutletOffCommandTrap	.1.3.6.1.4.1.10418.18.41.0.53
Off Command		
Power Device Outlet	ibmcsPduOutletRebootCommandTrap	.1.3.6.1.4.1.10418.18.41.0.54
Reboot Command		
Power Device Outlet	ibmcsPduStatusOutletOnTrap	.1.3.6.1.4.1.10418.18.41.0.57
On		
Power Device Outlet	ibmcsPduStatusOutletOffTrap	.1.3.6.1.4.1.10418.18.41.0.58
Off		
Power Device Inlet	ibmcsPduPortNameChangedTrap	.1.3.6.1.4.1.10418.18.41.0.59
Name Changed		
Power Device Port	ibmcsPduOutletNameChangedTrap	.1.3.6.1.4.1.10418.18.41.0.60
Name Changed		
Power Device Inlet	ibmcsPduInletTotalLoadHighTrap	.1.3.6.1.4.1.10418.18.41.0.61
Total Current High		
Power Device Inlet	ibmcsPduInletTotalLoadLowTrap	.1.3.6.1.4.1.10418.18.41.0.62
Total Current Low		

Local UI / OBWI	Trap Variable Name	OID
name		
Power Device	ibmcsPduDeviceNameChangedTrap	.1.3.6.1.4.1.10418.18.41.0.63
Device Name		
Changed		
Power Device	ibmcsPduInletNameChangedTrap	.1.3.6.1.4.1.10418.18.41.0.64
Circuit Name		
Changed		
These events are	ibmcsPduOutletLockCommandTrap	.1.3.6.1.4.1.10418.18.41.0.65
only used with	ibmcsPduOutletUnlockCommandTrap	.1.3.6.1.4.1.10418.18.41.0.66
DSView™	ibmcsPduStatusOutletLockTrap	.1.3.6.1.4.1.10418.18.41.0.67
Management	ibmcsPduStatusOutletUnlockTrap	.1.3.6.1.4.1.10418.18.41.0.68
Software		
Power Device	ibmcsPduImageFileUpgradeStartedTrap	.1.3.6.1.4.1.10418.18.41.0.69
Upgrade Started		
Power Device	ibmcsPduImageFileUpgradeResultTrap	.1.3.6.1.4.1.10418.18.41.0.70
Upgrade Result		
Power Device Outlet	ibmcsPduCircuitNameChangedTrap	.1.3.6.1.4.1.10418.18.41.0.71
Name Changed		
Power Device Total	ibmcsPduDeviceTotalLoadHighTrap	.1.3.6.1.4.1.10418.18.41.0.72
Current High		
Power Device	ibmcsPduCircuitTotalLoadHighTrap	.1.3.6.1.4.1.10418.18.41.0.73
Circuit Total Current		
High		
Power Device Outlet	IbmcsPduOutlet I otalLoadHigh I rap	.1.3.6.1.4.1.10418.18.41.0.74
Fan Failure	ibmcsFanFailureTrap	.1.3.6.1.4.1.10418.18.41.0.75
Temperature Out of	ibmcsTemperatureRangeTrap	.1.3.6.1.4.1.10418.18.41.0.76
Range		
Smart Card Inserted	ibmcsSmartCardInsertedTrap	.1.3.6.1.4.1.10418.18.41.0.77
Smart Card	ibmcsSmartCardRemovedTrap	.1.3.6.1.4.1.10418.18.41.0.78
Removed		

Table 1 – Event Names, Varialbe Names, OID

1.2 Trap Variables that are not used

The following information below relates to some Trap Variables and OID elements that are contained within the SNMP MIB but are not used.

Table 2 below shows the 3 MIB elements that are specific to access through the local port of the KVM, these elements do not generate any SNMP Traps. However, local access is still identified through the 3 variables in Table 3 and Local port Sessions are displayed as the Target Session started, stopped and terminated respectfully.

Trap Variable Name	OID
ibmcsLocalPortSessionStartedTrap	.1.3.6.1.4.1.10418.18.41.0.7
ibmcsLocalPortSessionStoppedTrap	.1.3.6.1.4.1.10418.18.41.0.8
ibmcsLocalPortSessionTerminatedTrap	.1.3.6.1.4.1.10418.18.41.0.9

Table 2 - Trap entries in the MIB file not used

Local UI / OBWI name	Trap Variable Name	OID
Target Session Started	ibmcsTargetSessionStartedTrap	.1.3.6.1.4.1.10418.18.41.0.4
Target Session Stopped	ibmcsTargetSessionStoppedTrap	.1.3.6.1.4.1.10418.18.41.0.5
Target Session Terminated	ibmcsTargetSessionTerminatedTrap	.1.3.6.1.4.1.10418.18.41.0.6

Table 3 - Trap entries in the MIB file used for Local Sessions

Table 3 provides a reference between the event names that are selectable through the OWBI Local or Web Interface to the SNMP MIB File Variable name and OID Number. For the corresponding event. See <u>Chapter "3.1 Configuring the GCM16 / GCM32 for SNMP"</u> on how to configure and access the event names held within the KVM.

1.3 Non-Selectable Traps

Table 4 provides reference automatic traps that are generated by the KVM and are not customer selectable.

Event Name	Event Criteria	What generates the Events
Cold Start	These 2 events are generated on the	Start-up of the switch
Link Up	start-up of the Global Console Switch	Start-up of the network interface
Link Down	Network Connection Failed / Lost	When the KVM looses connection
		with the network
SNMP Authentication Failure	Generated on SNMP authentication	When the KVM fails with SNMP
	failure	authentication

Table 4 – Non Selectable Traps

2 OIDs in MIB files

The OIDs in the 1754 GCM16 / GCM32 MIB files do not use numerical entries, e.g. .1.3.6.1.4.1.10418.3.1.0.14 for ibmGCMUserAuthenticationFailureTrap or ibmcsUserAuthenticationFailureTrap, but rather uses variable names.

```
ibmcsUserLoginTrap TRAP-TYPE
ENTERPRISE ibmcsProducts
      VARIABLES { ibmcsTrapObjectUserName }
      DESCRIPTION
         "A user logged into the appliance.
ibmcsUserLogoutTrap TRAP-TYPE
      ENTERPRISE ibmcsProducts
      VARIABLES { ibmcsTrapObjectUserName }
      DESCRIPTION
          "A user logged out of the appliance.
         The name of the user who logged out is contained
         in ibmcsTrapObjectUserName.
ibmcsUserAuthenticationFailureTrap TRAP-TYPE
      ENTERPRISE ibmcsProducts
      VARIABLES { ibmcsTrapObjectUserName }
      DESCRIPTION
          "A user failed to authenticate with the appliance.
         The name of the user who failed to authenticate
         is contained in ibmcsTrapObjectUserName.
```

Figure 1 - Trap entries in MIB file

When loading the MIB file into a SNMP application this will then be complied in numeric OIDs by that application.

2.1 Error in current MIB files

There is a known issue with the MIB file Revision 1.0.8 for the 1754-AxX (LCM8 / LCM16) units and the MIB file Revision 1.10.18 for the 1754-DxX (GCM16 / GCM32). The LCM8 / LCM16 identifies itself in the MIB file as a GCM16 / GCM32 whilst the GCM16 / GCM32 claims to be a Console Switch.

ibmGCMRebootStartedTrap ibmGCMUserLoginTrap ibmGCMUserLogoutTrap ibmGCMVideoSessionStartedTrap ibmGCMVideoSessionStoppedTrap Figure 2 - LCM8 / LCM16 MIB file entries

ibmcsRebootStartedTrap ibmcsUserLoginTrap ibmcsUserLogoutTrap ibmcsTargetSessionStartedTrap *Figure 3 - GCM16 / GCM32 MIB file entries*

3 Configuring the GCM16 / GCM32 for SNMP usage

The Global Console Switches require the IP Address of the system that will be receiving the SNMP Trap Event information; it is also possible to select what events will be sent from the GCM16 / GCM32.

3.1 Configuring the GCM16 / GCM32 for SNMP

Log on to the GCM16 or GCM32 unit either locally or via its web interface.

Firefox 🔻					I	
GCM16 Explorer [User Login]	+					
A https://10.10.10.20/login.php			☆ マ C 🚺		۶ 🎓	C -
				? HEL		/IEW 3
GCM16					IBI	
	User Login					
	Username: Password:	Admin				
	Language.		Login			

Figure 4 - Logging on to the GCM16 / GCM32 Web interface

Note: The default Username is Admin and a blank password.

Navigate to through the menu "Unit / Appliance / SNMP / Auditing / Events". Initially the GCM16 / GCM32 unit will send out all SNMP traps, i.e. per default all SNMP traps are selected. This however may take up a considerable amount of network traffic. It is therefore recommended to only monitor those traps that are important for a specific use.



Figure 5 - All SNMP traps are selected per default

Click on the box left to "Events Name" in order to unselect all SNMP traps.



Figure 6 - Unselect all SNMP traps by clicking the box left to "Events Name"

Scroll through the list of SNMP traps and tick the boxes of those traps that are to be monitored.

Firefox GCM16 Explorer	(Events	- GCM16-15-39-8A] +
A https://10.10.10.20/events.	php	
• • • • •		
✓ Unit View	Events	- GCM16-15-39-8A
Overview		
- Properties		Event Name∆
Identity	Г	Server Name has Changed
Location	Г	Smart Card Inserted
 Appliance settings Versions 		Smart Card Removed
Network		ONING A development
🖺 General		SNMP Authentication Failure
■ IPv4		Target Session Started
		Target Session Stopped
		Target Session Terminated
SNMP	Г	Temperature Out of Range
🚽 Auditing		
C Events		
Ports		Oser Authentication Failure
COs.		User Database File has been Loaded
Cascade Switches		User Deleted
Power Devices	Г	User Locked Out
Local Port UI Modem		User Logged In
Setup		User Logged Out
 Sessions General 		User Modified

Figure 7 - Selected SNMP traps

Once all needed SNMP traps have been selected save the choices.



Figure 8 - Save the selected SNMP traps to be monitored

Configure the IP address(es) of the target computer on which the SNMP software will be running.

Welcome Admin!		🥔 BOOKMARK 🔇 REFRESH	i 🔒 print 🧳)LOGOUT 🧃	HELP	TRY DSVIEW 3
GCM16						IDM.
✓ Unit View ■ Target Devices ✓ Appliance	Event Destinations		-	-		Save
 Verview ▼ Properties ■ Identity ■ Location 	SNMP Trap Destinations Destination 1: 10.10.10.10					
 ✓ Appliance Settings ▲ Versions ✓ Network 	Destination 2:					
≌ General ≌ IPv4 ≌ IPv6	Destination 4:					
■ DNS ■ NTP ■ SNMP	Destination 1: 10.10.10.10					
Auditing Events Destinations	Destination 2: Destination 3:					
	Destination 4:					

Figure 9 - Configuring the target computer IP address(es)

4 Collection of the SNMP Trap Information

There are various SNMP Managers available in the market today, for the purposes of this document All SNMP traps were captured with a trial version of iReasoning MIB Browser Professional Edition Version 9.0, Build 3516. Further information can be found on this software in the reference section.

IBM Systems Director[®] enables capabilities with the Global Console Switches and is the platform management backbone to achieve Smarter Computing. An integral component of the IBM Smarter Systems portfolio, further information can be found from the IBM Web Site:

http://www.ibm.com/systems/software/director/

Alternatively <u>Avocent DSView™</u> from Emerson can be used.

4.1 Collecting the raw SNMP Traps

The initial nature and format of these 'raw traps' meant that no text message description was available as part of the trap details for all such events received. This is a fairly typical phenomenon with receiving raw SNMP traps. The events used to generate these traps were "Power Supply Failure" and "Power Supply Restored".

Raw traps can be by SNMP applications by not loading and compiling the relevant MIB file.

🕸 iReasoning MIB Browser					
File Edit Operations Tools Bookmarks Help					
Address: - 127.0.0.1 - Advanced	OID: .1	1.3	-	Operations: Get Next	G Go
SNMP MIBs		Result Table Trap Receiver ×			
MIB Tree		Operations Tools Database			
		O 🙆 🎘 🏹 🦽			
		Description	Source	Time	Severity
		Specific: 49; .1.3.6.1.4.1.10418.18.41	10.10.10.20	2013-03-06 16:12:52	•
		Specific: 48; .1.3.6.1.4.1.10418.18.41	10.10.10.20	2013-03-06 16:12:44	
			1		
		~			
	- A				
MIB					
Syntax					
Access					
Status					
DefVal					
Indexes					

Figure 10 – raw SNMP Traps received in iReasoning Software

4.2 Collecting the SNMP Traps with a compiled MIB

For these 'raw traps' to be interpreted, the correct MIB reference file needs to be compiled into the SNMP Management software.

4.3 Obtaining the SNMP MIB File

The SNMP Trap MIB for the GCM16 / GCM32 appliance can be saved to a local machine or network drive from the "Tools" of the WEB User Interface (OWBI) of the GCM16 / GCM32 Switch. The MIB file is also part of the lasted firmware download from IBM's FixCentral web site located at http://www.ibm.com/support/fixcentral/.

The MIB file obtained from the KVM unit may differ slightly from the MIB file included in the Note: firmware download. However this has little impact in the SNMP usage of the KVM switch.



Figure 11 – GCM16 / GCM32 Tools Page within the OWBI

4.4 Loading the SNMP MIB file into the SNMP Management Software

For the purposes of this test, detailed below is how to load the MIB file into the iReasoning Software.

🚸 iReasoning MIB Browser				_ 8 >
File Edit Operations Tools Bookmarks Help				
Address: - 127.0.0.1 - Advanced OID:	.1.3	▼ Operations:	Get Next 👻	Go Go
SNMP MIBs	Result Table			-
MIB Tree	Name/OID	Value	Type IP:Po	ort 👝
iso.org.dod.internet			1 .00- 1	
				X
				_
				Ľ
				2
				-
				
Name	1			
OID	1			
MIB				
Syntax				
Access				
Status				
Indexes				
Deere				

Start iReasoning MIB Browser Professional Edition

Figure 12 - iReasoning MIB Browser

Load the needed MIB file via the menu "File / Load MIBs"

File	Edit Operations Tools Book	marks Help
	Load MIBs Ctrl+L	Advanced OID: .1.3
	UnLoad MIBs	
	MIB Modules	
	Open Graph Data	
	Open Session	
	Save Session	
	Exit	

Figure 13 - Loading a MIB file into iReasoning MIB Browser

Browse to the directory containing the MIB file and load it.

🔹 iReasoning MIB Browser				X
Address:	Advanced OID:	1.3	Operations:	Get Next Go
SNMP MIBs	, and a second point of the	Result Table		
MIB Tree		Name/OID	Value	Type IP:Port
🗄 🍶 iso.org.dod.internet				900 1900
				2
	🚯 Open	A REAL PROPERTY OF THE REAL PR	×	Ľ
	Look in:	1754	💌 🤌 📂 🖽 🚍	9
		1754 Dvy MIR		
	Recent Items			È.
	Desktop			
	My Documents			
	Thy Documents			
	Computer			
	Computer			
		ename: [1754_DXX.MLB	Open	
	Network File	es of type: All Files	✓ Cancel	
Name				
OID				
MIB				
Syntax				
Status				
DefVal				
Indexes				
n	10100			

Figure 14 - Browse to and load the MIB file

The loaded MIB file is presented in red.

🚸 iReasoning MIB Browser				
File Edit Operations Tools	Bookma	arks Help		
Address: • 127.0.0.1	•	Advanced	OID:	1.3
SNMP MIBs				
MIB Tree iso.org.dod.internet mgmt private mwww.snmpV2 SNMPv1 TRAPs				

Figure 15 - GCM16 / GCM32 SNMP traps loaded

View all GCM16 / GCM32 traps

iReasoning MIB Browser				<u>_8 ×</u>
File Edit Operations Tools Bookmarks Help				
Address: • 127.0.0.1 • Advanced OID: .1.	.3	▼ Operati	ons: Get Next	👻 🌈 Go
SNMP MIBs	Result Table			
Address: 127.0.0.1 Advanced OID: 1. SNMP MIBS biomsRebootStartedTrap biomsStartedTrap biomsStartedStartedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetSessionStoppedTrap biomsStargetFieUpgradeStarted biomsStargetFieUpgradeResultSTrap biomsStaretMolfiedTrap biomsStartMolfiedTrap biomsStartNotedTrap biomsStartNotedTrap biomsSCACAdedTrap biomsSCACAdedTrap biomsSCACAdedTrap biomsSCACAdedSwitchAddedTrap biomsCSCAdedSwitchAddedTrap biomsCSCAdedSwitchAddedTrap biomsCSCAscadeSwitchAddedTrap	.3 Result Table Name/OID	Value Value	Type	
ibmcsConfigurationFileLoadedTrap ibmcsUserDatabaseFileLoadedTrap ibmcsCOImageUpgradeStarted Name OID MIB Syntax Access Status DefVal Indexes				

Figure 16 - GCM16 / GCM32 SNMP traps from the MIB file

4.5 Collection of the SNMP Traps with a compiled MIB

For the purposes of this test, the same SNMP Trap Events were used as the events collected for the 'raw trap' test of "Power Supply Failure" and "Power Supply Restored". Launch the iReasoning MIB Browser Trap Receiver via the "Tools" menu.

🚸 iReasoning MIB Browser		
File Edit Operations Tool	s Bookmarks Help	
Address: 👻 127.0.0.1 🏓	Trap <u>R</u> eceiver	Ctrl+I
SNMP MIBs	Trap Sender	
SNMPv1 TRAPs	Ping	
ibmcsUserL	Trace Route	
ibmcsUserL	Add to Watches	Ctrl+D
🤟 🍎 ibmcsTarge	Watches	Ctrl+0

Figure 17- Lauching the Trap Receiver

These traps were received and interpreted with a meaningful description of the event.

🐠 iReasoning MIB Browser					<u>_ ×</u>
File Edit Operations Tools Bookmarks	Help				
Address: 127.0.0.1 TAdva	anced OID: .1	3	▼ Operat	ions: Get Next 💌	r Go
SNMP MIBs	Re	sult Table Trap Receiver ×			
주 MIB Tree	Opera	tions Tools Database			
😟 📹 iso.org.dod.internet	0	🔉 🎦 🚺 🔏			
		Description	Source	Time	Severity
	ibmcsPo	owerSupplyRestoredTrap	10.10.10.20	2013-03-26 15:32:33	
	ibmcsPo	owerSupplyFailureTrap	10.10.10.20	2013-03-26 15:31:56	
	ibmcsPo	owerSupplyRestoredTrap	10.10.10.20	2013-03-26 15:30:42	
	ibmcsPo	owerSupplyFailureTrap	10.10.10.20	2013-03-26 15:30:39	22
	~~				
Name					
OID					
MIB					
Syntax					
Access					
Didida di					

Figure 18 – Collection of SNMP Traps with a comopiled MIB

5 Configuration of specific SNMP Traps and capture

The GCM16 / GCM32 provides the ability to select / de-select specific traps depending on what information needs to be captured. By default, the GCM16 / GCM32 has all the SNMP Trap events selected.

5.1 Collecting GCM16 / GCM32 SNMP traps with iReasoning MIB Browser



Figure 19 - SNMP traps as shown in the GCM16 / GCM32 and the iReasoning software

Launch the iReasoning MIB Browser Trap Receiver via the "Tools" menu.

🚸 iReasoning MIB Bro	wser	
File Edit Operations	Tools Bookmarks Help	
Address: + 127.0.0	.1 🏓 Trap <u>R</u> eceiver	Ctrl+I
SNMP MIBs	Trap Sender	
E SNMPv1 TRAP	Ps Ping	
	L Trace Route	
- JibmcsTarg	Add to Watches	Ctrl+D
	e 😽 Watches	Ctrl+O

Figure 20 - Lauching the Trap Receiver

5.2 GCM16 / GCM32 successful log on

Firefox 🔻						
GCM16 Explorer [User Login]	+					
https://10.10.10.20/login.php			☆ v C	🖁 🔻 Google	۶ م	•
				? HELP		/IEW 3
GCM16					IBI	,∎. ₹I.₀
	User Login			i i		
	Username: Password:	Admin				
	Language:	English 👤	Login			

Figure 21 - Log on to the GCM16 / GCM 32 Web interface



Figure 22 - Results of the Log On Action

Using SNMP traps with the IBM Global Console Managers 2x2x16 (GCM16) and 4x2x32 (GCM32)

🚸 iReasoning MIB Browser				<u>_8 ×</u>
File Edit Operations Tools Bookmarks Help				
Address: • 127.0.0.1 • Advanced OID:	.1.3	•	Operations: Get Next	🖌 🌈 Go
SNMP MIBs	Result Table Trap Receiver ×			
E-SNMPv1 TRAPs	Operations Tools Database			
ibmcsRebootStartedTrap	0 🔇 🎦 🏹 🔏			
ibmcsUserLogoutTrap	Description	Source	Time	Severity
ibmcsTargetSessionStoppedTrap	ibmcsUserLoginTrap	10.10.10.20	2013-02-06 10:28:36	
 ibmcsLocalPortSessionStartedTrap ibmcsLocalPortSessionStoppedTrap ibmcsLocalPortSessionStoppedTrap ibmcsLocalPortSessionStoppedTrap ibmcsLmageFileUpgradeStarted ibmcsUserAddedTrap ibmcsUserAddedTrap ibmcsUserVolfiedTrap ibmcsUserUnlockedTrap ibmcsUserUnlockedTrap ibmcsUserAddedTrap ibmcsUserAddedTrap ibmcsUserCokedTrap ibmcsUserCokedTrap ibmcsUserCokedTrap ibmcsUserCokedTrap ibmcsCORdedTrap ibmcsCORdedTrap ibmcsCORdenvedTrap 				
	Source: 10.10.10.20	Timestamp: 9 minut	es 8 seconds SNMP	Version:
	Enterprise: .iso.org.dod.internet.	private enterprises ibm ibmcs ibmcsH	Products	
ibmcsCascadeSwitchNameChangedTrap	Specific: 2			
ibmcsConfigurationFileLoadedTrap	Generic: enterpriseSpecific			
	Variable Bindings			
Name	Name: .iso.org.dod.internet.	private enterprises ibm ibmcs ibmcsl	vlanagement.ibmcsTrapObjec	t.ibmcsTrapObje
OID	Value: [OctetString] Admin			
MIB				
Syntax	Description: "A user logged into t	ne appliance. The name of the user w	ho logged in is contained in i	bmcsTrapObject
Access				
Definition				
				_
Passa V				

Figure 23 - SNMP Log On trap

5.3 GCM16 / GCM32 log out



Figure 24 - Result of the Log Out Action

Using SNMP traps with the IBM Global Console Managers 2x2x16 (GCM16) and 4x2x32 (GCM32)

🚯 iReasoning MIB Browser							_ 8 ×
File Edit Operations Tools Bookmarks Help							
Address: • 127.0.0.1 • Advanced OID:	.1.3			•	Operations: Get Next	-	Go Go
SNMP MIBs	Result Ta	ble Trap Receiver ×	1				
E SNMPv1 TRAPs	Operations	Tools Database					
ibmcsRebootStarted Irap		XI 😼 🔏					
ibmcsUserLogoutTrap		Description	1	Source	Time		Severity
bmcsTargetSessionStartedTrap	ibmost isert oor	outTran		10 10 10 20	2013-02-06 10:29:14		
ibmcsTargetSessionTerminatedTrap	ibmedulation	in Tana		10, 10, 10, 20	2013 02 00 10:29:31		
ibmcsLocalPortSessionStartedTrap	ibmcsUserLogi	Intrap		10.10.10.20	2013-02-06 10:28:36		
	Source	10 10 10 20	Timestamp	0 minutes	47 seconds	SNMP Ve	rsion
ibmcsCascadeSwitchAddedTrap	source.	10.10.10.20	rinestanip.	9 IIIIIuuca	47 seconds	STANE VE	151011.
	Enterprise	: .iso.org.dod.internet	.private.enterprises.it	om.ibmcs.ibmcsPi	roducts		
	Specific:	3					
	Constant	-					
	Generic:	enterpriseSpecific					
	🛛 🛛 Variable B	Bindings:					
Name	Name:	iso.org.dod.internet	.private.enterprises.it	om ibmcs ibmcsM	lanagement.ibmcsTra	apObject.ib	.ncsTrapObje
OID	Value:	[OctetString] Admir	6				
MIB			50				
Syntax		"A user logged out o	f the appliance. The	name of the user v	who logged out is co	ntained in	
Access	Descriptio	n: ihmcsTranOhiectUs	erName "		00		
Status		ionics riapoojectos	CIT WILLS.				
DefVal							
Indexes						1	Þ

Figure 25 - SNMP Log Out trap

5.4 GCM16 / GCM32 log on failure



Figure 26 - Result of failed log on

Using SNMP traps with the IBM Global Console Managers 2x2x16 (GCM16) and 4x2x32 (GCM32)

🚸 iReasoning MIB Browser		×
File Edit Operations Tools Bookmarks Help		
Address: • 127.0.0.1 • Advanced OID	.1.3	Operations: Get Next Get Go
SNMP MIBs	Result Table Trap Receiver ×	
SNMPv1 TRAPs	Operations Tools Database	
ibmcsUserLoginTrap	0 🙆 🎦 🏹 🤞	
bmcsUserLogoutTrap	Description	Source Time Severity
ibmcsTargetSessionStoppedTrap	ibmcsUserAuthenticationFailureTrap 10.1	0.10.20 2013-02-06 10:29:41
ibmcsTargetSessionTerminatedTrap	ibmcsUserLogoutTrap 10.1	0.10.20 2013-02-06 10:29:14
ibmcsLocalPortSessionStartedTrap ibmcsLocalPortSessionStoppedTrap	ibmcsUserLoginTrap 10.1	0.10.20 2013-02-06 10:28:36
ibmcsImageFileUpgradeStarted ibmcsImageFileUpgradeResultsTrap ibmcsUserAddeTrap ibmcsUserDeletedTrap ibmcsUserLockedTrap ibmcsUserLockedTrap ibmcsUserAuthenticationFailureTrap ibmcsCOAddedTrap ibmcsCOAddedTrap ibmcsCOAddedTrap ibmcsCCAscadeSwitchRemovedTrap ibmcsCascadeSwitchRemovedTrap ibmcsCascadeSwitchNameChangedTrap ibmcsConfigurationFileLoadedTrap ibmcsCoTababaseFileLoadedTrap ibmcsCOIndageUpgradeStarted	Source: 10.10.10.20 Timestamp: Enterprise: iso.org.dod.internet.private.enterprises.ibm.i Specific: 17 Generic: enterpriseSpecific Variable Bindings:	10 minutes 14 seconds SNMP Version: lomcs ibmcsProducts
Name OID MIB Syntax Access	Value: [OctetString] Admin Description: "A user failed to authenticate with the appliar ibmcsTrapObjectUserName."	nce. The name of the user who failed to authenticate is con
Status Defval Indexes		<u></u>

Figure 27 - SNMP Failed Log On trap

6 References - Hardware / Software Used

6.1 Hardware Used

IBM Part Number	Device description
1754-D2X	IBM 4x2x32 Global Console Management Switch
1754-D1X	IBM 2x2x16 Global Console Management Switch
46M5383	IBM VCO2 Conversion Option

6.2 Software Used

All work was carried out on a Microsoft Windows Server 2008 R2 SP1 server with the following web browsers:

- Microsoft Internet Explorer
- Mozilla FireFox
- Goolge Chrome

The main work was carried out with Mozilla FireFox.

All SNMP traps were captured with a trial version of iReasoning MIB Browser Professional Edition Version 9.0, Build 3516. The software is available from

http://ireasoning.com/mibbrowser.shtml



Figure 28 - iReasoning MIB Browser

7 Known Web Browser Issues

The GCM16 / GCM32 switches allow web access via the https protocol only. The switches are equipped with an according certificate which however is seen by web browsers as being a security issue.

7.1 Microsoft Internet Explorer

Depending on the Windows version Internet Explorer displays an error message that there is an issue with the security certificate. Continue to connect to that web site.

	The security certificate presented by this website was not issued by a trusted certificate authority.				
	The security certificate presented by this website has expired or is not yet valid.				
	The security certificate presented by this website was issued for a different website's address.				
	Security certificate problems may indicate an attempt to fool you or intercept any data you send to th server.				
	We recommend that you close this webpage and do not continue to this website.				
	Click here to close this webpage.				
	Continue to this website (not recommended)				

Add the IP address of the GCM16 / GCM32 switch to the trusted sites.

Internet Explorer	X Trusted sites
Content from the website listed below is being blocked by the Internet Explorer Enhanced Security Configuration.	You can add and remove websites from this zone. All websites in this zone will use the zone's security settings.
https://10.10.10.20	
	Add this website to the zone:
Continue to prompt when website content is blocked	https://10.10.10.20 Add
Learn more about Internet Explorer's Enhanced Security Configuration	Websites:
If you trust this website, you can lower security settings for the site by adding it to the Trusted sites zone. If you know this website is on your local intract review help for	http://*.update.microsoft.com Remove http://*.windowsupdate.com Ittp://*.windowsupdate.microsoft.com
instructions on adding the site to the local intranet zone instead.	http://go.microsoft.com
Important: adding this website to the Trusted sites zone will lower the securit settings for all content from this web site for all applications, including Interne Explorer.	y Require server verification (https:) for all sites in this zone

Figure 30 - Add the IP address of the GCM16 / GCM32 to the trusted sites

Internet Explorer in Windows Server 2008 shows a certificate error.

🖉 GCM16 Explorer [User Login] - Windows Internet Expl	rer	<u>_ 8 ×</u>
C C v // 10.10.10.20/login.php	Certificate Error 🛛 😣 😽 🗙 🔎 Bing	P -
🖕 Favorites 🛛 🚔 🙋 Suggested Sites 👻 🙋 Web Slice Galle	y •	
GCM16 Explorer [User Login]	🚹 • 🔂 - 🖻 🚔 • Page •	Safety + Tools + 🔞 +
GCM16	Ø BOOKMARK (3) HELP	
	UserLogin	
	Username: Password: Language: English T	
		=1
l Done	Trusted sites Protected Mode: Off	• • 100% ·

Figure 31 - Certificate Error displayed by Internet Explorer in Windows Server 2008

Internet Explorer will always show the Certificate error however will then not advise of any connection issues.

7.2 Google Chrome

Goolge Chrome will display a warning message. Click on the "Proceed anyway" button.

SSL Error	×
	.10.10.20/index.php
	The site's security certificate is not trusted!
	You attempted to reach 10.10.10.20, but the server presented a certificate issued by an entity that is
	not trusted by your computer's operating system. This may mean that the server has generated its own
	security credentials, which Google Chrome cannot rely on for identity information, or an attacker may
	be trying to intercept your communications.
	You should not proceed, especially if you have never seen this warning before for this site.
	Proceed anyway Back to safety
	► Help me understand
	28 V TERMUTTE V TERMETER 24

Figure 32 - Google Chrome Certificate Error

Note: This error message will always be displayed when connecting to the GCM16 / GCM32 web interface.

Google Chrome will then connect to the web page.

IEM GCM16 Exp	lorer [User Login] ×
← → C	2 https://10.10.10.20/login.php
GCM16	
	User Login
	Username:
	Password:
	Language: English

Figure 33 - GCM16 / GCM32 log on page with Google Chrome

Note that the https connection will be established. Since the certificate is not trusted by Google Chrome it will display the https connection as crossed out.

Login



Figure 34 - Google Chrome shows https crossed out

7.3 Mozilla FireFox

Mozilla FireFox will display a notification that the connection is not trusted. Click on the "I understand the Risks" link.



Figure 35 - FireFox advises that the connection is not trusted

Add an exception to FireFox for the GCM16 / GCM32 KVM.

and a	
Ľ,	You have asked Firefox to connect securely to 10.10.10.20 , but we can't confirm that your connection is secure.
	Normally, when you try to connect securely, sites will present trusted identification to prove that you are going to the right place. However, this site's identity can't be verified.
	What Should I Do?
	If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.
	Get me out of here!
	Technical Details
	I Understand the Risks
	If you understand what's going on, you can tell Firefox to start trusting this site's identification. Even if you trust the site, this error could mean that someone is tampering with your connection.
	Don't add an exception unless you know there's a good reason why this site doesn't use trusted identification.
	Add Exception

Figure 36 - Add an exception

Confim the exception.

You are about to override how Firefox identifies this site. Legitimate banks, stores, and other public sites will not ask you to o rver cation: https://10.10.20/index.php Get Cert rtificate Status is site attempts to identify itself with invalid information. <u>Vie</u> rong Site	lo this.
rver Cation: https://10.10.10.20/index.php Get Cert rtificate Status is site attempts to identify itself with invalid information. <u>Vie</u> rong Site	
rtificate Status is site attempts to identify itself with invalid information.	tificate
is site attempts to identify itself with invalid information. <u>Vie</u> rong Site	
rong Site	w
an a the second s	
rtificate belongs to a different site, which could indicate an identity theft.	
itdated Information	
rtificate is not currently valid. It is impossible to verify whether this identity was repor slen or lost.	ted as
iknown Identity	
rtificate is not trusted, because it hasn't been verified by a recognized authority using cure signature.	ga
Permanently store this exception	
Confirm Security Exception C	ancel

Figure 37 - Confirm this security exception

Connect to the GCM16 / GCM32 web interface.

Firefox V							
GCM16 Explorer [User Login]	+						
🗲 🔒 https://10.10.10.20/login.php			5	☆▼C	8 🔻 Google	۶	•
					? HI		/IEW 3
CCM16						723	
GCMTU							₹≟⊗
	liser Login						
	ooor Login	1					
	Username:				-		
	Language:	English	•				
	Languago.	Lugion		Login	1		

Figure 38 - GCM16 Log on page

7.4 Other Web browsers

No other web browsers have been tested. However it is assumed that any other web browsers will issue a certificate warning.

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