



AK355 System

Installation and User's Guide

Publication Information

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AK355/AK355 E System Installation and User's Guide

Publication date: April 2013

Printed in Canada

Published By

Positron Inc.

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Montreal, Quebec, Canada

H402R9

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International: 1-514-345-2220

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FCC Notification

The AK355 System complies with part 15 of the FCC Rules. Operation is subject to the following two conditions (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Chapter 1

AK355 System

1.1 Introduction

The AK355 Systems enable point-to-point Ethernet over Copper services and is ideally suited for demanding applications such as DSLAM Backhaul over long distances. The AK355C model offers point-to-point transport of DS3 or Ethernet over Copper, providing a smooth migration from TDM to IP at a later stage (the AK355CE model offers point-to-point transport of Ethernet only). The systems bond together 2 to 16 copper pairs creating a symmetric or asymmetric high bandwidth link capable of delivering up to 100 Mbps out to 12 Kft/3.7 Km (24 AWG) or 45 Mbps out to 17 Kft/5.2 Km (24 AWG).

Positron's signature FlexStream functionality enables the AK355 Systems to run either in symmetric or asymmetric mode with a simple software command. It allows service providers to dictate how much bandwidth is allocated to downstream vs. upstream traffic - an essential tool for ensuring precious bandwidth is used as efficiently as possible.

The AK355 Systems consist of 1 RU high Central Office and Remote units for 19" and 23" racks or for wall mounting. It is environmentally hardened and the Remote units can be either line or locally powered.

Note: Read Chapter 5 Safety and Warnings before proceeding.

1.2 Installation

Mounting the AK355

The AK355 units can be mounted in either 19 inch or 23 inch racks. The 19 and 23 inch flanges and mounting screws are included in the installation kit.

Mounting holes are provided for flush or mid mount. Note that the mid mount flange can be mounted forward or backward for either 5 or 6 inch recess. Figure 1 shows examples of 19 inch flanges attached to the flush position and 23 inch flanges attached to the mid mount position.

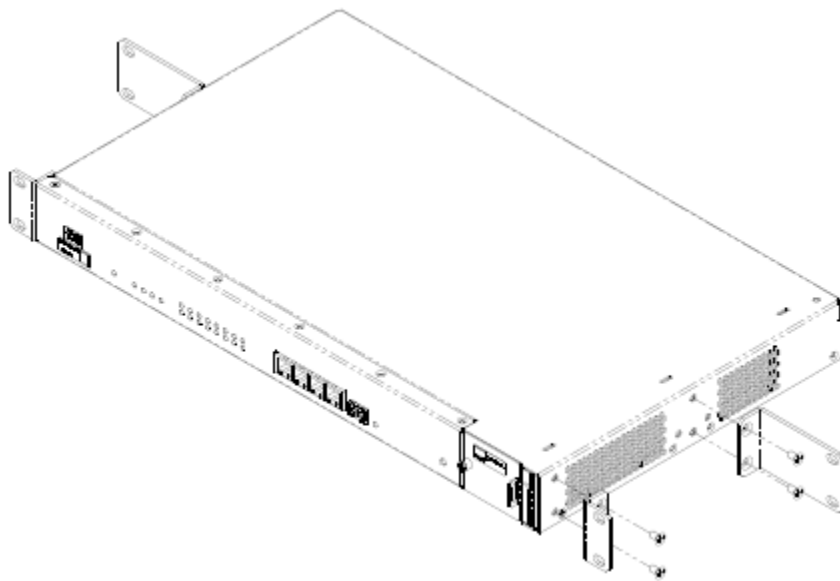


Figure 1 Flange Wall Mounting

The unit can also be mounted on a wall using either 19 or 23 inch flanges (see Figure 2). It is not necessary for the flange to be bonded with the frame; the unit's Ground Lug on the back provides proper grounding.

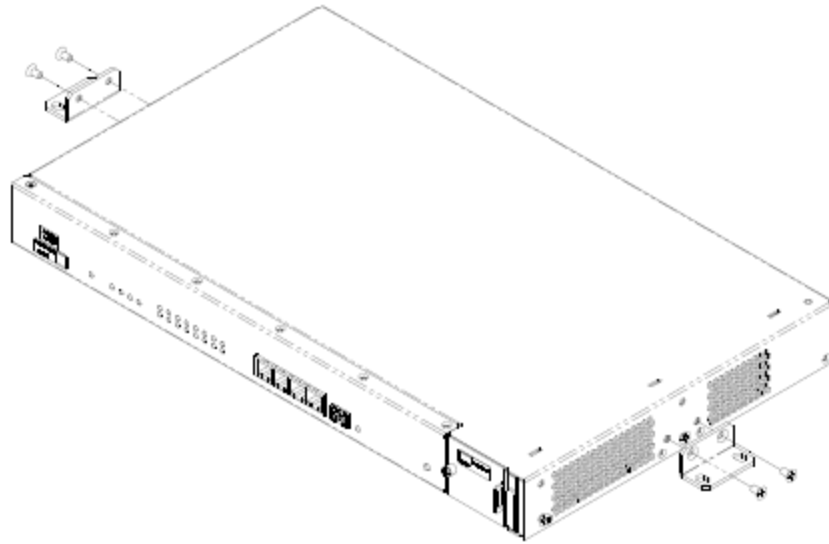


Figure 2 Wall Mounting

NOTE: The fan filter should be replaced every six months. Ordering information can be found at the end of this document.

1.3 AK355 Connections

1.3.1 Front View

Figure 3 shows the AK355 front panel. The AK355C and AK355R units have identical front panel indicators and functions.

1.3.1.1 Management Connections

The RJ-45 port (located on the front panel) can be used for local or remote management access. The Ethernet port automatically is set to either 10BaseT or 100BaseT and auto-sense the polarity of TX/RX (automatic MDIX).

Caution: In order to comply with the intra-building lightning surge requirements, intra-building Ethernet management wiring must be shielded, and the shield for the wiring must be grounded at both ends.

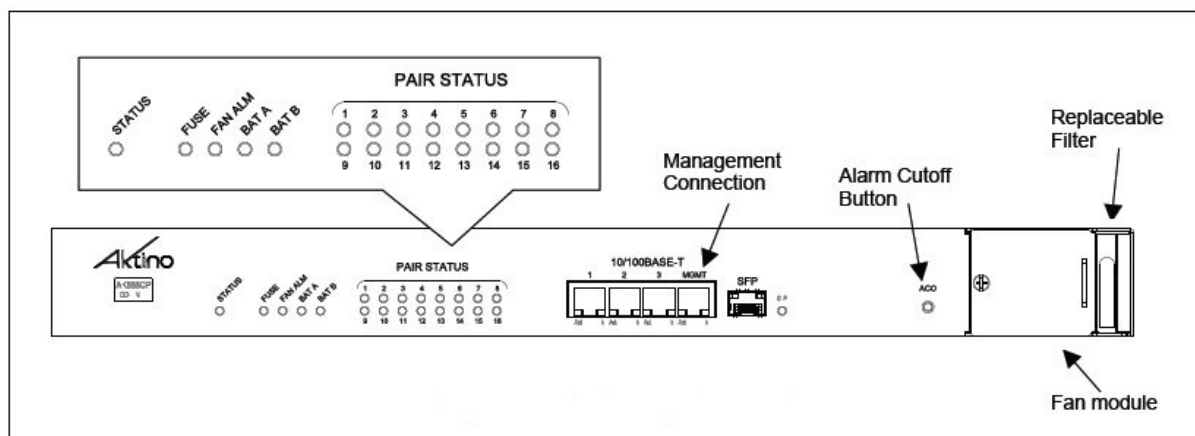


Figure 3 AK355 Front View

AK355 Front Panel Indicators

LED	Condition	Function
Status	Solid Green Flashing Green Solid Yellow Solid Red	Normal DS3 Loopback Active (DS3 Only) Minor Alarm Active Critical or Major Alarm
Fuse	Off Red	Unit Fuse OK Unit Fuse Has Blown
Fan Alarm	Solid Green Solid Yellow Flashing Red	Fan Status Normal One Fan Has Failed More Than One Fan Has Failed
MULTIPAIR SPAN STATUS	Solid Green Solid Yellow Solid Red	Normal Minor Alarm Critical or Major Alarm
PAIR STATUS	Off Solid Green Flashing Green Solid Red	Pair Is Disabled Pair Is Up Pair Is Acquiring Pair LOS/Open Circuit/Short
BAT A BAT B	Off Solid Green	External DC Power Has Not Been Applied External DC Power Is Present

ACO Pushbutton

Pushbutton	Function
ACO	<p>Push Alarm Cut Off pushbutton for at least 1/2 second, deactivates audio (not visual) relay for all active alarms. The ALARM LED on the AK355 indicates ACO has been activated by the connection on the back of the unit.</p> <p>To temporarily override the AK355C IP Address, push and hold the ACO button until the Status LED turns off. The management IP address of the CCU will revert to 192.168.10.1 for a period of 5 minutes. The AK355R will revert to the 192.168.10.2 IP Address.</p>

1.3.2 Rear View

The rear views of the AK355 systems are similar less the DS3 connections on the AK355E model.

1.3.2.1 Frame Ground Connections

The Ground Lug located on the right hand side of the back panel (see Figure 4) can accommodate up to 6 AWG wire. Use a wire gauge for grounding at least as heavy as the power wiring. Attach the grounding wire to the AK355 Ground Lug to a nearby grounding screw on the equipment rack or facility ground. Test the ground connection with an ohm meter; there should be less than 2 ohms between the AK355 Ground Lug and facility ground.

Note that the ground connection is required for proper system operations.

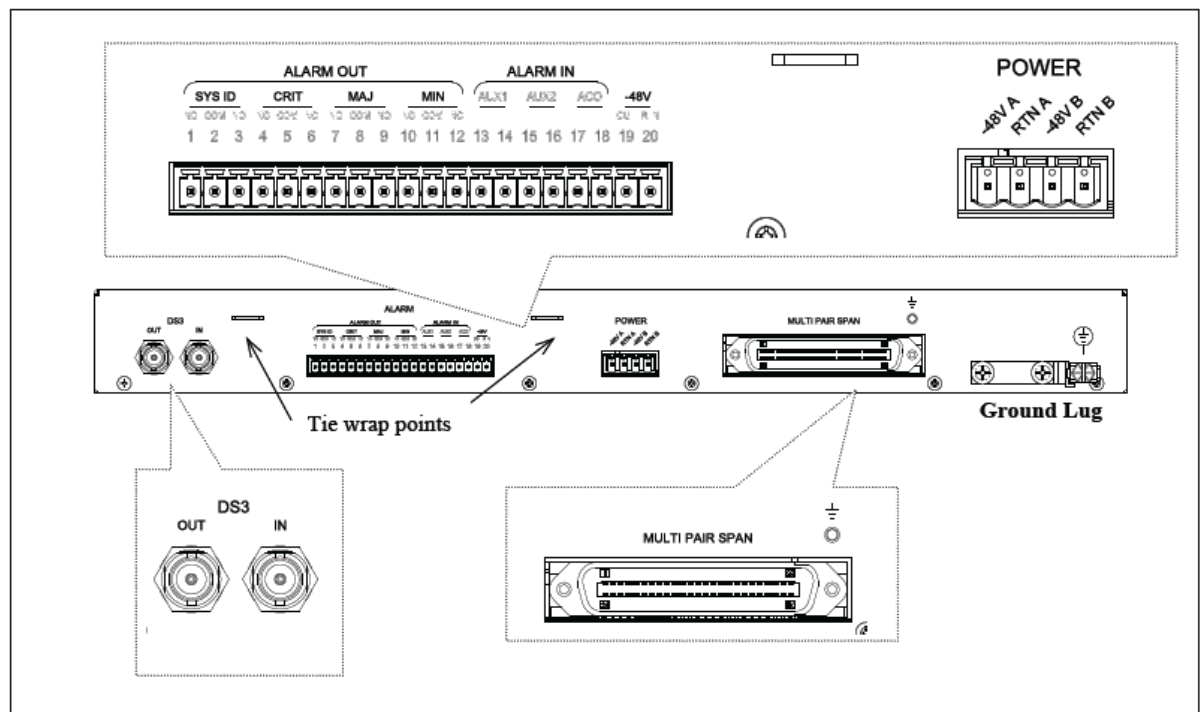


Figure 4 AK355 Rear View

1.3.2.2 **Power Connections**

A 7.5A to 10A UL listed fuse/circuit breaker must be installed ahead of this unit.

Two redundant power buses are provided (A and B). The two power inputs are identical and can be used for redundant power configurations.

Insert the ends of the -48 Vdc and Return power wires (16 AWG wire is recommended) into the A and B holes on the left side of the Phoenix plug. Inset the Phoenix plug into the Power connector.

Note: The DC return terminal is not connected to the equipment frame or the grounding means of the equipment (Isolated DC Return).

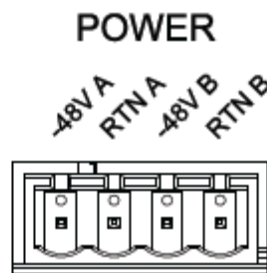


Figure 5 Power Connector

1.3.2.3 *Multi-Pair Span Connection*

The MSPAN connector is used to connect the AK355 to the outside plant pairs.

The Table shown below specifies the 50-pin AMP connector pin assignments.

Connector Pin Assignments

	TIP	RING
Pair 1	26	1
Pair 2	27	2
Pair 3	28	3
Pair 4	29	4
Pair 5	30	5
Pair 6	31	6
Pair 7	32	7
Pair 8	33	8
Pair 9	34	9
Pair 10	35	10
Pair 11	36	11
Pair 12	37	12
Pair 13	38	13
Pair 14	39	14
Pair 15	40	15
Pair 16	41	16

The CO MSPAN cable should be shielded with a pigtail wire that attaches to the ground lug just above the MSPAN connector. The RT MSPAN cable's shield should NOT be connected to ground (leave open). The MSPAN cable is female. Tie wrap points are available in several places on the back panel. The MSPAN cable can be routed to the left or right.

1.3.2.4 **Alarm Connections**

Alarm connections are generally used on the CO end. Insert alarm connections into the supplied Phoenix connector. Alarm connections available are:

- Critical, audio and visual
- Major, audio and visual
- Minor, audio and visual
- SysID
- Alarm-CutOff (ACO)
- Aux1, Aux2 Alarm in

Each alarm can be connected to Normally Open (NO) or Normally Closed (NC) position. Use the Common (COM) connection to complete the connection. SysID connections can be used to identify the equipment in alarm. SysID is active during any alarm activation. Aux1 and Aux2 are input alarm dry contact delay point. The Alarm-CutOff (ACO) connections are input dry contact relay points used for remote activation of ACO.

Note: The AK355CPS and the AK355RP only support the Alarm In connections.

1.3.2.5 **-48 Vdc OUT Connection**

The AK355R and the AK355CPS can supply 48Vdc output to power external devices. **Note:** DO NOT attach external voltages to these outputs.

1.3.2.6 **DS3 Connection**

Attach the transmit and receive DS3 coax cables to the In and Out BNC connectors on the back panel (see Figure 14).

Note: See Chapter 8 for AK355 Systems that support DS3.

Chapter 2

AktinoView Management Software

Ethernet Mode

2.1 Introduction

AktinoView is a Microsoft Windows software package used to manage one or more systems. In AktinoView, the AK355 unit located at the Central Office is referred to as the CO and the AK355 unit located at the Remote Office is referred to as the RT.

2.2 Installation

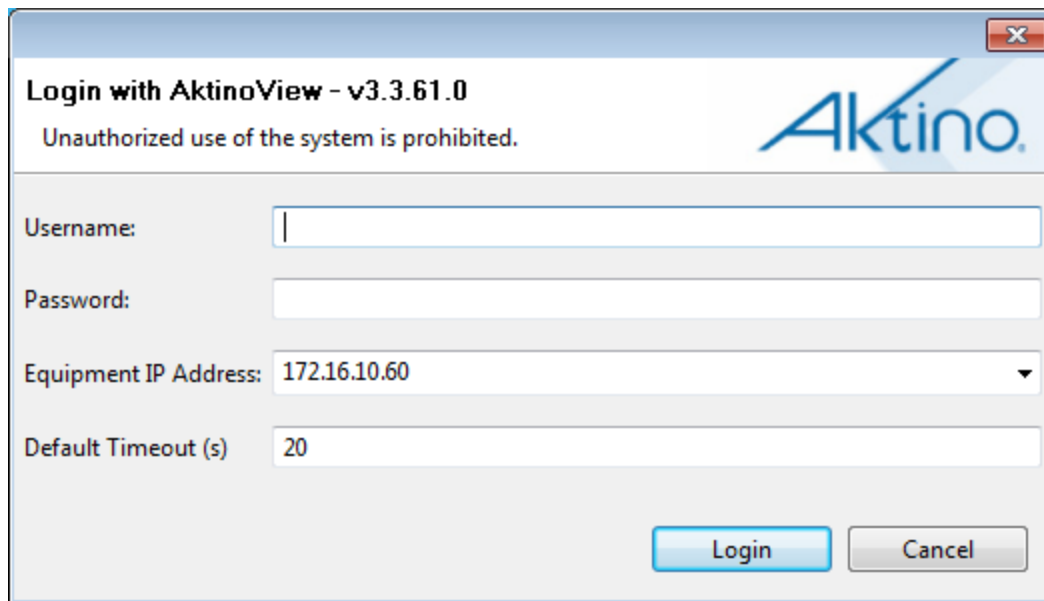
To install AktinoView proceed through the following:

- Insert the AktinoView CD in to the CD ROM drive or download AktinoView from Positron's portal located at <http://www.positronaccess.com>
- Open Windows Explorer and click on the CD drive
- Double-click on install.exe in the AktinoView folder
- Follow the instructions on the screen

2.3 System Management

2.3.1 Logging in to the System

From the Start Menu select **Aktino > AktinoView**, and you will see a dialog box similar to the following:



Enter a Username and Password appropriate for the system. The default Username is "superuser" and the default password is "superuser". Enter the system's IP address in the Equipment IP Address field, and Click **Login**. The default IP address for the CO unit is 192.168.10.1 and the default IP address for the RT unit is 192.168.10.2.

2.3.2 Switching from DS3 Mode to Ethernet Mode (for Systems supporting DS3)

- 1 Go to the Tools tab.
- 2 Right click on the RT Unit. **Note:** Always start this process by switching the RT unit first.
- 3 Select **Switch to Ethernet Mode** from the RT drop-down box and then select **OK**. This will initiate a process that will result with the RT rebooting.
- 4 Right click on the CO once the RT disappears.
- 5 Select **Switch to Ethernet Mode** from the CO drop-down box and then select **OK**. This will initiate a process that will result with the CO rebooting. **Note:** Wait a couple of minutes before continuing with the remainder of this process.
- 6 Go to the File Menu and select **Connect to...** This will bring up the Login to AktinoView dialog box.
- 7 Type in the Username and Password. The default Username is "superuser" and the default Password is also "superuser."
- 8 Click **Login**.
- 9 Follow the same process when returning to DS3 Mode.

2.3.3 AktinoView Main Window

Once you are logged into the system you will see three menu options:

File Menu

The File Menu provides two options:

Connect to: Allows you to connect to and manage several Aktino systems simultaneously.

Exit: Exits the AktinoView program.

Action Menu

The Action Menu provides four options:

Refresh: Refreshes the system.

System Backup: Opens a dialog box allowing you to save your System Configuration in an XML file to your PC so that you may retrieve and restore the configuration at a later date.

System Restore: Opens a dialog box to import and apply a previously saved System Configuration file. The process of restoring your system configuration will reboot your system.

System Software Upgrade: Opens a dialog box allowing you to upgrade the Aktino System software. (See Appendix A for System Software Upgrade procedures.)

Export: Provides three options: **Alarm Log**, **Alarm History**, and **PM** (Performance Monitoring). These options allow you to export the desired information to a .csv file.

Help Menu

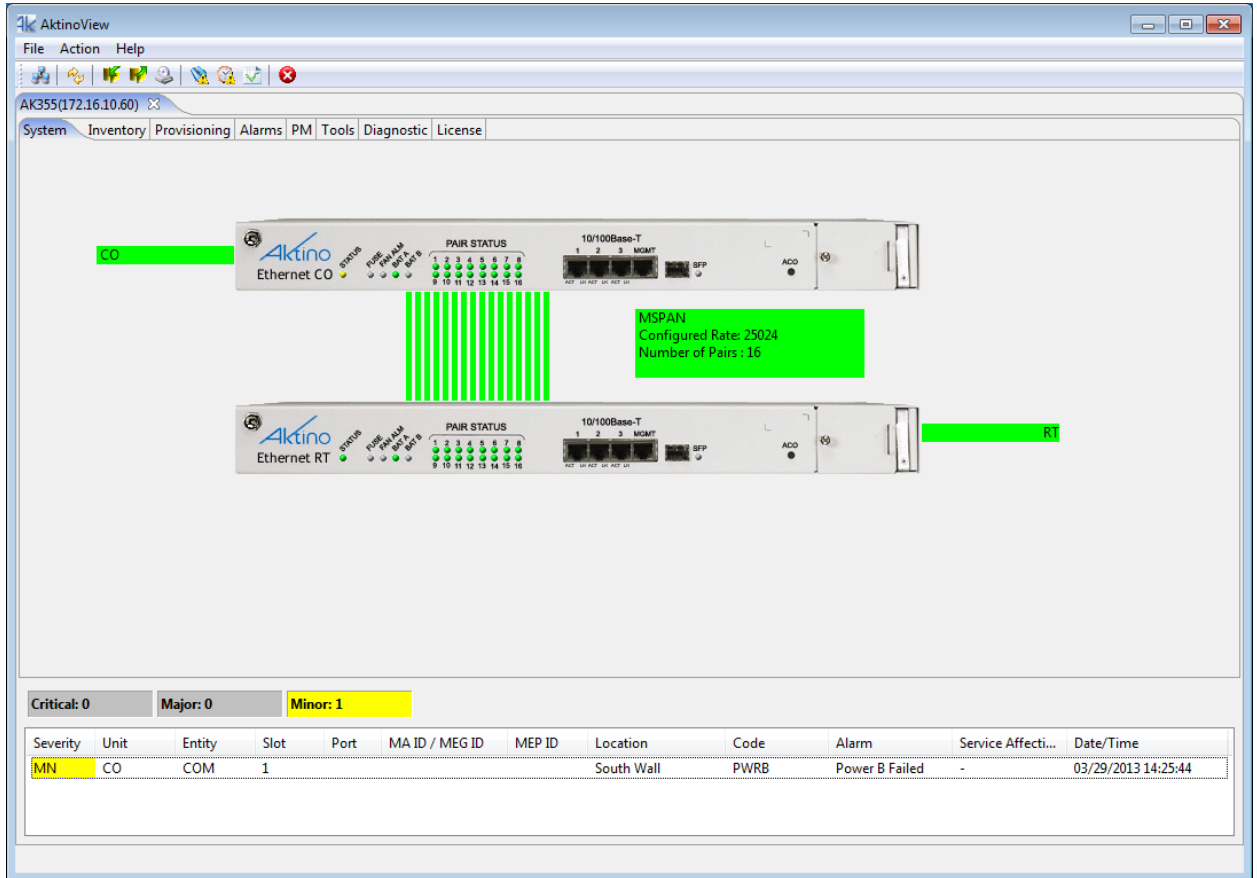
The Help Menu provides one option:

About: Displays the AktinoView software version information.

AktinoView provides Quick-Launch buttons for all the menus:



Under the Menus and Quick-Launch buttons, AktinoView displays a tab for all the systems currently being managed. Each tab will display the System Name and IP address of the selected system.



When AktinoView connects to a given system, it will display several additional tabs appropriate for the selected system. In this case, AktinoView displays the following tabs for the system in Ethernet mode: System, Inventory, Provisioning, Alarms, PM, Tools, Diagnostic, and License.

AktinoView provides Alarm details by right-clicking on the unit. If alarms are present in the system, AktinoView will display them at the bottom of the screen. For more information about a particular alarm, double-click on the alarm for details and trouble-shooting information.

Alarm Details

System ID: AK355_1

IP Address: 172.16.1.81

Unit: CO

Entity: COM

Code: PWRB

Troubleshooting Info: No power detected on power input B
Recommended action:
1. Check B side wiring and Fuse

Cancel

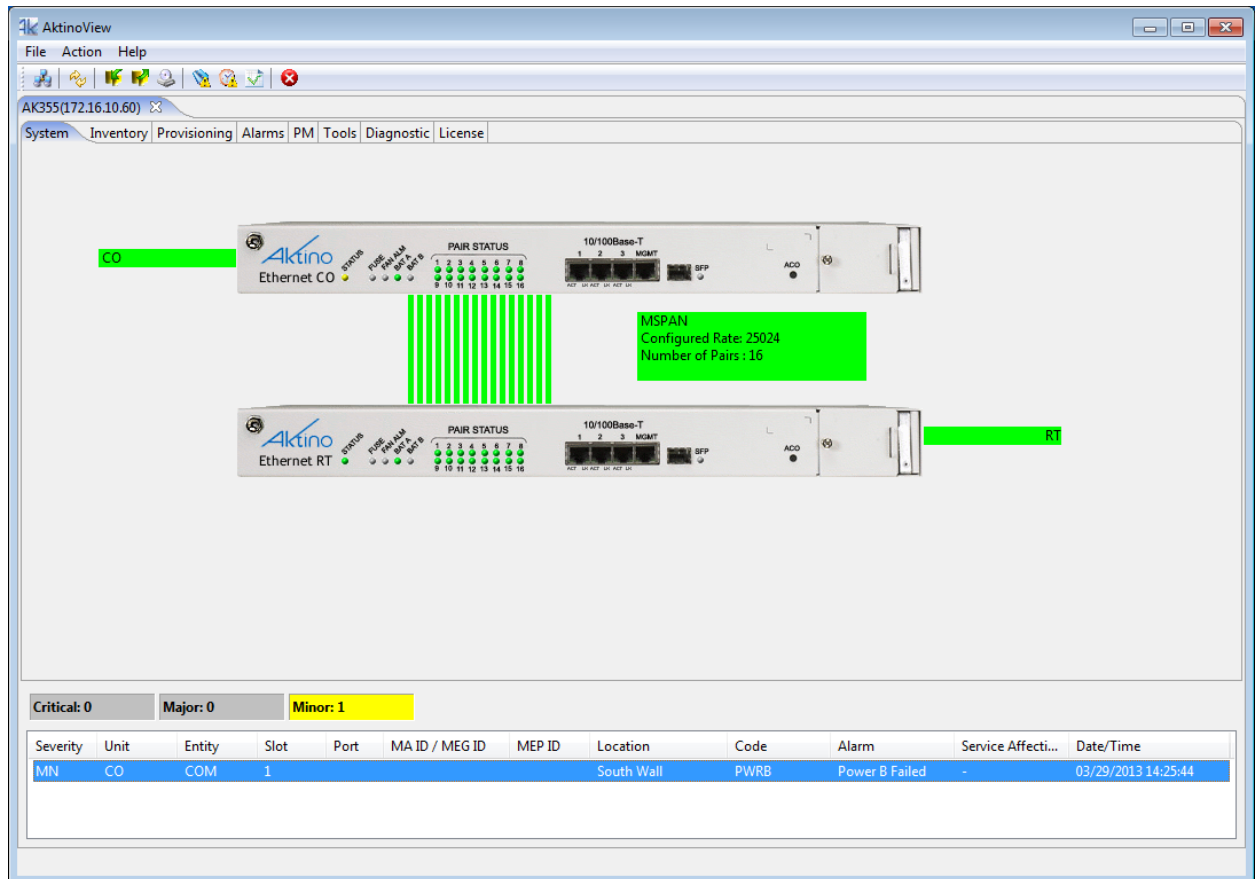
Alarm Details

AktinoView displays detailed alarm information for each system. It displays counters for the active Critical, Major, and Minor alarms, as well as detailed alarm information for each of the alarms present. The columns can be sorted and resized as desired.

Critical: 0 Major: 0 Minor: 1											
Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affecti...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.4 System

The System tab provides a front panel representation of the system.



2.3.5 Inventory

The Inventory tab provides details for the CO and RT Units comprising the system.

Inventory Tab Data:

Slot	Unit	Description	Serial Num.	CLEI Code	MAC Address	Hardware Rev.	Software Rev.	Options
1	CO	AK355CUP:CO DS3/Ethernet CO Unit 55 ...	1033458	VAMLW10H...	00:0e:d8:02:45:34	E05	r3.3.4	Asymmetric, Line Powering
1	RT	AK355RU: RT DS3/Ethernet RT Unit, 55 M...	1033482	VAMLX10HRA	00:0e:d8:02:45:6c	E05	r3.3.4	

System Status: Critical: 0, Major: 0, Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

It displays a Description for each of the devices, as well as their Serial Number, CLEI Code, Hardware and Software Revision Levels. It also displays any applied feature options.

See the following table for Parameters and Values:

Parameter	Values
Slot	Slot number
Unit	Location
Description	Detailed description
Serial	Serial Number
CLEI Code	Telcordia assigned CLEI code
MAC Address	MAC Address for the device
Hardware Rev.	Hardware Revision Level
Software Rev.	Software Revision Level
Options	Asymmetric: Support for Asymmetric Mode
	2.2 Mhz: Support for 2.2 Mhz Mode
	Line Powering: Support for Line Powering Mode

2.3.6 Provisioning

Clicking the Provisioning tab displays all the provisioning sub-sections supported by the system.

2.3.6.1 Equipment

Selecting the Equipment tab under Provisioning allows equipment provisioning of the system.

Slot	Unit	System ID	Contact	Location	Time	IP Address	Subnet Mask	Gateway Ad...	RT Proxy IP	Allow CPE Mgmt ...	Regenerator Type	Other Span IP Add...	Span 2 Mgmt. IP A...
1	CO	AK355_1	Ken	East Rack	03/09/2012 16:40:39	172.16.1.81	255.255.0.0	172.16.254.254		YES	None		
1	RT	RT for AK355 L...			03/09/2012 16:40:39	192.168.10.2	255.255.255.0				None		

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1	8			East Rack	PWRB	Power B Failed	-	03/07/2012 16:53:19
MN	CO	PAIR	1	8			East Rack	OPENCKT	Open Circuit	-	03/07/2012 16:53:21
NA	CO	ETHERNET	1	1			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:19
NA	CO	ETHERNET	1	2			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:20
NA	CO	ETHERNET	1	3			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:20
NA	CO	ETHERNET	1	SFP			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:20
NA	RT	ETHERNET	1	1				LINKDOWN	Link Down	yes	03/07/2012 16:52:27
NA	RT	ETHERNET	1	2				LINKDOWN	Link Down	yes	03/07/2012 16:52:27
NA	RT	ETHERNET	1	3				LINKDOWN	Link Down	yes	03/07/2012 16:52:27
NA	RT	ETHERNET	1	SFP				LINKDOWN	Link Down	yes	03/07/2012 16:52:27

Clicking on either a CO or RT unit brings up the Equipment dialog box for that specific unit.

×

Equipment

Aktino.

Slot	<input type="text" value="1"/>
Unit	<input type="text" value="CO"/>
System ID	<input type="text" value="AK355_1"/>
Contact	<input type="text" value="Ken"/>
Location	<input type="text" value="East Rack"/>
IP Address	<input type="text" value="172.16.1.81"/>
Subnet Mask	<input type="text" value="255.255.0.0"/>
Gateway Address	<input type="text" value="172.16.254.254"/>
RT Proxy IP	<input type="text"/>
Allow CPE Mgmt Access	<input type="text"/>
Regenerator Type	<input type="text" value="None"/>
Other Span IP Address	<input type="text"/>
Span 2 Mgmt. IP Address	<input type="text"/>
Time	<input type="text" value="03/09/2012"/> <input type="text" value="16"/> : <input type="text" value="51"/> : <input type="text" value="31"/> <input type="button" value="PC Time"/>

Equipment

Aktino.

Slot

1

Unit

RT

System ID

RT for AK355 Legacy

Contact

Location

IP Address

192.168.10.2

Subnet Mask

255.255.255.0

Gateway Address

RT Proxy IP

Allow CPE Mgmt Access

YES

Regenerator Type

None

Other Span IP Address

Span 2 Mgmt. IP Address

Time

03/09/2012

:

:

PC Time

OK

Apply

Cancel

See the following tables for Parameters and Values:

AK355C Equipment Parameters	Values
System ID	User configurable string of up to 20 characters
Contact	User configurable string of up to 64 characters
Location	User configurable string of up to 64 characters
IP Address	IP Address of the unit
Subnet Mask	Subnet Mask of the unit
Gateway Address	Gateway Address of the unit
RT Proxy IP	Proxy IP address of the CRU, used to access the CRU through the MSPAN link
Allow CPE Management Access	Enable or Disable local management access for CRU
Repeater Type	For Regenerator Applications
Other Span IP Address	For Regenerator Applications, indicate the Other Span IP Address (Do not use the same IP Address as the device's management port)
Span 2 Mgmt. IP Address	For Regenerator Applications, indicate the Span 2 management IP address (Do not use the same IP Address as the device's management port)

AK355R Equipment Parameters	Values
System ID	User configurable string of up to 20 characters
Contact	User configurable string of up to 64 characters
Location	User configurable string of up to 64 characters
IP Address	IP Address of the unit
Subnet Mask	Subnet Mask of the unit
Gateway Address	Gateway Address of the unit
Allow CPE Management Access	Enable or Disable local management access for CRU

2.3.6.2 Ethernet

Selecting the Ethernet tab under Provisioning allows Ethernet provisioning of the system.

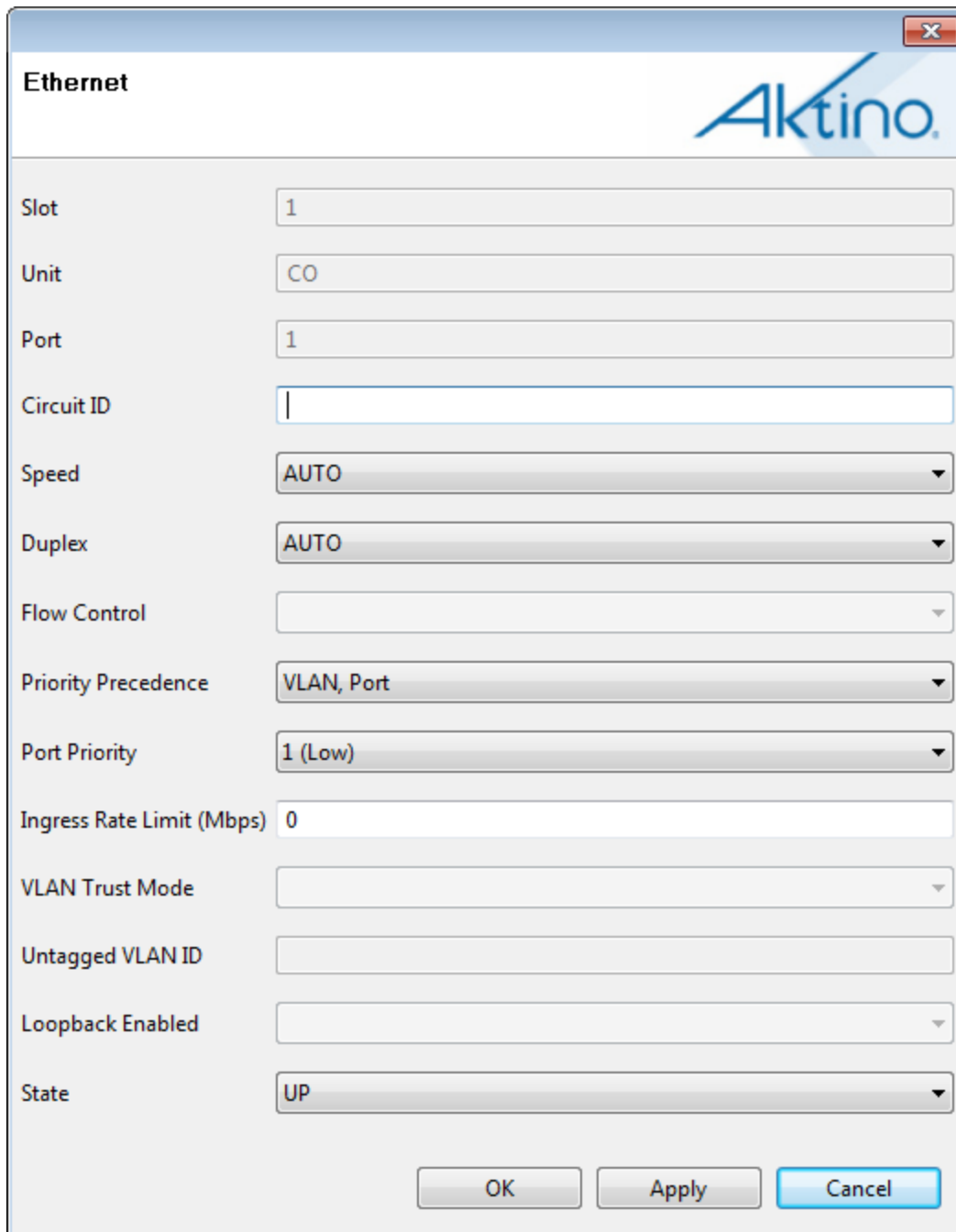
Table 1: Ethernet Provisioning Data

Slot	Unit	Port	State	Circuit ID	Speed	Duplex	Flow Control	Priority Precedence	Port Priority	Ingress Rate Limit ...	VLAN Trust Mode	Untagged VLAN ID	Loopback Enabled
1	CO	1	DOWN		AUTO	AUTO		VLAN, Port	1 (Low)	0			NO
1	CO	2	DOWN		AUTO	AUTO		VLAN, Port	1 (Low)	0			NO
1	CO	3	DOWN		AUTO	AUTO		VLAN, Port	1 (Low)	0			NO
1	CO	SFP	DOWN		1000	AUTO		VLAN, Port	1 (Low)	0			NO
1	RT	1	DOWN		AUTO	AUTO		VLAN, Port	1 (Low)	0	NO		NO
1	RT	2	DOWN		AUTO	AUTO		VLAN, Port	1 (Low)	0	NO		NO
1	RT	3	DOWN		AUTO	AUTO		VLAN, Port	1 (Low)	0	NO		NO
1	RT	SFP	DOWN		1000	AUTO		VLAN, Port	1 (Low)	0	NO		NO

Table 2: Alarm Data

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

Double-click on an Ethernet Port to bring up an Ethernet provisioning dialog box.



The image shows a software dialog box titled "Ethernet" with the Aktino logo in the top right corner. The dialog contains several configuration fields and buttons. The fields are arranged in a list on the left, with their corresponding input controls on the right. The controls include text boxes, dropdown menus, and a checkbox. At the bottom of the dialog are three buttons: "OK", "Apply", and "Cancel".

Field	Control
Slot	Text box containing "1"
Unit	Text box containing "CO"
Port	Text box containing "1"
Circuit ID	Text box containing a vertical bar " " (placeholder)
Speed	Dropdown menu showing "AUTO"
Duplex	Dropdown menu showing "AUTO"
Flow Control	Dropdown menu (empty)
Priority Precedence	Dropdown menu showing "VLAN, Port"
Port Priority	Dropdown menu showing "1 (Low)"
Ingress Rate Limit (Mbps)	Text box containing "0"
VLAN Trust Mode	Dropdown menu (empty)
Untagged VLAN ID	Text box (empty)
Loopback Enabled	Dropdown menu (empty)
State	Dropdown menu showing "UP"

Buttons: OK, Apply, Cancel

See the following table for the Parameters and Values:

Ethernet Parameters	Values
Circuit ID	User configurable string of up to 48 characters
Speed	Sets the Ethernet Speed for the selected port
Duplex	Sets the Ethernet Duplex for the selected port
Priority Preference	Sets the Priority Ranking for ingress Ethernet data to: VLAN DiffServ, Port VLAN, Port DiffServ, Port Port Only
Port Priority	Sets the Port's Priority Ranking for the ingress Ethernet data
Ingress Rate Limit (Mbps)	Sets an ingress Rate Limit for the Ethernet data, where "0" means no Ingress Rate Limit is set
VLAN Trust Mode	For CRUs in Tunneled VLAN mode only: YES - RT Ingress packets which have a VLAN ID matching a provisioned VLAN ID will be passed through transparently, otherwise the packet is dropped. RT Egress packets are passed through transparently. NO - RT Ingress packets have the VLAN ID assigned to the port added to the packet (the outer VLAN ID if a VLAN ID is already present). RT Egress packets have the outer VLAN ID stripped.
Untagged VLAN ID	For CRUs in Tunneled VLAN mode only: The VLAN ID entered will be added to RT Ingress untagged packets, then checked for VLAN membership.
Loopback Enabled	Yes - Ethernet Loopback enabled No - Ethernet Loopback disabled
State	Up - Ethernet Port is in service Down - Ethernet Port is out of service

2.3.6.3 SNMP

Selecting the SNMP tab allows setting SNMP receiver parameters.

System ID: Read Community String:

Contact:

Location:

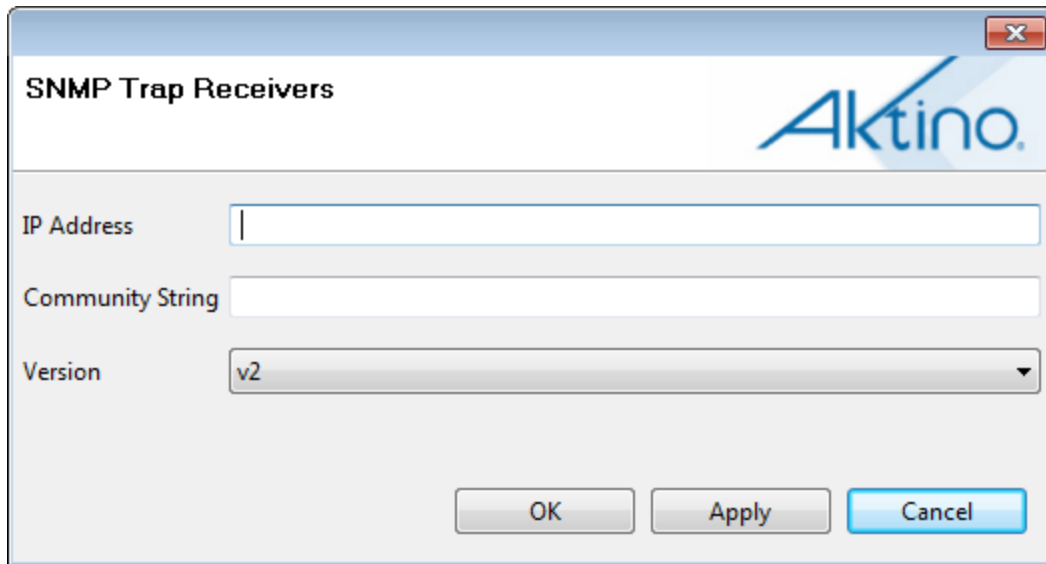
SNMP Trap Hosts

Index	IP Address	Community String	Version
1	172.16.2.2	public	v2
2			
3			
4			

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

Double-clicking on the Index brings up the SNMP Trap Receivers dialog box enabling SNMP provisioning.



The image shows a Windows-style dialog box titled "SNMP Trap Receivers" with the Aktino logo in the top right corner. The dialog contains three input fields: "IP Address" (a text box with a cursor), "Community String" (a text box), and "Version" (a dropdown menu currently showing "v2"). At the bottom right, there are three buttons: "OK", "Apply", and "Cancel".

SNMP Trap Receivers

Aktino.

IP Address

Community String

Version

OK Apply Cancel

See the following for the Parameters and Values for both of these screens:

SNMP Parameters	Values
System ID	User configurable string of up to 20 characters
Contact	User configurable string of up to 64 characters
Location	User configurable string of up to 64 characters
Read Community String	The SNMP Read Community String for the AK355 System

SNMP Trap Host Parameters	Values
IP Address	IP Address of the SNMP Trap Receiver
Community String	SNMP Community String of the Trap Receiver
Version	SNMP Trap Version Number (v1 or v2)

2.3.6.4 MSPAN

Selecting the MSPAN tab under Provisioning allows MSPAN provisioning of the system.

Note: Configuring Line Powering on an AK355RP is done by connecting to the AktinoView session to the AK355RP instead of connecting to the AK355CPS.

General Parameters

Slot	Unit	State	Circuit ID	Mode	Rate Upstream...	Rate Downstre...	Line Powering	SNR Margin ...	Margin Threshold (d...	Reserve Pairs	PSD Mask	2.2 Mhz
1	CO	UP		Symmetric	25000	25000	-185V	5	3	0	AUTO Select	

Advanced Parameters

Slot	Unit	Reed-Solomon Up...	Reed-Solomon Do...	Latency Upstream	Latency Downstre...	Impulse Prot. Upst...	Impulse Prot. Dow...	Power Back-Off U...	Power Back-Off D...	Max SNR Margin (...	Rate Alarm Threshold Ups...	Rate Alarm
1	CO	5.30	5.30	2	2	50	50	AUTO	AUTO	50	25000	25000

Summary: Critical: 0, Major: 0, Minor: 2

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				East Rack	PWRB	Power B Failed	-	03/07/2012 16:53:19
MN	CO	PAIR	1	8			East Rack	OPENCKT	Open Circuit	-	03/07/2012 16:53:21
NA	CO	ETHERNET	1	1			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:19
NA	CO	ETHERNET	1	2			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:20
NA	CO	ETHERNET	1	3			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:20
NA	CO	ETHERNET	1	SFP			East Rack	LINKDOWN	Link Down	yes	03/07/2012 16:53:20
NA	RT	ETHERNET	1	1				LINKDOWN	Link Down	yes	03/07/2012 16:52:27
NA	RT	ETHERNET	1	2				LINKDOWN	Link Down	yes	03/07/2012 16:52:27
NA	RT	ETHERNET	1	3				LINKDOWN	Link Down	yes	03/07/2012 16:52:27
NA	RT	ETHERNET	1	SFP				LINKDOWN	Link Down	yes	03/07/2012 16:52:27

Double-clicking on the Slot number entry in either the General Parameters area or the Advanced Parameters area provides the MSPAN Parameters dialog box for both General and Advanced Parameters.

MSPAN

General Parameters

Slot: 1

Unit: CO

Circuit ID:

Mode: Symmetric

MSPAN Rate (kbps): 25000

Rate Upstream (kbps): 25000

Rate Downstream (kbps): 25000

Line Powering: -185V

SNR Margin (dB): 5

Margin Threshold (dB): 3

Reserve Pairs: 0

PSD Mask: AUTO Select

2.2 Mhz:

State: UP

Advanced Parameters

Reed-Solomon Upstream: 5.30

Reed-Solomon Downstream: 5.30

Latency Upstream: 2

Latency Downstream: 2

Impulse Prot. Upstream (μs): 50

Impulse Prot. Downstream (μs): 50

Power Back-Off Upstream (dB): AUTO

Power Back-Off Downstream (dB): AUTO

Max SNR Margin (dB): 50

Rate Alarm Threshold (kbps): 25000

Rate Alarm Threshold Upstream (kbps): 25000

Rate Alarm Threshold Downstream (kbps): 25000

☐ Configure Rate Alarm Threshold

OK Apply Cancel

See the following table for Parameters and Values:

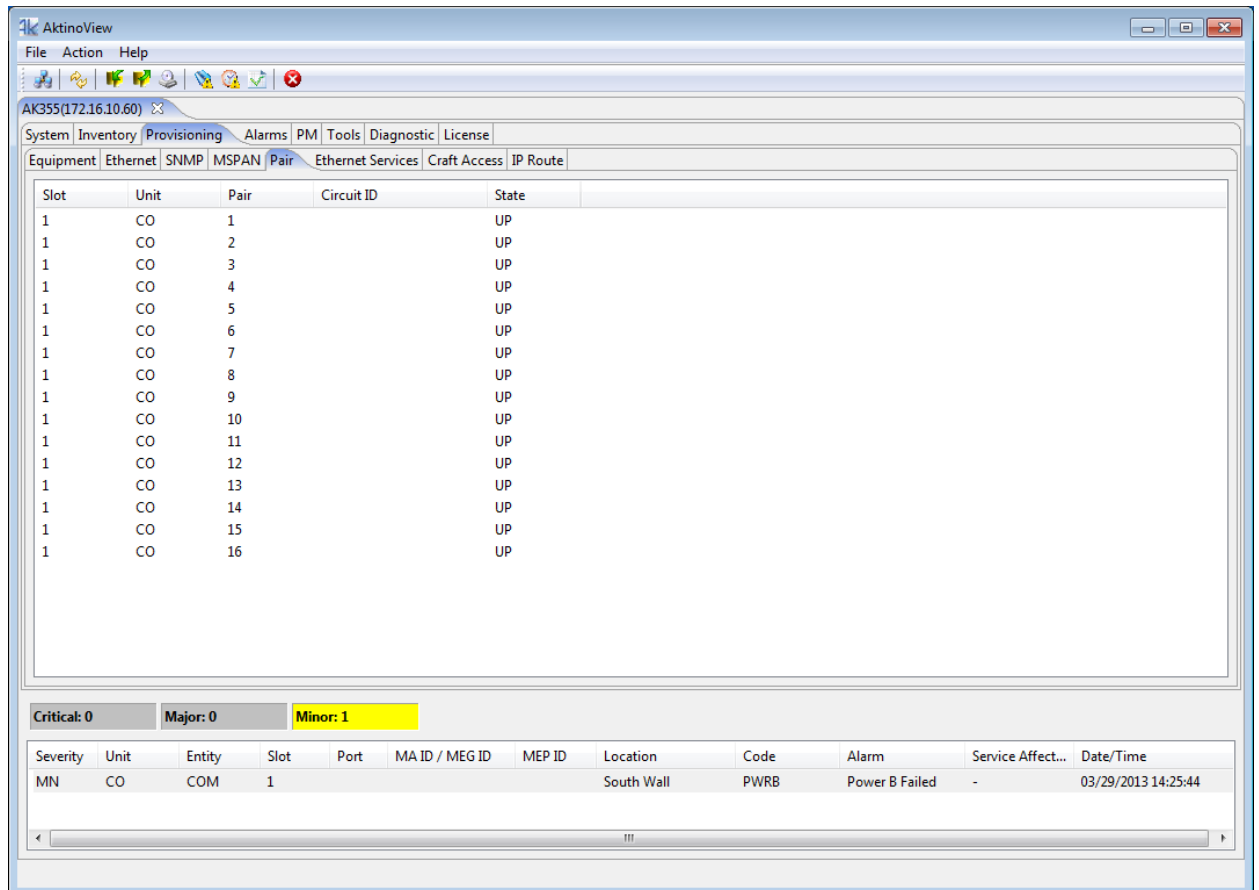
MSPAN General Parameters	Values
State	Sets the MSPAN State: Up - MSPAN is in service Down - MSPAN is out of service
Circuit ID	User configurable string of up to 48 characters
Mode	Sets the MSPAN Mode: Symmetric Asymmetric
MSPAN Rate (kbps)	Sets the MSPAN Rate in Symmetric Mode
Rate Upstream	Sets the Upstream MSPAN Rate in Asymmetric Mode
Rate Downstream	Sets the Downstream MSPAN Rate in Asymmetric Mode
Line Powering	Sets Line Powering to: Off, -135v, or -185v
SNR Margin	Sets the SNR Margin: 0 to 18dB
Margin Threshold	Sets the SNR Margin Threshold. If the SNR Margin falls below this threshold, an Alarm will be generated
Reserve Pairs	Sets the number of Reserve Pairs
PSD Mask	Sets the PSD Mask: Auto - Select the PSD Mask automatically Select - M0, M1, M2, M3, M4 or M5
2.2 Mhz	If the 2.2 Mhz feature is enabled: Select - Auto, or No

See the following table for Advanced Parameters and Values:

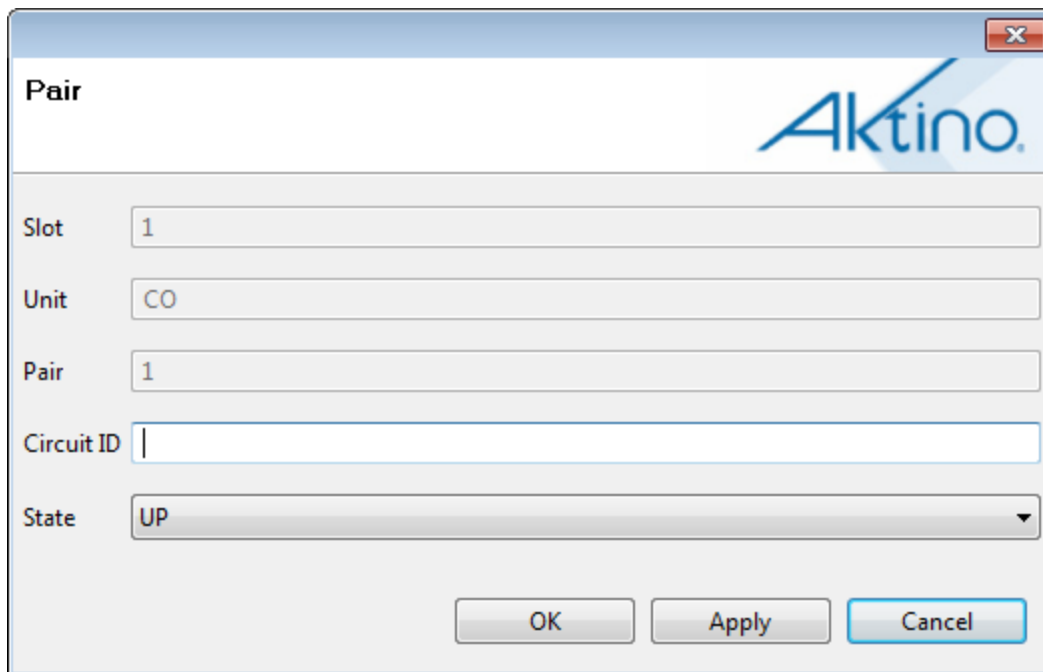
MSPAN Advanced Parameters	Values
Reed-Solomon Upstream	Calculated Reed-Solomon Overhead percentage Upstream: $RS\% = 2 * INP / Latency$
Reed-Solomon Downstream	Calculated Reed-Solomon Overhead percentage Downstream: $RS\% = 2 * INP / Latency$
Latency Upstream	Sets the Upstream Latency: 0, 1, 2, 4, 8, 12, 16, 20, 32msec
Latency Downstream	Sets the Downstream Latency: 0, 1, 2, 4, 8, 12, 16, 20, 32msec
Impulse Protection Upstream	Length of Upstream Impulse Noise Protection: 50, 125, 250, 500, 750, 1000, 2000, 4000 μ sec
Impulse Protection Downstream	Length of Downstream Impulse Noise Protection: 50, 125, 250, 500, 750, 1000, 2000, 4000 μ sec
Power Back-Off Upstream	Auto, -3 to 16dB
Power Back-Off Downstream	Auto, -3 to 16dB
Rate Alarm Threshold	MSPAN Rate Alarm Threshold for Symmetric Mode
Rate Alarm Threshold Upstream	MSPAN Upstream Rate Alarm Threshold for Asymmetric Mode
Rate Alarm Threshold Downstream	MSPAN Downstream Rate Alarm Threshold for Asymmetric Mode

2.3.6.5 *Pair*

Selecting the Pair tab under the Provisioning tab allows Pair provisioning of the system.



Double-clicking on the Pair brings up the following Pair provisioning dialog box:



Pair

Slot: 1

Unit: CO

Pair: 1

Circuit ID:

State: UP

OK Apply Cancel

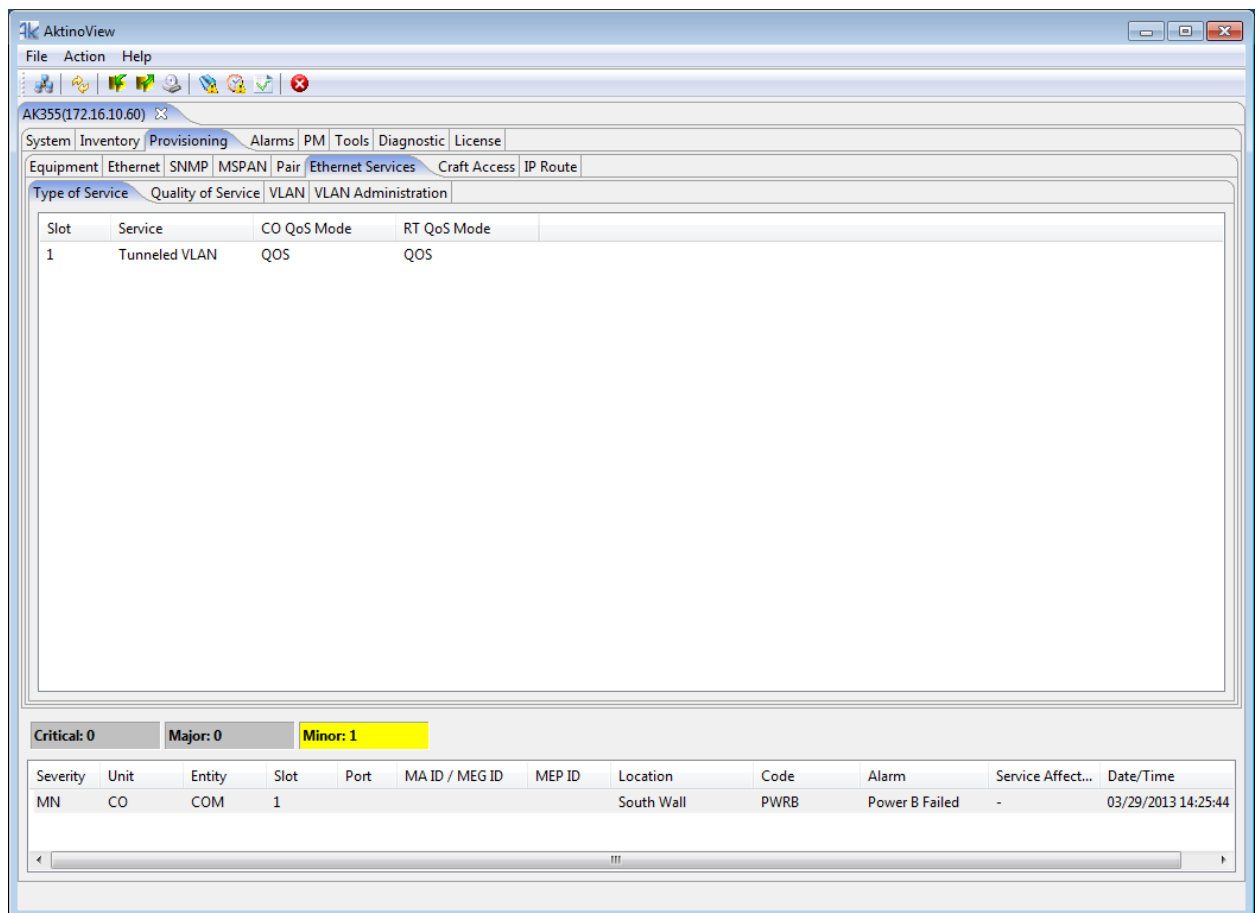
See the following table for Pair Provisioning Parameters and Values:

Pair Parameters	Values
Circuit ID	User configurable string of up to 48 characters
State	Sets the Pair State: Up - Pair is in service Down - Pair is out of service

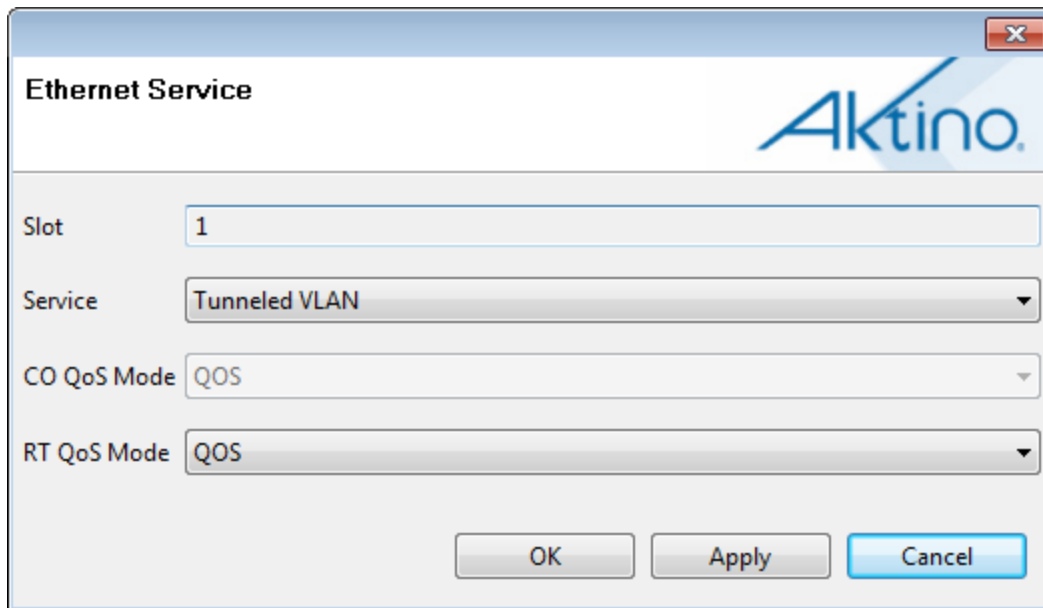
2.3.6.6 Ethernet Services

2.3.6.6.1 Type of Service

Selecting the Ethernet Type of Services tab allows type of service provisioning of the system.



Double-clicking on a slot brings up the following Ethernet Service provisioning dialog box:



The image shows a software dialog box titled "Ethernet Service" with the Aktino logo in the top right corner. The dialog contains four configuration fields: "Slot" with a text input containing "1", "Service" with a dropdown menu showing "Tunneled VLAN", "CO QoS Mode" with a dropdown menu showing "QoS", and "RT QoS Mode" with a dropdown menu showing "QoS". At the bottom right, there are three buttons: "OK", "Apply", and "Cancel".

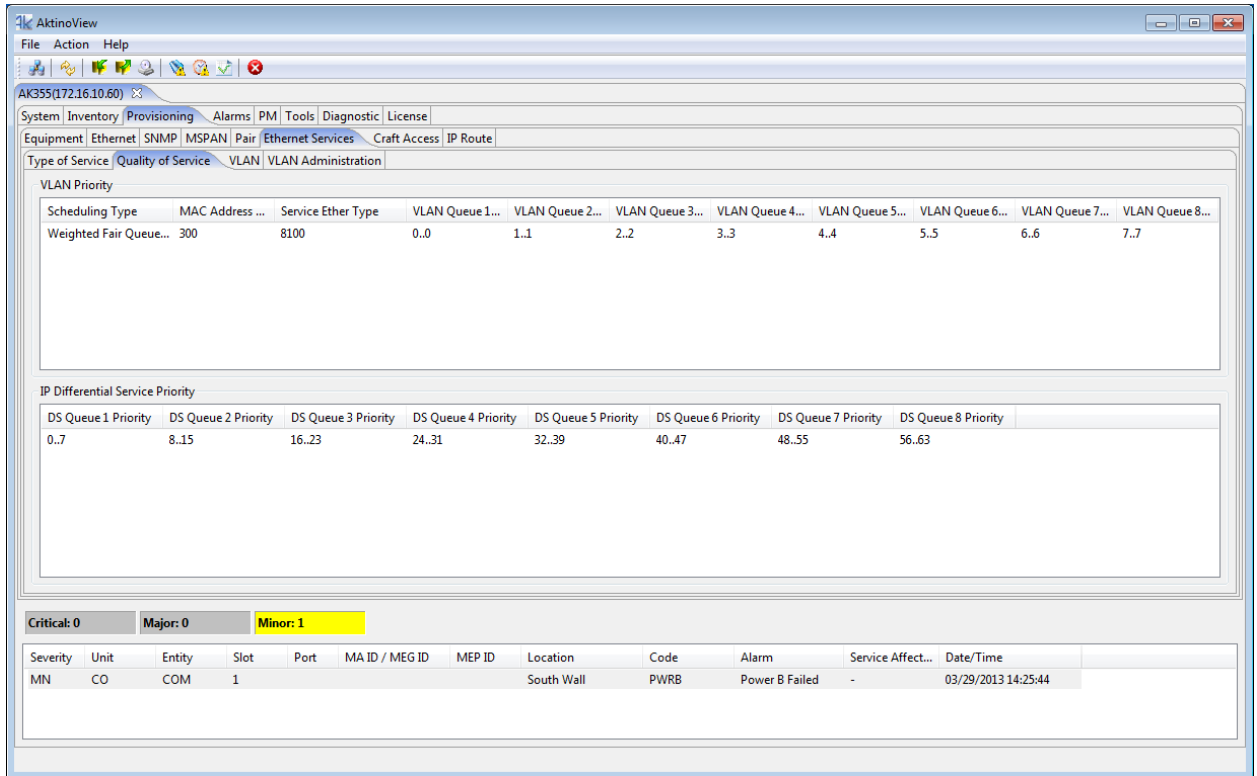
Field	Value
Slot	1
Service	Tunneled VLAN
CO QoS Mode	QoS
RT QoS Mode	QoS

See the following table for Ethernet Type of Service Parameters and Values:

Type of Service Parameters	Values
Service	<p>Transparent Switch - The CO and RT units behave as a 6-port switch (three ports on each end). Frames may go from any port to any other port. Frames are transported transparently.</p> <p>Transparent Port - CO/RT 1000BaseT Port-1 is connected to Port-1, Port-2 to Port-2, and Port-3 to Port-3 Data between each port is not mixed. SFP module cannot be used in this mode.</p> <p>Tunneled VLAN - VLAN IDs are assigned to each port. The VLAN IDs determine which packets go to which ports.</p>
Co QoS Mode	<p>QoS - Port, VLAN, and DiffServ priorities are used as the flow control mechanism. Pause frames are not sent for flow control</p> <p>Lossless - Pause frames are used as the flow control mechanism. The Port, VLAN, and DiffServ priorities are also active</p>
RT QoS Mode	<p>QoS - Port, VLAN, and DiffServ priorities are used as the flow control mechanism. Pause frames are not sent for flow control</p> <p>Lossless - Pause frames are used as the flow control mechanism. The Port, VLAN, and DiffServ priorities are also active</p>
Tail Drop Threshold	<p>The Tail Drop Threshold is the number of 256-Byte buffers each Line Card reserves for its priority queues. Since downstream traffic can arrive at gigabit speed, each Line Card buffers Ethernet frames as they wait to be sent over the MSPAN. Each Line Card provides 384 buffers which are shared by all its priority queues. The default Tail Drop configuration provides the four busiest priority queues with 96 buffers each. If only two priority queues are used, increasing the Tail Drop threshold to 192 provides better throughput.</p>

2.3.6.6.2 Quality of Service

Selecting the Quality of Service tab unit allows Global Quality of Service provisioning of the system.



The screenshot shows the AktinoView software interface. The main window has a menu bar (File, Action, Help) and a toolbar. Below the menu bar is a tabbed interface with the following tabs: System, Inventory, Provisioning, Alarms, PM, Tools, Diagnostic, and License. The Provisioning tab is selected, and within it, the Ethernet Services sub-tab is active. The Quality of Service section is displayed, showing a table for VLAN Priority and a section for IP Differential Service Priority.

Scheduling Type	MAC Address ...	Service Ether Type	VLAN Queue 1...	VLAN Queue 2...	VLAN Queue 3...	VLAN Queue 4...	VLAN Queue 5...	VLAN Queue 6...	VLAN Queue 7...	VLAN Queue 8...
Weighted Fair Queue...	300	8100	0..0	1..1	2..2	3..3	4..4	5..5	6..6	7..7

IP Differential Service Priority

DS Queue 1 Priority	DS Queue 2 Priority	DS Queue 3 Priority	DS Queue 4 Priority	DS Queue 5 Priority	DS Queue 6 Priority	DS Queue 7 Priority	DS Queue 8 Priority
0..7	8..15	16..23	24..31	32..39	40..47	48..55	56..63

Summary: Critical: 0, Major: 0, Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

Double-clicking on any area in the VLAN Priority or IP Differential Service Priority brings up the following Ethernet Quality of Service provisioning dialog box:



The dialog box is titled "Ethernet Quality of Service" and features the Aktino logo in the top right corner. It contains the following fields and sections:

- Scheduling Type:** A dropdown menu set to "Weighted Fair Queueing".
- MAC Address Aging Timeout (sec):** A text input field containing "300".
- Service Ether Type:** A text input field containing "8100".
- VLAN Priority:** A section with eight rows, each containing a queue name, a numeric value, and a dropdown arrow.

Queue	Value	Dropdown
Queue 1 (Lowest Priority)	0	0
Queue 2	1	1
Queue 3	2	2
Queue 4	3	3
Queue 5	4	4
Queue 6	5	5
Queue 7	6	6
Queue 8 (Highest Priority)	7	7
- IP Differential Service Priority:** A section with eight rows, each containing a queue name, a numeric value, and a dropdown arrow.

Queue	Value	Dropdown
Queue 1 (Lowest Priority)	0	7
Queue 2	8	15
Queue 3	16	23
Queue 4	24	31
Queue 5	32	39
Queue 6	40	47
Queue 7	48	55
Queue 8 (Highest Priority)	56	63

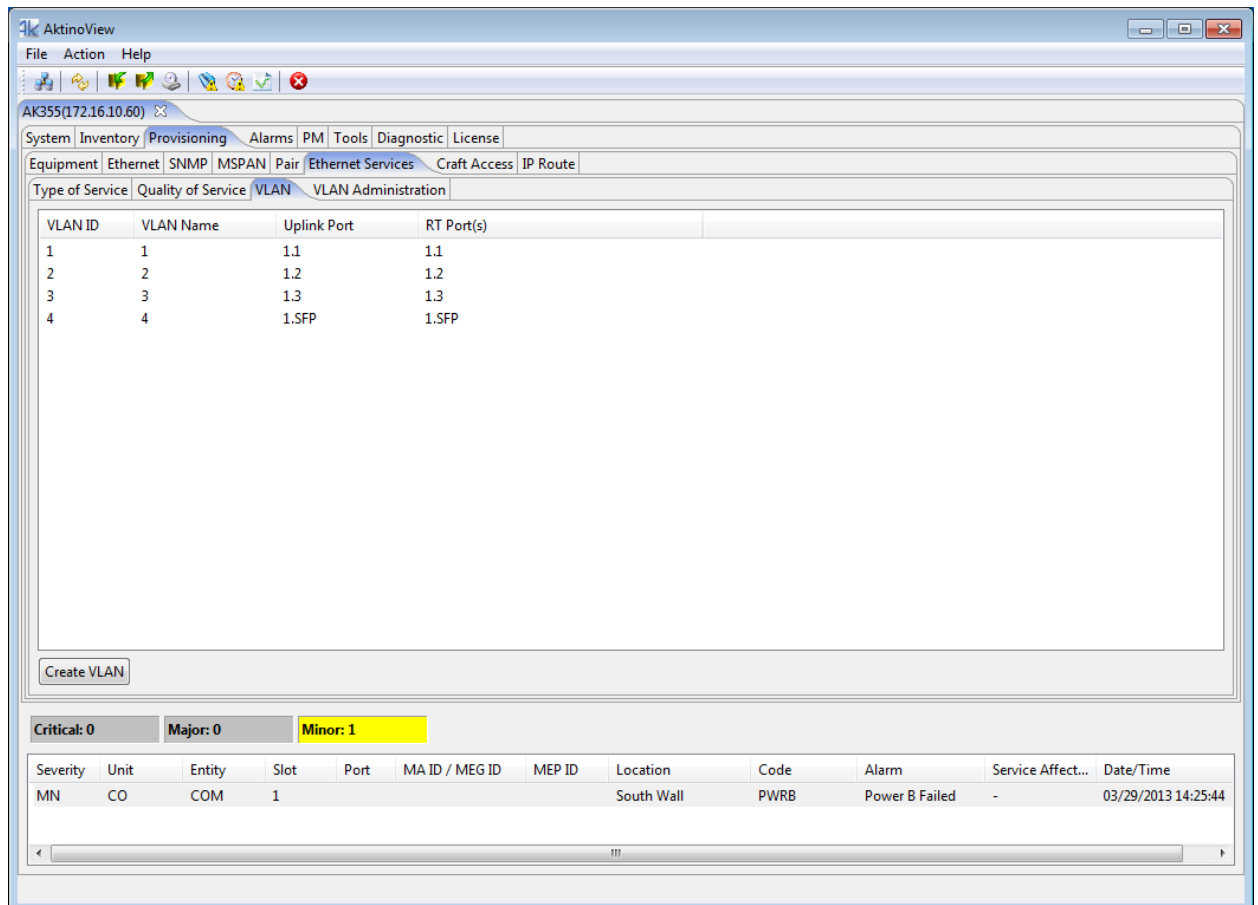
At the bottom right, there are three buttons: "OK", "Apply", and "Cancel".

See the following table for Quality of Service Parameters and Values:

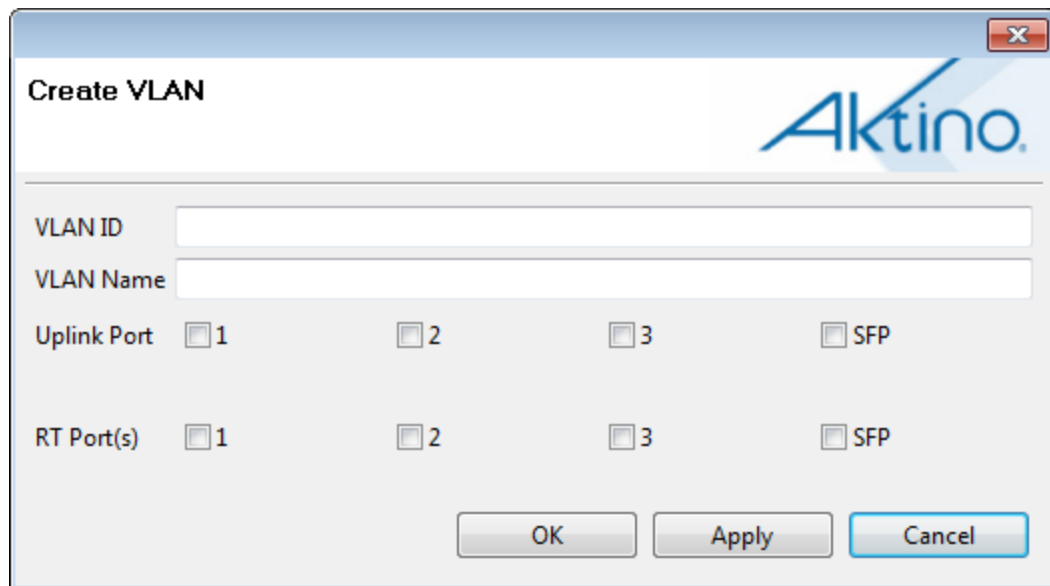
QoS Parameters	Values
Scheduling Type	Weighted Fair Queuing Strict Priority Strict Priority & Weighted Fair Queuing
MAC Address Aging Timeout	Time in seconds after which MAC Addresses are removed from the MAC Address table
Service Ether Type	Value for Ether Type Field that is used when adding a service VLAN tag
VLAN Priority	Allows for the mapping of priority levels for each of the AK355 System's eight priority queues
IP Differential Service Priority	Allows for the mapping of IP DiffServ ranges for each of the AK355 System's eight system priority queues
Queue Scheduling	Allows for each of the AK355 System's eight priority queues to either WFQ or Strict priority, and for WFQ settings, allows for the configuration of the queues scheduling weight from 0 to 255

2.3.6.6.3 VLAN

Selecting the VLAN tab allows the VLAN provisioning of the system. Note that this menu is available when the System is provisioned for Tunneled VLAN service.



Right-clicking on the **Create VLAN** button brings up the Create VLAN dialog box.

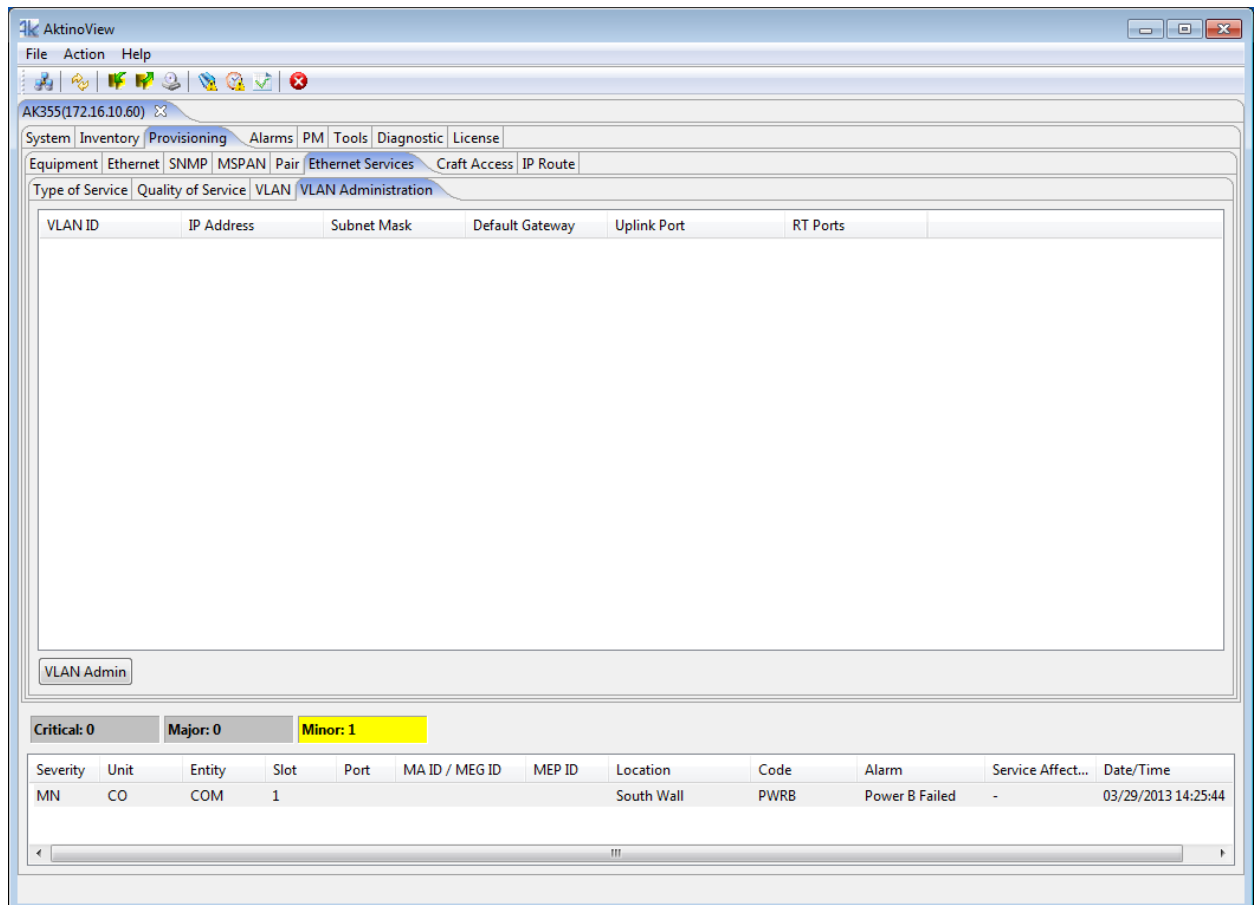
The image shows a 'Create VLAN' dialog box with the Aktino logo in the top right corner. It contains two text input fields: 'VLAN ID' and 'VLAN Name'. Below these are two rows of checkboxes. The first row is labeled 'Uplink Port' and has checkboxes for '1', '2', '3', and 'SFP'. The second row is labeled 'RT Port(s)' and also has checkboxes for '1', '2', '3', and 'SFP'. At the bottom right are three buttons: 'OK', 'Apply', and 'Cancel'.

See the following table for the VLAN Parameters and Values:

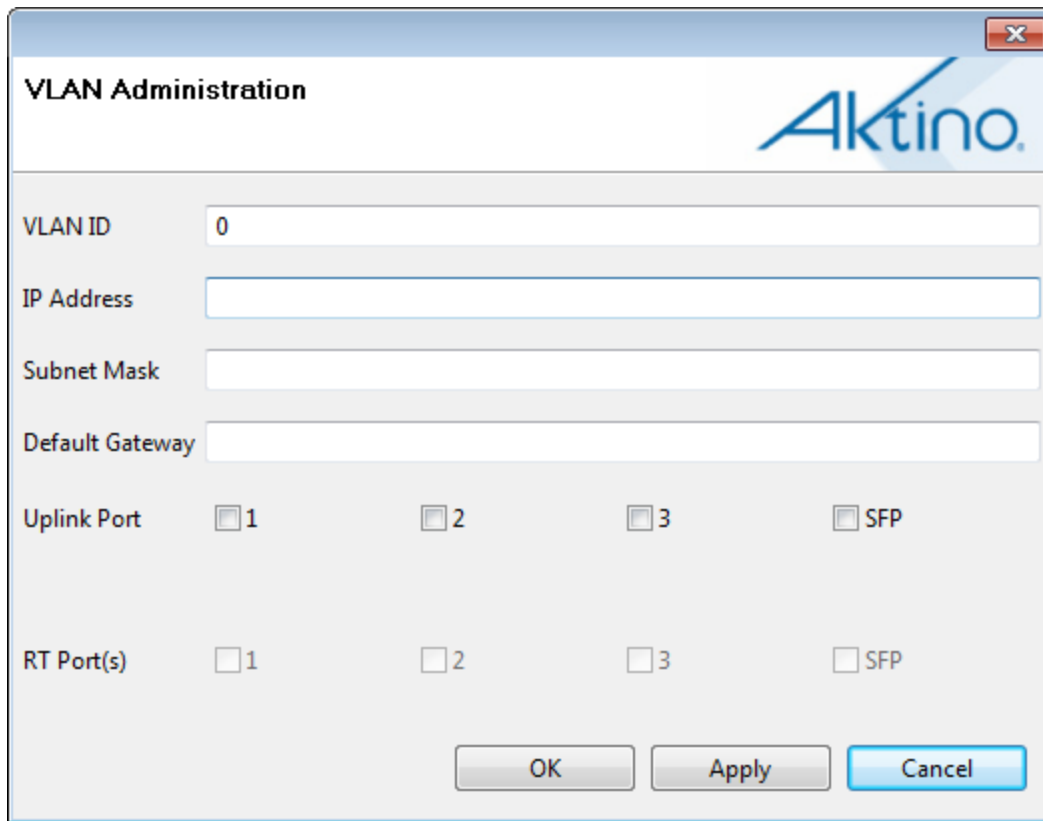
VLAN Parameters	Values
VLAN ID	Enter a VLAN ID from 1 to 4092.
VLAN Name	User configurable string of up to 31 characters.
Uplink Port	Specify the Uplink Port on the on AK355C Unit this VLAN ID is assigned to.
RT Port(s)	Specify the AK355R Port(s) this VLAN ID is assigned to.

2.3.6.6.4 VLAN Administration

Selecting the VLAN Administration tab allows you to provision a management VLAN. The VLAN can be transparently passed through to RT ports to allow other equipment to use the same management VLAN.



Click VLAN Admin to bring up the following dialog box:



The image shows a 'VLAN Administration' dialog box with the Aktino logo in the top right corner. The dialog contains several input fields and checkboxes. The 'VLAN ID' field is set to '0'. Below it are empty fields for 'IP Address', 'Subnet Mask', and 'Default Gateway'. There are two rows of checkboxes: 'Uplink Port' and 'RT Port(s)', each with options for ports 1, 2, 3, and SFP. At the bottom are 'OK', 'Apply', and 'Cancel' buttons.

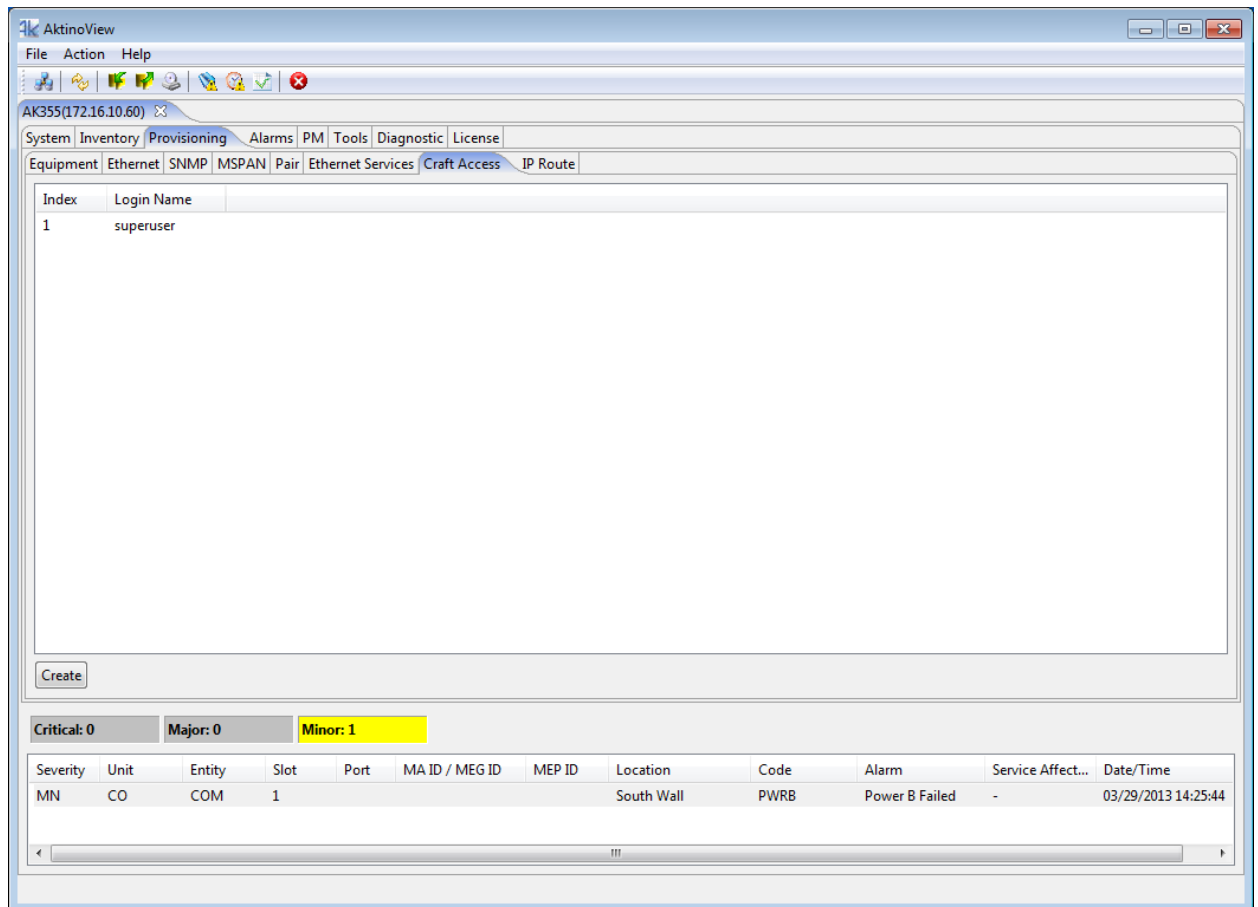
Parameter	Value
VLAN ID	0
IP Address	
Subnet Mask	
Default Gateway	
Uplink Port	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> SFP
RT Port(s)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> SFP

See the following table for the VLAN Administration Parameters and Values:

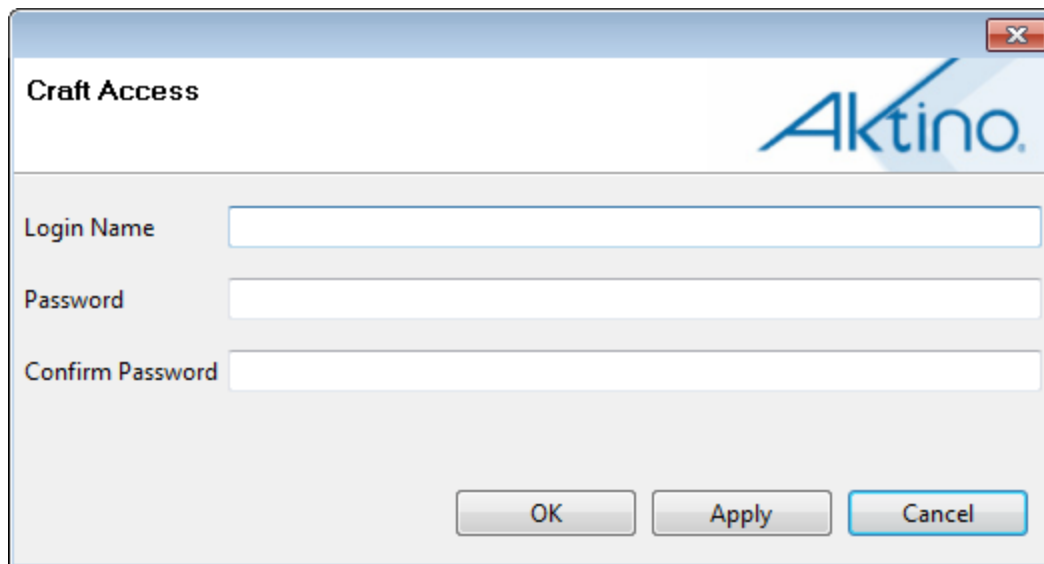
VLAN Administration Parameters	Values
VLAN ID	Enter a VLAN ID from 1 to 4092, a value of 0 disables the Management VLAN
IP Address	The IP Address for the Management VLAN
Subnet Mask	The Subnet Mask for the Management VLAN
Default Gateway	The Default Gateway for the Management VLAN
Uplink Port	Specify the Uplink Port on the AK355C Unit this VLAN ID is assigned to

2.3.6.7 Craft Access

Selecting the Craft Access tab under Provisioning allows management administration.



Click on **Create** to display the following Craft Access dialog box:



The image shows a Windows-style dialog box titled "Craft Access". In the top right corner of the title bar is a red close button with a white "X". The dialog has a light blue header area containing the "Aktino." logo on the right. Below the header, the main area is light gray and contains three text input fields. The first field is labeled "Login Name", the second "Password", and the third "Confirm Password". At the bottom right of the dialog are three buttons: "OK", "Apply", and "Cancel".

Craft Access

Aktino.

Login Name

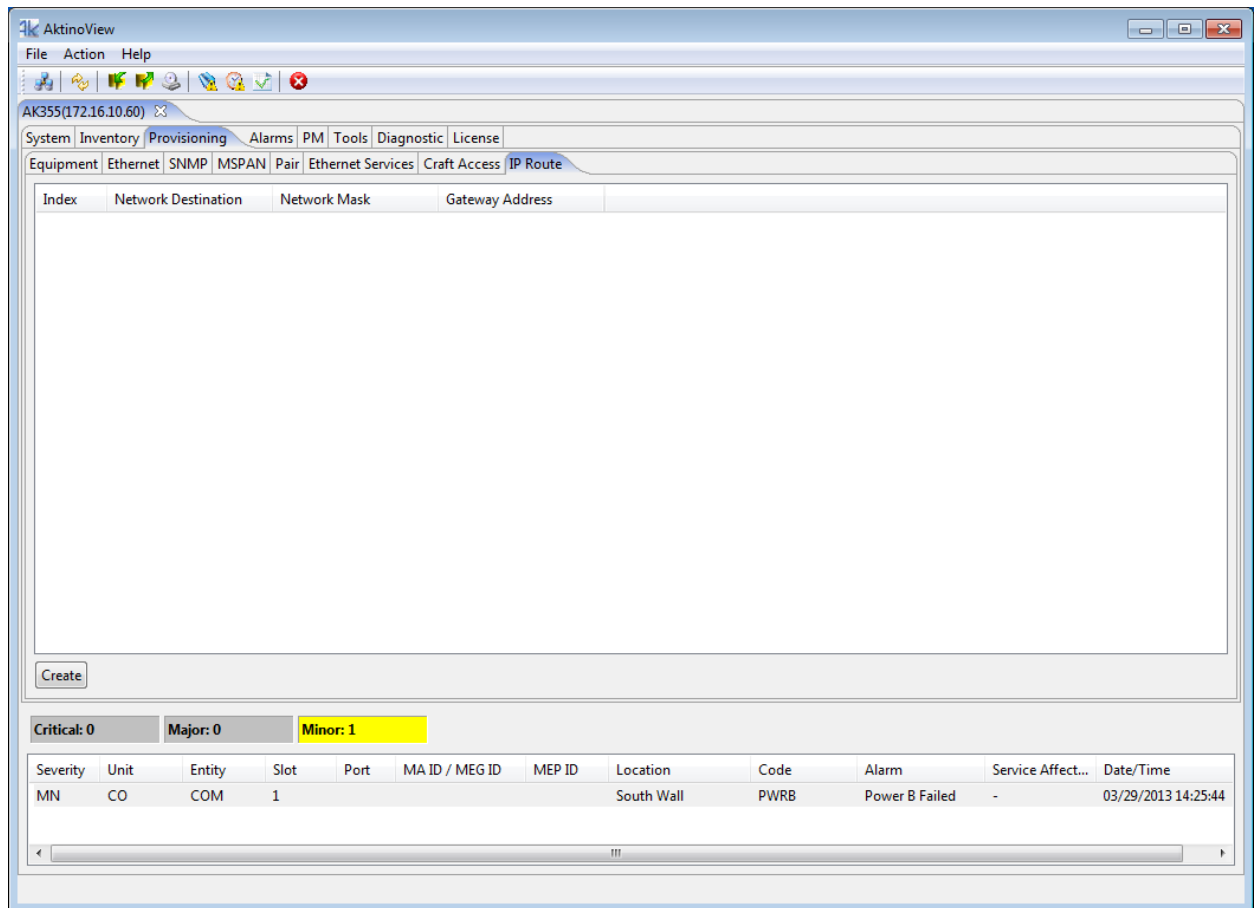
Password

Confirm Password

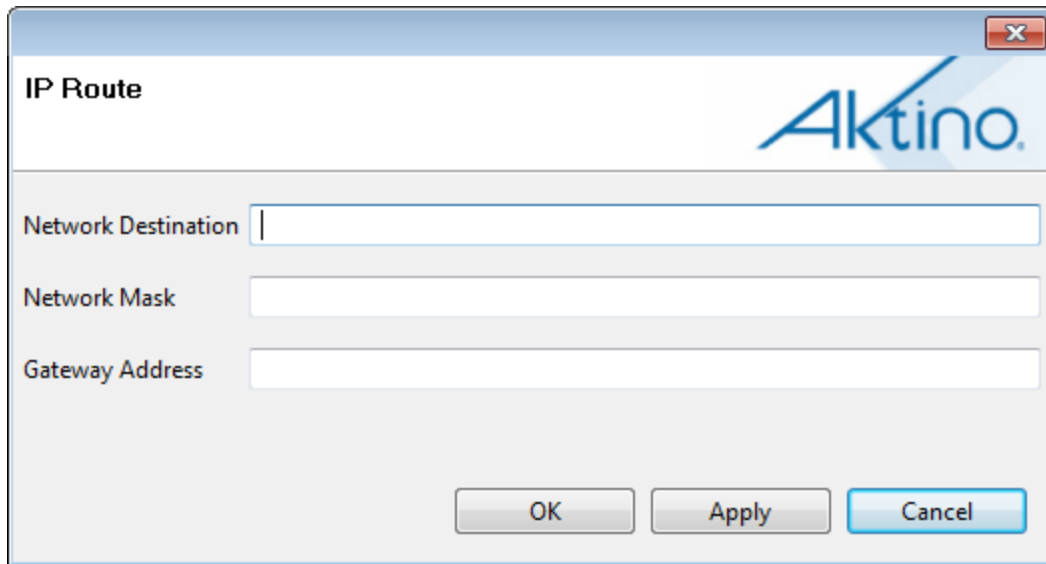
OK Apply Cancel

2.3.6.8 IP Route

The IP Route tab allows you to provision static routes for the CO unit.



Click the **Create** button to display the following dialog:



The image shows a software dialog box titled "IP Route". In the top right corner of the title bar is a red close button with a white "X". The dialog has a light blue header area containing the "Aktino." logo on the right. Below the header, the main area is light gray and contains three text input fields. The first field is labeled "Network Destination" and has a vertical cursor at its start. The second field is labeled "Network Mask". The third field is labeled "Gateway Address". At the bottom of the dialog, there are three buttons: "OK", "Apply", and "Cancel". The "Cancel" button is highlighted with a blue border.

IP Route

Aktino.

Network Destination

Network Mask

Gateway Address

OK Apply Cancel

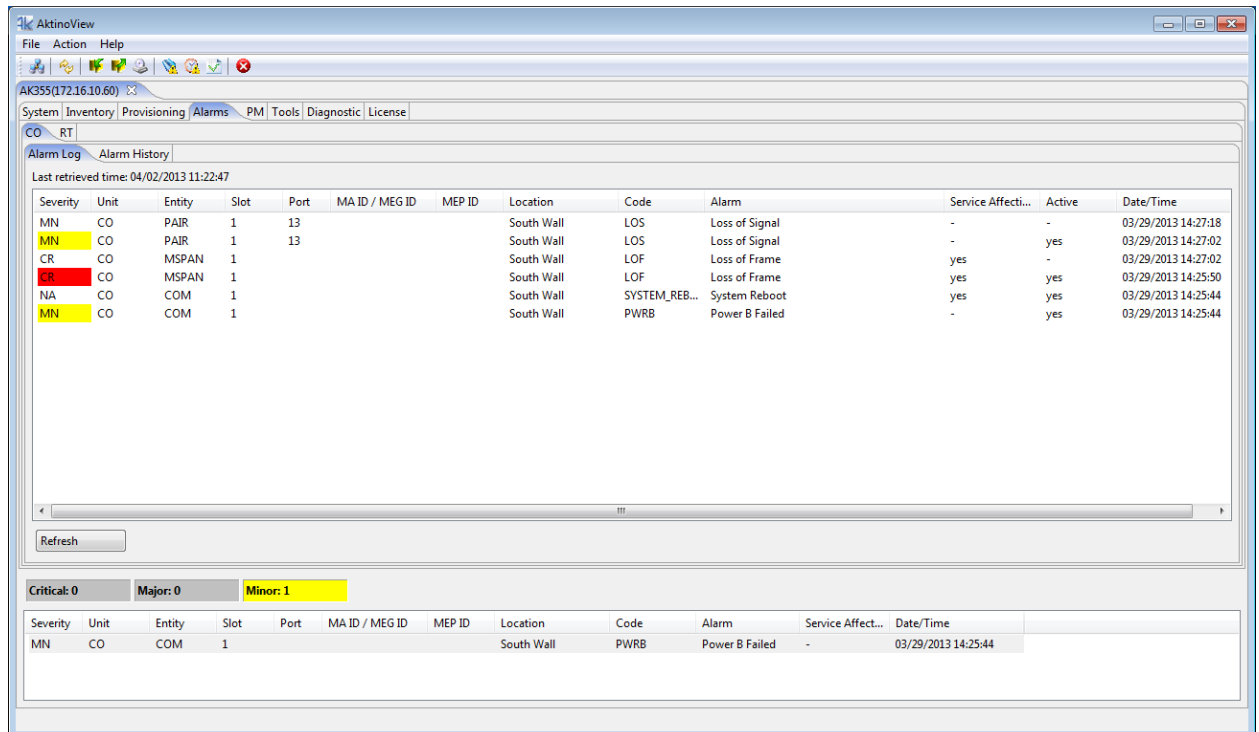
See the following table for the IP Route Parameters and Values:

IP Route Parameters	Values
Network Destination	Destination Network Address
Network Mask	Network Mask
Gateway Address	Default Gateway Address

2.3.7 Alarms

2.3.7.1 CO > Alarm Log

The CO Alarm Log tab displays a list of all the alarms observed on the AK355C including time-stamp information as to when the alarm was triggered or cleared.



AK355(172.16.10.60)

System | Inventory | Provisioning | **Alarms** | PM | Tools | Diagnostic | License

CO RT

Alarm Log Alarm History

Last retrieved time: 04/02/2013 11:22:47

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Active	Date/Time
MN	CO	PAIR	1	13			South Wall	LOS	Loss of Signal	-	-	03/29/2013 14:27:18
MN	CO	PAIR	1	13			South Wall	LOS	Loss of Signal	-	yes	03/29/2013 14:27:02
CR	CO	MSPAN	1				South Wall	LOF	Loss of Frame	yes	-	03/29/2013 14:27:02
CR	CO	MSPAN	1				South Wall	LOF	Loss of Frame	yes	yes	03/29/2013 14:25:50
NA	CO	COM	1				South Wall	SYSTEM_REB...	System Reboot	yes	yes	03/29/2013 14:25:44
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	yes	03/29/2013 14:25:44

Refresh

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.7.2 CO > Alarm History

The CO Alarm History tab displays the alarms that have been observed by the CO unit and how many times each of the alarms has been observed, as well as the first and last times the alarm has been observed.

AK355(172.16.10.60)

System | Inventory | Provisioning | **Alarms** | PM | Tools | Diagnostic | License

CO RT

Alarm Log | **Alarm History**

Last retrieved time: 04/02/2013 11:23:13

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	First Time	Last Time	Occ
MN	CO	PAIR	1	13				LOS	Loss of Signal	-	03/29/2013 14:27:02	03/29/2013 14:27:02	1
CR	CO	MSPAN	1					LOF	Loss of Frame	yes	03/29/2013 14:25:50	03/29/2013 14:25:50	1
NA	CO	COM	1					SYSTEM_REB...	System Reboot	yes	03/29/2013 14:25:44	03/29/2013 14:25:44	1
MN	CO	COM	1					PWRB	Power B Failed	-	03/29/2013 14:25:44	03/29/2013 14:25:44	1

Refresh

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.7.3 RT > Alarm Log

The RT Alarm Log tab displays a list of all the alarms observed on the RT unit including time-stamp information as to when the alarm was triggered or cleared.

AK355(172.16.10.60)

System | Inventory | Provisioning | **Alarms** | PM | Tools | Diagnostic | License

CO | RT

Alarm Log | Alarm History

Last retrieved time: 04/02/2013 11:23:42

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Active	Date/Time
MN	RT	COM	1				South Wall	PWRB	Power B Failed	-	-	03/29/2013 14:27:43
MN	RT	COM	1				South Wall	PWRB	Power B Failed	-	yes	03/29/2013 14:25:17

Refresh

Critical: 0 | Major: 0 | **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.7.4 RT > Alarm History

The RT Alarm History tab displays the alarms that have been observed by the RT unit and how many times each of the alarms has been observed, as well as the first and last times the alarm has been observed.

AK355(172.16.10.60)

System | Inventory | Provisioning | Alarms | PM | Tools | Diagnostic | License

CO RT

Alarm Log / Alarm History

Last retrieved time: 04/02/2013 11:23:55

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	First Time	Last Time	Occ
MN	RT	COM	1					PWRB	Power B Failed	-	03/29/2013 14:25:17	03/29/2013 14:25:17	1

Refresh

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8 Performance Monitoring (PM)

The PM tab allows you to display detailed Performance related information for the system's Ethernet Ports, MSPAN interfaces, and individual MSPAN Pairs. This PM data is provided for both the CO and RT sides of the system

2.3.8.1 CO > Ethernet > Summary

The Summary tab displays Ethernet Link information and counters for the Ethernet Ports. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

The screenshot shows the AktinoView application window. The 'PM' tab is selected, and the 'Ethernet' sub-tab is active. The 'Summary' view displays two tables of port statistics for Slot 1.

Time	Slot	Unit	Port	State	Resolved	Speed	Duplex	In Frames	Out Frames	In Errors	Discarded Pkts
04/02/2013 11:24:26	1	CO	1	DOWN	NO	10	HALF	0	0	0	0
04/02/2013 11:24:26	1	CO	2	DOWN	NO	10	HALF	0	0	0	0
04/02/2013 11:24:27	1	CO	3	DOWN	NO	10	HALF	0	0	0	0
04/02/2013 11:24:27	1	CO	SFP	DOWN	NO	1000	FULL	0	0	0	0

Time	Slot	Unit	Port	In Octets	Bad Octets	Undersize	Oversize	Fragments	Align Errors	Jabber	Collision
04/02/2013 11:24:26	1	CO	1	0	0	0	0	0	0	0	0
04/02/2013 11:24:26	1	CO	2	0	0	0	0	0	0	0	0
04/02/2013 11:24:27	1	CO	3	0	0	0	0	0	0	0	0
04/02/2013 11:24:27	1	CO	SFP	0	0	0	0	0	0	0	0

Below the tables, there is a 'Refresh' button, a 'now' dropdown menu, and a 'Slot' dropdown menu set to '1'.

The status bar at the bottom shows:

- Critical: 0
- Major: 0
- Minor: 1

Below the status bar, there is a table of alarms:

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.2 CO > Ethernet > Detail

The Detail tab displays detailed Ethernet counters for the Ethernet Ports. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

The screenshot shows the AktinoView software interface. The top menu bar includes File, Action, and Help. The main window displays the Ethernet Detail tab for the AK355(172.16.10.60) device. The interface is divided into two main sections: 'In Parameters' and 'Out Parameters'. Each section contains a table with columns for Time, Slot, Unit, Port, Unicast Pkts, Broadcasts, Multicasts, Pause, Octets, 64 Octets, 127 Octets, 255 Octets, 511 Octets, 1023 Octets, and Max Octets. The 'In Parameters' table shows data for ports 1, 2, 3, and SFP. The 'Out Parameters' table shows data for ports 1, 2, 3, and SFP. Below the tables, there is a 'Refresh' button and a 'Slot' dropdown menu. At the bottom, a table shows system status and alarm details.

Time	Slot	Unit	Port	Unicast Pkts	Broadcasts	Multicasts	Pause	Octets	64 Octets	127 Octets	255 Octets	511 Octets	1023 Octets	Max Octets
04/02/2013 11:24:48	1	CO	1	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:24:49	1	CO	2	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:24:49	1	CO	3	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:24:50	1	CO	SFP	0	0	0	0	0	0	0	0	0	0	0

Time	Slot	Unit	Port	Unicast Pkts	Broadcasts	Multicasts	Pause	Octets	64 Octets	127 Octets	255 Octets	511 Octets	1023 Octets	Max Octets
04/02/2013 11:24:48	1	CO	1	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:24:49	1	CO	2	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:24:49	1	CO	3	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:24:50	1	CO	SFP	0	0	0	0	0	0	0	0	0	0	0

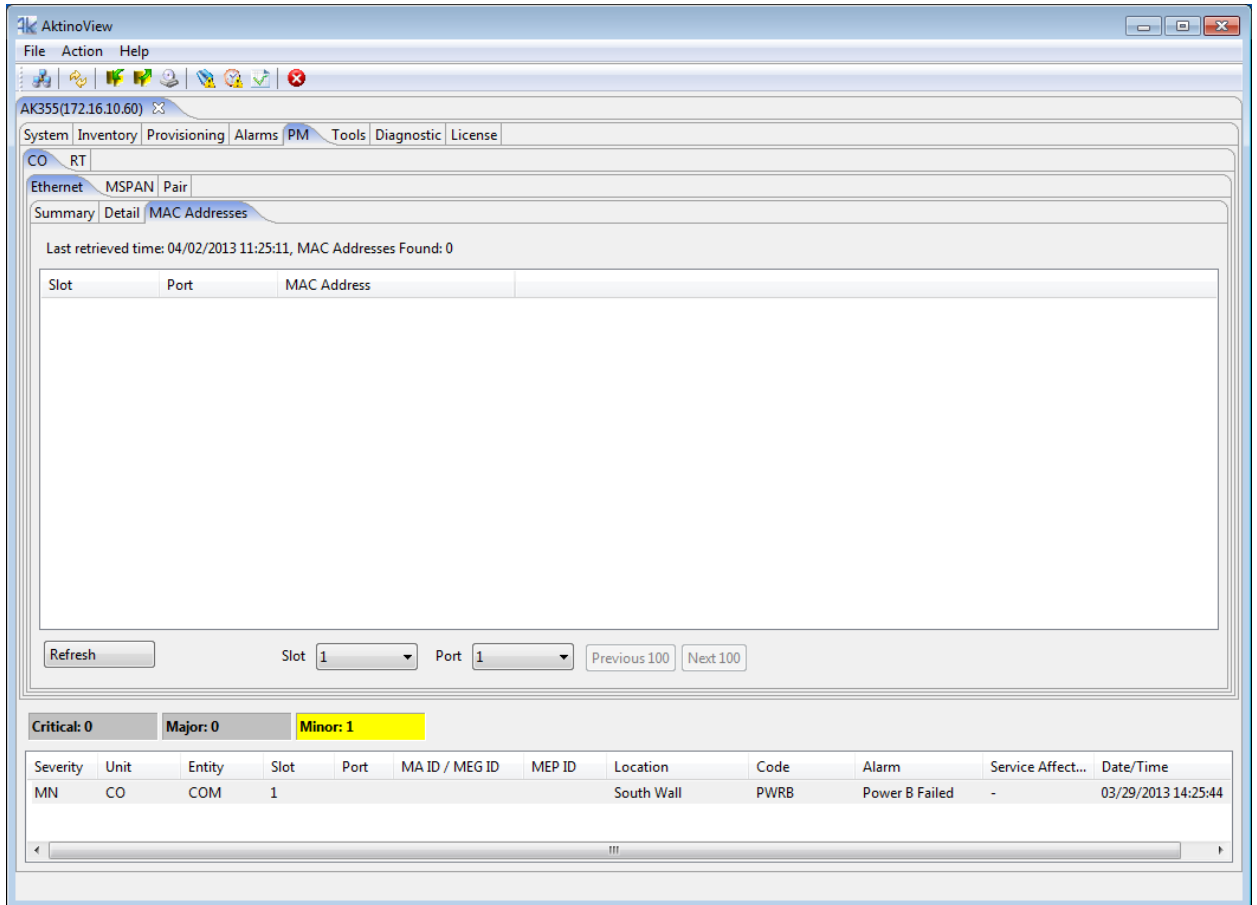
Refresh now Slot 1

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.3 CO > Ethernet > MAC Addresses

The MAC Addresses tab displays the Ethernet MAC Addresses learned by the selected port. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.



2.3.8.4 CO > MSPAN

The MSPAN tab displays the upstream PM information for the MSPAN. This PM data is separated into three sections:

- 1 The heading section provides summary information for the MSPAN including upstream MSPAN Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Capacity (Kbps): 98076 **Rate (Kbps):** 25024 **Margin (dB):** 31.25 **State:** DATA

PSD Mask: M1 **TX Utilization (%):** 0.0 **RX Utilization (%):** 0.0 **2.2 MHz:** NO

15 Minutes

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013 11:25	0	0	0	0	97980	98116	25024	25024	31.25	31.25	0.00	0.00	100.00
04/02/2013 11:15	0	0	0	0	97972	98132	25024	25024	31.25	31.25	0.00	0.00	100.00
04/02/2013 11:00	0	0	0	0	98000	98136	25024	25024	31.25	31.25	0.00	0.00	100.00
04/02/2013 10:45	0	0	0	0	97988	98124	25024	25024	31.25	31.25	0.00	0.00	100.00

24 Hours

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013	0	0	0	0	96980	98188	25024	25024	31.12	31.25	0.00	0.00	100.00
04/01/2013	0	0	0	0	97916	98188	25024	25024	31.25	31.25	0.00	0.00	100.00
03/31/2013	0	0	0	0	97928	98172	25024	25024	31.25	31.25	0.00	0.00	100.00
03/30/2013	6	5	0	0	0	98156	64	25024	0.78	36.91	0.00	0.00	99.99

Refresh now Slot 1

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.5 CO > Pair > Summary

The Summary tab displays the upstream Pair Summary information for all the Pairs supported by the MSPAN. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary | Current 15 Minutes | Current 24 Hours | History

Time Period	Slot	Unit	Pair	Remote Pair	Capacity (kb...)	Rate (kb...)	Margin (...)	Voltage (v)	Line Current (mA)	Ground Current (...)
04/02/2013 11:26:02	1	CO	1	1	6108	1656	31.30	51.80	3.20	0.00
04/02/2013 11:26:03	1	CO	2	2	6172	1696	31.25	51.80	3.20	0.00
04/02/2013 11:26:03	1	CO	3	3	6100	1608	31.30	51.80	3.20	0.00
04/02/2013 11:26:04	1	CO	4	4	6076	1608	31.22	51.80	3.20	0.00
04/02/2013 11:26:04	1	CO	5	5	6160	1700	31.25	51.80	3.20	0.00
04/02/2013 11:26:05	1	CO	6	6	6096	1612	31.25	51.80	3.20	0.00
04/02/2013 11:26:05	1	CO	7	7	6172	1716	31.22	51.80	3.40	0.00
04/02/2013 11:26:06	1	CO	8	8	6152	1672	31.25	51.80	3.20	0.00
04/02/2013 11:26:06	1	CO	9	9	6140	1672	31.25	51.80	3.40	0.00
04/02/2013 11:26:07	1	CO	10	10	6136	1664	31.25	51.80	3.20	0.00
04/02/2013 11:26:07	1	CO	11	11	6184	1724	31.22	51.80	3.00	0.00
04/02/2013 11:26:08	1	CO	12	12	6124	1636	31.25	51.80	3.20	0.00
04/02/2013 11:26:08	1	CO	13	13	5984	1532	31.22	51.80	3.20	0.00
04/02/2013 11:26:09	1	CO	14	14	6180	1716	31.22	51.80	3.20	0.00
04/02/2013 11:26:09	1	CO	15	15	6080	1608	31.22	51.80	3.20	0.00
04/02/2013 11:26:10	1	CO	16	16	6188	1708	31.25	51.80	3.20	0.00

Refresh now Slot 1

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.6 CO > Pair > Current 15 Minutes

The 15 Minutes tab displays the upstream Pair PM information for all the Pairs supported by the MSPAN for the last 15-minute interval. The page can be provisioned to refresh automatically, and time-stamp is displayed for each of the entries.

Summary | **Current 15 Minutes** | **Current 24 Hours** | **History**

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin (...	EFS (%)
04/02/2013 11:26:23	1	CO	1	0	0	0	0	6100	6120	1656	1656	31.30	31.30	100.00
04/02/2013 11:26:23	1	CO	2	0	0	0	0	6156	6176	1696	1696	31.25	31.25	100.00
04/02/2013 11:26:24	1	CO	3	0	0	0	0	6084	6112	1604	1608	31.30	31.30	100.00
04/02/2013 11:26:24	1	CO	4	0	0	0	0	6064	6092	1608	1608	31.22	31.22	100.00
04/02/2013 11:26:25	1	CO	5	0	0	0	0	6152	6172	1700	1700	31.25	31.25	100.00
04/02/2013 11:26:25	1	CO	6	0	0	0	0	6080	6104	1612	1612	31.25	31.25	100.00
04/02/2013 11:26:26	1	CO	7	0	0	0	0	6172	6192	1716	1716	31.22	31.22	100.00
04/02/2013 11:26:26	1	CO	8	0	0	0	0	6140	6164	1668	1672	31.25	31.25	100.00
04/02/2013 11:26:27	1	CO	9	0	0	0	0	6128	6152	1672	1672	31.25	31.25	100.00
04/02/2013 11:26:27	1	CO	10	0	0	0	0	6124	6144	1664	1664	31.25	31.25	100.00
04/02/2013 11:26:28	1	CO	11	0	0	0	0	6172	6200	1724	1728	31.22	31.22	100.00
04/02/2013 11:26:28	1	CO	12	0	0	0	0	6112	6136	1632	1636	31.25	31.25	100.00
04/02/2013 11:26:29	1	CO	13	0	0	0	0	5972	5996	1532	1536	31.22	31.22	100.00
04/02/2013 11:26:29	1	CO	14	0	0	0	0	6172	6192	1716	1716	31.22	31.22	100.00
04/02/2013 11:26:30	1	CO	15	0	0	0	0	6072	6096	1608	1608	31.22	31.22	100.00
04/02/2013 11:26:30	1	CO	16	0	0	0	0	6176	6196	1708	1712	31.25	31.25	100.00

Refresh now Slot 1

Critical: 0 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.7 CO > Pair > Current 24 Hours

The Current 24 Hours tab displays the upstream Pair PM information for all the Pairs supported by the MSPAN for the current day. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary | Current 15 Minutes | **Current 24 Hours** | History

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin (...	EFS (%)
04/02/2013 11:26:29	1	CO	13	0	0	0	0	5972	6004	1516	1536	31.22	31.22	100.00
04/02/2013 11:26:29	1	CO	14	0	0	0	0	6172	6200	1708	1736	31.22	31.22	100.00
04/02/2013 11:26:30	1	CO	15	0	0	0	0	4928	6108	1444	1616	28.83	31.22	100.00
04/02/2013 11:26:30	1	CO	16	0	0	0	0	6172	6204	1704	1720	31.25	31.25	100.00
04/02/2013 11:26:44	1	CO	1	0	0	0	0	6096	6128	1652	1668	31.30	31.30	100.00
04/02/2013 11:26:45	1	CO	2	0	0	0	0	6152	6184	1688	1712	31.25	31.25	100.00
04/02/2013 11:26:45	1	CO	3	0	0	0	0	6084	6120	1604	1644	31.30	31.30	100.00
04/02/2013 11:26:46	1	CO	4	0	0	0	0	6060	6100	1600	1628	31.22	31.22	100.00
04/02/2013 11:26:46	1	CO	5	0	0	0	0	6152	6180	1696	1716	31.25	31.25	100.00
04/02/2013 11:26:47	1	CO	6	0	0	0	0	6076	6112	1596	1628	31.25	31.25	100.00
04/02/2013 11:26:47	1	CO	7	0	0	0	0	6168	6200	1708	1732	31.22	31.22	100.00
04/02/2013 11:26:48	1	CO	8	0	0	0	0	6136	6168	1660	1688	31.25	31.25	100.00
04/02/2013 11:26:48	1	CO	9	0	0	0	0	6124	6156	1660	1684	31.25	31.25	100.00
04/02/2013 11:26:49	1	CO	10	0	0	0	0	6116	6148	1656	1676	31.25	31.25	100.00
04/02/2013 11:26:49	1	CO	11	0	0	0	0	6172	6204	1716	1740	31.22	31.22	100.00
04/02/2013 11:26:50	1	CO	12	0	0	0	0	6108	6152	1628	1656	31.25	31.25	100.00

Refresh now Slot 1

Critical: 0 Major: 0 **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.8 CO > Pair > History

The History tab displays the upstream PM information for the Pairs supported by the MSPAN. This PM data is separated into three sections and the PM can be displayed for each of the Pairs of the MSPAN.

- 1 The heading section provides summary information for the MSPAN including upstream Pair Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary

Capacity (Kbps):	6116	Rate (Kbps):	1656	Margin (dB):	31.3
Line Voltage (V):	51.8	Current (mA):	3.2	Ground Current (mA):	0.0
State:	ACTIVE	Remote Pair:	1		

15 Minutes

Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...)	Max Capacity (k...)	Min Rate (kb...)	Max Rate (kb...)	Min Margin (...)	Max Margin ...	EFS (%)
04/02/2013 11:27	0	0	0	0	6100	6120	1656	1656	31.30	31.30	100.00
04/02/2013 11:15	0	0	0	0	6100	6124	1656	1656	31.30	31.30	100.00
04/02/2013 11:00	0	0	0	0	6104	6124	1656	1656	31.30	31.30	100.00

24 Hours

Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...)	Max Capacity (k...)	Min Rate (kb...)	Max Rate (kb...)	Min Margin (...)	Max Margin ...	EFS (%)
04/02/2013	0	0	0	0	6096	6128	1652	1668	31.30	31.30	100.00
04/01/2013	0	0	0	0	6092	6128	1644	1664	31.30	31.30	100.00
03/31/2013	0	0	0	0	6096	6128	1648	1660	31.30	31.30	100.00

Refresh: now Slot: 1 Pair: 1

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.9 RT > Ethernet > Summary

The Summary tab displays Ethernet Link information and counters for the Ethernet Ports. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

The screenshot shows the AktinoView application window. The main content area displays the 'Ethernet' section for device 'AK355(172.16.10.60)'. The 'Summary' tab is selected, showing two tables of Ethernet link information.

Table 1: Ethernet Link Information

Time	Slot	Unit	Port	State	Resolved	Speed	Duplex	In Frames	Out Frames	In Errors	Discarded Pkts
04/02/2013 11:27:23	1	RT	1	DOWN	NO	1000	HALF	0	0	0	0
04/02/2013 11:27:23	1	RT	2	DOWN	NO	1000	HALF	0	0	0	0
04/02/2013 11:27:24	1	RT	3	DOWN	NO	1000	HALF	0	0	0	0
04/02/2013 11:27:24	1	RT	SFP	DOWN	NO	1000	HALF	0	0	0	0

Table 2: Ethernet Link Counters

Time	Slot	Unit	Port	In Octets	Bad Octets	Undersize	Oversize	Fragments	Align Errors	Jabber	Collision
04/02/2013 11:27:23	1	RT	1	0	0	0	0	0	0	0	0
04/02/2013 11:27:23	1	RT	2	0	0	0	0	0	0	0	0
04/02/2013 11:27:24	1	RT	3	0	0	0	0	0	0	0	0
04/02/2013 11:27:24	1	RT	SFP	0	0	0	0	0	0	0	0

Below the tables, there are controls for refreshing the data (Refresh button) and a dropdown menu for the slot (Slot 1).

Alarm Summary: Critical: 0, Major: 0, Minor: 1

Alarm Log:

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.10 RT > Ethernet > Detail

The Detail tab displays detailed Ethernet counters for the Ethernet Ports. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

In Parameters

Time	Slot	Unit	Port	Unicast Pkts	Broadcasts	Multicasts	Pause	Octets	64 Octets	127 Octets	255 Octets	511 Octets	1023 Octets	Max Octets
04/02/2013 11:27:45	1	RT	1	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:27:45	1	RT	2	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:27:46	1	RT	3	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:27:46	1	RT	SFP	0	0	0	0	0	0	0	0	0	0	0

Out Parameters

Time	Slot	Unit	Port	Unicast Pkts	Broadcasts	Multicasts	Pause	Octets	64 Octets	127 Octets	255 Octets	511 Octets	1023 Octets	Max Octets
04/02/2013 11:27:45	1	RT	1	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:27:45	1	RT	2	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:27:46	1	RT	3	0	0	0	0	0	0	0	0	0	0	0
04/02/2013 11:27:46	1	RT	SFP	0	0	0	0	0	0	0	0	0	0	0

Refresh now Slot 1

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MIN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.11 RT > Ethernet > Circuit

The Circuit tab shows performance monitoring traffic from the RT Port to the CO Port.

The screenshot displays the AktinoView application window. The main menu includes File, Action, and Help. The toolbar contains various icons for navigation and actions. The main pane shows the 'AK355(172.16.10.60)' device with tabs for System, Inventory, Provisioning, Alarms, PM, Tools, Diagnostic, and License. The 'PM' tab is active, showing a tree view with 'CO' and 'RT' nodes. Under 'RT', the 'Ethernet' node is selected, and the 'Circuit' sub-tab is active. The 'Circuit' tab displays a table of performance monitoring data for traffic from the RT Port to the CO Port. The table has columns for Time, Slot, Entity, Port, In Frames, Out Frames, Discarded Pkts, Filtered Pkts, Paused, and Tail Drop Fram... The data shows three rows of traffic for the time period 04/02/2013 11:28:22 to 11:28:23. Below the table, there are controls for Refresh, a dropdown for 'now', and dropdowns for Slot (1) and Port (1). At the bottom, there is a summary bar showing 'Critical: 0', 'Major: 0', and 'Minor: 1'. Below this, a table lists alarms with columns for Severity, Unit, Entity, Slot, Port, MA ID / MEG ID, MEP ID, Location, Code, Alarm, Service Affect..., and Date/Time. The table shows one alarm with Severity MN, Unit CO, Entity COM, Slot 1, Port 1, Location South Wall, Code PWRB, Alarm Power B Failed, and Date/Time 03/29/2013 14:25:44.

Time	Slot	Entity	Port	In Frames	Out Frames	Discarded Pkts	Filtered Pkts	Paused	Tail Drop Fram...
04/02/2013 11:28:22	1	RT	1	0	0	0	0	0	
04/02/2013 11:28:23	1	RT	IMS1	0	0	0	0	0	0
04/02/2013 11:28:23	1	CO	IMS1	0	0	0	0	0	0

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.12 RT > Ethernet > MAC Addresses

The MAC Addresses tab displays the Ethernet MAC Addresses learned by the selected port. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

The screenshot shows the AktinoView web interface. The top navigation bar includes 'File', 'Action', and 'Help'. Below it, a breadcrumb trail shows 'System' > 'Inventory' > 'Provisioning' > 'Alarms' > 'PM' > 'Tools' > 'Diagnostic' > 'License'. The main content area is titled 'AK355(172.16.10.60)' and has tabs for 'System', 'Inventory', 'Provisioning', 'Alarms', 'PM', 'Tools', 'Diagnostic', and 'License'. The 'PM' tab is selected, and within it, the 'Ethernet' sub-tab is active. The 'Ethernet' sub-tab has further sub-tabs: 'Summary', 'Detail', 'Circuit', and 'MAC Addresses'. The 'MAC Addresses' sub-tab is selected, showing a table with columns 'Slot', 'Port', and 'MAC Address'. Below the table, there is a 'Refresh' button and dropdown menus for 'Slot' (set to 1) and 'Port' (set to 1). To the right of these are 'Previous 100' and 'Next 100' buttons. Below the table, there is a summary bar showing 'Critical: 0', 'Major: 0', and 'Minor: 1'. Below this is a table with columns: 'Severity', 'Unit', 'Entity', 'Slot', 'Port', 'MA ID / MEG ID', 'MEP ID', 'Location', 'Code', 'Alarm', 'Service Affect...', and 'Date/Time'. The table contains one entry: 'MN', 'CO', 'COM', '1', 'Port', 'MA ID / MEG ID', 'MEP ID', 'South Wall', 'PWRB', 'Power B Failed', '-', and '03/29/2013 14:25:44'.

Slot	Port	MAC Address
------	------	-------------

Refresh Slot 1 Port 1 Previous 100 Next 100

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1	Port	MA ID / MEG ID	MEP ID	South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.13 RT > MSPAN

The MSPAN tab displays the downstream PM information for the MSPAN. This PM data is separated into three sections:

- 1 The heading section provides summary information for the MSPAN including upstream MSPAN Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary Information:

Capacity (Kbps):	109976	Rate (Kbps):	25024	Margin (dB):	30.64	State:	DATA
PSD Mask:	M1	TX Utilization (%):	0.0	RX Utilization (%):	0.0	2.2 MHz:	NO

15 Minutes

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013 11:29	0	0	0	0	109288	110164	25024	25024	30.64	30.64	0.00	0.00	100.00
04/02/2013 11:15	0	0	0	0	109548	110176	25024	25024	30.64	30.64	0.00	0.00	100.00
04/02/2013 11:00	0	0	0	0	109480	110204	25024	25024	30.64	30.66	0.00	0.00	100.00

24 Hours

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013	0	0	0	0	108836	110360	25024	25024	30.50	30.66	0.00	0.00	100.00
04/01/2013	0	0	0	0	109004	110320	25024	25024	30.64	30.66	0.00	0.00	100.00
03/31/2013	0	0	0	0	108832	110276	25024	25024	30.64	30.66	0.00	0.00	100.00

Refresh **now** **Slot** 1

Critical: 0 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.14 RT > Pair > Summary

The RT side, Pair Summary tab displays the downstream Pair Summary information for all the Pairs supported by the MSPAN. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary | Current 15 Minutes | Current 24 Hours | History

Time Period	Slot	Unit	Pair	Remote Pair	Capacity (kb...	Rate (kb...	Margin (...)	Voltage (v)	Line Current (mA)	Ground Current (...)
04/02/2013 11:29:54	1	RT	1	1	6544	1400	30.75			
04/02/2013 11:29:55	1	RT	2	2	6788	1612	30.75			
04/02/2013 11:29:55	1	RT	3	3	6660	1476	30.67			
04/02/2013 11:29:56	1	RT	4	4	6748	1544	30.67			
04/02/2013 11:29:56	1	RT	5	5	6888	1648	30.64			
04/02/2013 11:29:57	1	RT	6	6	6928	1724	30.64			
04/02/2013 11:29:57	1	RT	7	7	6916	1728	30.64			
04/02/2013 11:29:58	1	RT	8	8	6788	1560	30.64			
04/02/2013 11:29:58	1	RT	9	9	7000	1816	30.67			

Refresh | now | Slot 1

Critical: 0 | **Major: 0** | **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.15 RT > Pair > Current 15 Minutes

The Current 15 Minutes tab displays the downstream Pair PM information for all the Pairs supported by the MSPAN for the last 15-minute interval. The page can be provisioned to refresh automatically, and time-stamp is displayed for each of the entries.

AK355(172.16.10.60)

System | Inventory | Provisioning | Alarms | **PM** | Tools | Diagnostic | License

CO | RT | Ethernet | MSPAN | Pair

Summary | **Current 15 Minutes** | Current 24 Hours | History

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin (...	EFS (%)
04/02/2013 11:30:13	1	RT	1	0	0	0	0	6548	6556	1404	1404	30.75	30.75	100.00
04/02/2013 11:30:13	1	RT	2	0	0	0	0	6780	6800	1612	1612	30.75	30.75	100.00
04/02/2013 11:30:14	1	RT	3	0	0	0	0	6636	6672	1472	1480	30.67	30.67	100.00
04/02/2013 11:30:14	1	RT	4	0	0	0	0	6728	6756	1544	1544	30.67	30.67	100.00
04/02/2013 11:30:15	1	RT	5	0	0	0	0	6864	6892	1648	1648	30.64	30.64	100.00
04/02/2013 11:30:16	1	RT	6	0	0	0	0	6924	6944	1724	1724	30.64	30.64	100.00
04/02/2013 11:30:16	1	RT	7	0	0	0	0	6900	6936	1728	1732	30.64	30.64	100.00
04/02/2013 11:30:17	1	RT	8	0	0	0	0	6780	6808	1560	1560	30.64	30.64	100.00
04/02/2013 11:30:17	1	RT	9	0	0	0	0	6992	7008	1812	1820	30.67	30.67	100.00
04/02/2013 11:30:17	1	RT	10	0	0	0	0	6816	6836	1596	1596	30.59	30.59	100.00
04/02/2013 11:30:18	1	RT	11	0	0	0	0	6776	6800	1544	1548	30.64	30.64	100.00
04/02/2013 11:30:18	1	RT	12	0	0	0	0	6796	6828	1588	1588	30.59	30.59	100.00
04/02/2013 11:30:19	1	RT	13	0	0	0	0	6988	7012	1764	1772	30.59	30.59	100.00
04/02/2013 11:30:19	1	RT	14	0	0	0	0	7080	7112	1884	1888	30.59	30.59	100.00
04/02/2013 11:30:20	1	RT	15	0	0	0	0	6864	6896	1628	1636	30.64	30.64	100.00
04/02/2013 11:30:20	1	RT	16	0	0	0	0	7216	7244	1996	2000	30.59	30.59	100.00

Refresh now Slot 1

Critical: 0 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.16 RT > Pair > Current 24 Hours

The Current 24 Hours tab displays the downstream Pair PM information for all the Pairs supported by the MSPAN for the current day. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

The screenshot shows the AktinoView application window. The main menu includes File, Action, and Help. Below the menu is a toolbar with various icons. The main window displays a tree view on the left with 'CO RT' selected. The right pane shows the 'Current 24 Hours' tab for the 'Pair' view. The table below represents the data displayed in this tab.

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin (...	EFS (%)
04/02/2013 11:30:17	1	RT	8	0	0	0	0	6740	6836	1548	1572	30.64	30.67	100.00
04/02/2013 11:30:17	1	RT	9	0	0	0	0	6920	7028	1796	1824	30.67	30.67	100.00
04/02/2013 11:30:17	1	RT	10	0	0	0	0	6776	6868	1584	1608	30.59	30.64	100.00
04/02/2013 11:30:18	1	RT	11	0	0	0	0	6728	6820	1532	1568	30.64	30.67	100.00
04/02/2013 11:30:18	1	RT	12	0	0	0	0	6756	6860	1576	1608	30.56	30.64	100.00
04/02/2013 11:30:19	1	RT	13	0	0	0	0	6916	7048	1756	1784	30.59	30.67	100.00
04/02/2013 11:30:19	1	RT	14	0	0	0	0	7028	7144	1864	1924	30.59	30.59	100.00
04/02/2013 11:30:20	1	RT	15	0	0	0	0	5572	6932	1524	1656	27.59	30.67	100.00
04/02/2013 11:30:20	1	RT	16	0	0	0	0	7132	7260	1984	2016	30.56	30.64	100.00
04/02/2013 11:30:32	1	RT	1	0	0	0	0	6524	6592	1376	1404	30.75	30.80	100.00
04/02/2013 11:30:32	1	RT	2	0	0	0	0	6720	6828	1596	1620	30.75	30.80	100.00
04/02/2013 11:30:33	1	RT	3	0	0	0	0	6584	6708	1456	1488	30.67	30.72	100.00
04/02/2013 11:30:33	1	RT	4	0	0	0	0	6676	6788	1536	1556	30.67	30.72	100.00
04/02/2013 11:30:34	1	RT	5	0	0	0	0	6804	6936	1640	1676	30.59	30.64	100.00
04/02/2013 11:30:34	1	RT	6	0	0	0	0	6852	6960	1712	1736	30.64	30.67	100.00
04/02/2013 11:30:35	1	RT	7	0	0	0	0	6848	6968	1716	1748	30.64	30.67	100.00

Below the table, there is a 'Refresh' button, a 'now' dropdown menu, and a 'Slot' dropdown menu set to '1'.

At the bottom of the window, there is a status bar showing 'Critical: 0', 'Major: 0', and 'Minor: 1'. Below this is a table with the following data:

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.8.17 RT > Pair > History

The History tab displays the downstream PM information for the Pairs supported by the MSPAN. This PM data is separated into three sections and the PM can be displayed for each of the Pairs of the MSPAN.

- 1 The heading section provides summary information for the MSPAN including upstream Pair Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary Information:

Capacity (Kbps):	6544	Rate (Kbps):	1400	Margin (dB):	30.75
State:	ACTIVE	Remote Pair:	1		

15 Minutes

Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...)	Max Capacity (k...)	Min Rate (kb...)	Max Rate (kb...)	Min Margin (...)	Max Margin (...)	EFS (%)
04/02/2013 11:30	0	0	0	0	6532	6572	1396	1404	30.75	30.75	100.00
04/02/2013 11:30	0	0	0	0	6544	6560	1400	1408	30.75	30.75	100.00
04/02/2013 11:15	0	0	0	0	6540	6576	1396	1400	30.75	30.75	100.00
04/02/2013 11:00	0	0	0	0	6536	6572	1396	1400	30.75	30.75	100.00

24 Hours

Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...)	Max Capacity (k...)	Min Rate (kb...)	Max Rate (kb...)	Min Margin (...)	Max Margin (...)	EFS (%)
04/02/2013	0	0	0	0	6524	6592	1376	1408	30.75	30.80	100.00
04/01/2013	0	0	0	0	6516	6588	1380	1408	30.75	30.75	100.00
03/31/2013	0	0	0	0	6516	6584	1380	1412	30.72	30.75	100.00
03/30/2013	0	0	0	0	6496	6584	1360	1440	30.67	30.75	100.00

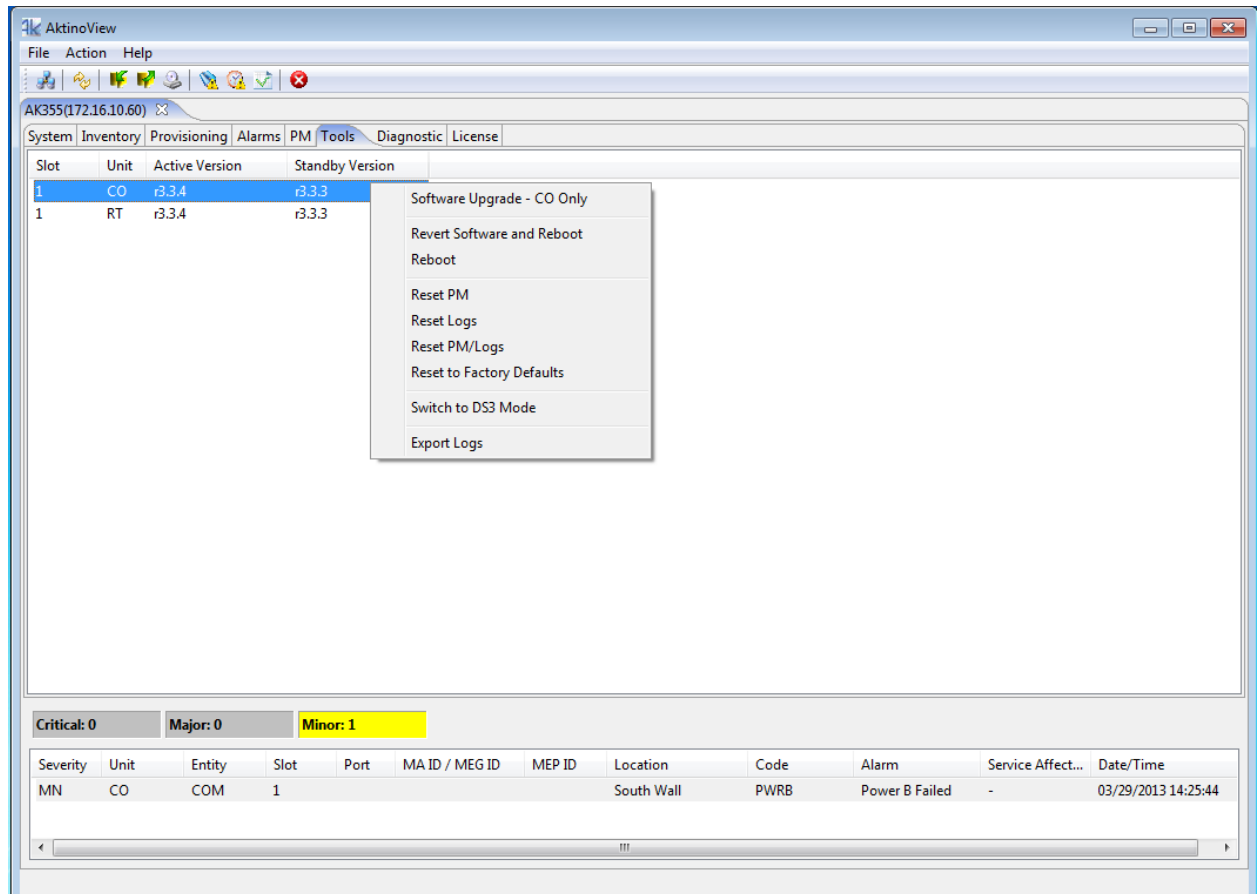
Refresh: Slot: Pair:

Status: Critical: 0, Major: 0, Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

2.3.9 Tools

The Tools tab displays two firmware partitions--the Active and Standby Firmware partition for each component of the system. The Active partition contains the firmware version currently running. The Standby partition is used for firmware upgrades and provides a means of having a backup firmware version on the system.



Right-Clicking on a CO unit allows you to select the following system management options:

Software Upgrade - CO Only

Upgrades the firmware in the CO unit.

Revert Software and Reboot

Reboots the CO unit, and when the unit reboots, the unit selects the firmware version in the Standby partition.

Reboot

Reboots the CO unit, and when the unit reboots, the unit selects the firmware version in the Active partition.

Reset PM

Resets only the Performance Monitoring data in the CO unit.

Reset Logs

Resets only the Alarm Logs in the CO unit.

Reset PM/Log

Resets only the Alarm Logs in the CO unit.

Reset to Factory Defaults

Resets the CO to factory defaults.

Switch to Ethernet Mode/DS3 Mode (for Systems supporting DS3)

Switches the CO to the desired mode.

Export Logs

Opens a dialog box enabling you to export the CO System Alarm and Performance Monitoring (PM) logs.

Right-Clicking on an RT unit allows you to select the following system management options:

Revert Software and Reboot

Reboots the RT, and when the unit reboots, the unit selects the firmware version in the Standby partition.

Reboot

Reboots the RT, and when the unit reboots, the unit selects the firmware version in the Active partition.

Reset PM

Resets only the Performance Monitoring data in the RT.

Reset Logs

Resets only the Alarm Logs in the RT.

Reset PM/Logs

Resets only the Alarm Logs in the RT.

Reset to Factory Defaults

Resets the RT to factory defaults

Switch to Ethernet Mode/DS3 Mode (for the AK355 Only)

Switches the RY to the desired mode.

2.3.10 Diagnostic

Diagnostics can be run on the AK355 System. There are two types of tests: Single Ended Loop Test (SELT) and Dual Ended Loop Test (DELT).

2.3.10.1 *SELT*

Single Ended Loop Test (SELT) provides diagnostics for each pair. Follow this procedure to run SELT:

- 1 SELT is service effecting. The remote unit must be disconnected to run the test.
- 2 The Pairs need to be calibrated. To get distance from the chassis, remove the MSPAN connector from the chassis. If removal of the MSPAN connector is not possible, calibration can be done at any point in the loop, including the MDF. This point will be the start of the Line Length test.
- 3 Click on the Calibrate button to start the calibration process. The Status of the calibration is indicated.
- 4 Connect the pairs back to the Outside Plant. Ensure that the remote unit is NOT connected.
- 5 Click on Start Testing button to run the SELT test. The Status of the SELT test is indicated.
- 6 The results can be exported to an Excel csv file by clicking on the Export Test Result button.

The results of the SELT test are indicated below:

SELT **DELT**

Slot	Unit	Pair	Line Length (ft)	Tip To Ground Resistance (ohms)	Ring To Ground Resistance (ohms)	Tip To Ring Resistance (ohms)
1	CO	1	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	2	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	3	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	4	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	5	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	6	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	7	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	8	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	9	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	10	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	11	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	12	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	13	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	14	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	15	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	16	Unavailable	Unavailable	Unavailable	Unavailable

Calibrate Export Test Result Start Testing Slot 1 Status: Unit is not calibrated for SELT

Critical: 0 Major: 0 **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm	Service Affect...	Date/Time
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	03/29/2013 14:25:44

For each pair, the following test results are available:

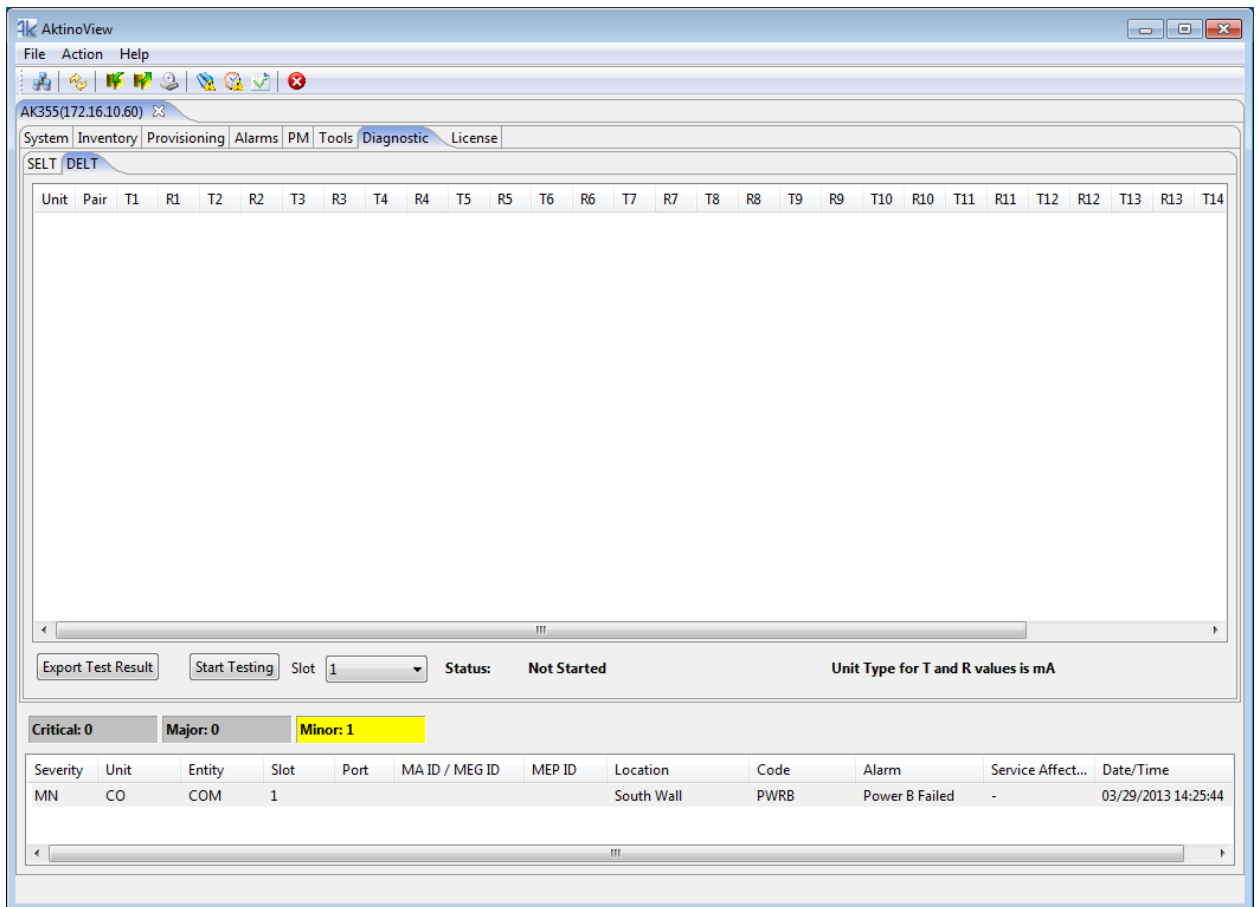
- **Line Length.** This is the physical line length, it is AWG diagnostic. If there are large differences in the line length of the pairs, it indicates possibly a short, open, ground fault, or bridge tap. If the pair is open in the middle of a loop, the length will indicate where it exists.
- **Tip to Ground Resistance. Ring to Ground Resistance. Tip to Ring Resistance.** The results should show "Open" for all pairs since the remote is not connected. If there is resistance on any pair, this indicates that there may be a problem.

2.3.10.2 DELT

Dual Ended Loop Test (DELT) provides diagnostics for each pair. Follow this procedure to run DELT:

- 1 DELT is service effecting. The remote unit must be connected to run the test.
- 2 Click on Start Testing button to run the DELT test. The Status of the DELT test is indicated.
- 3 The results can be exported to an Excel csv file by clicking on the Export Test Result button.

The results of the DELT test are indicated below:

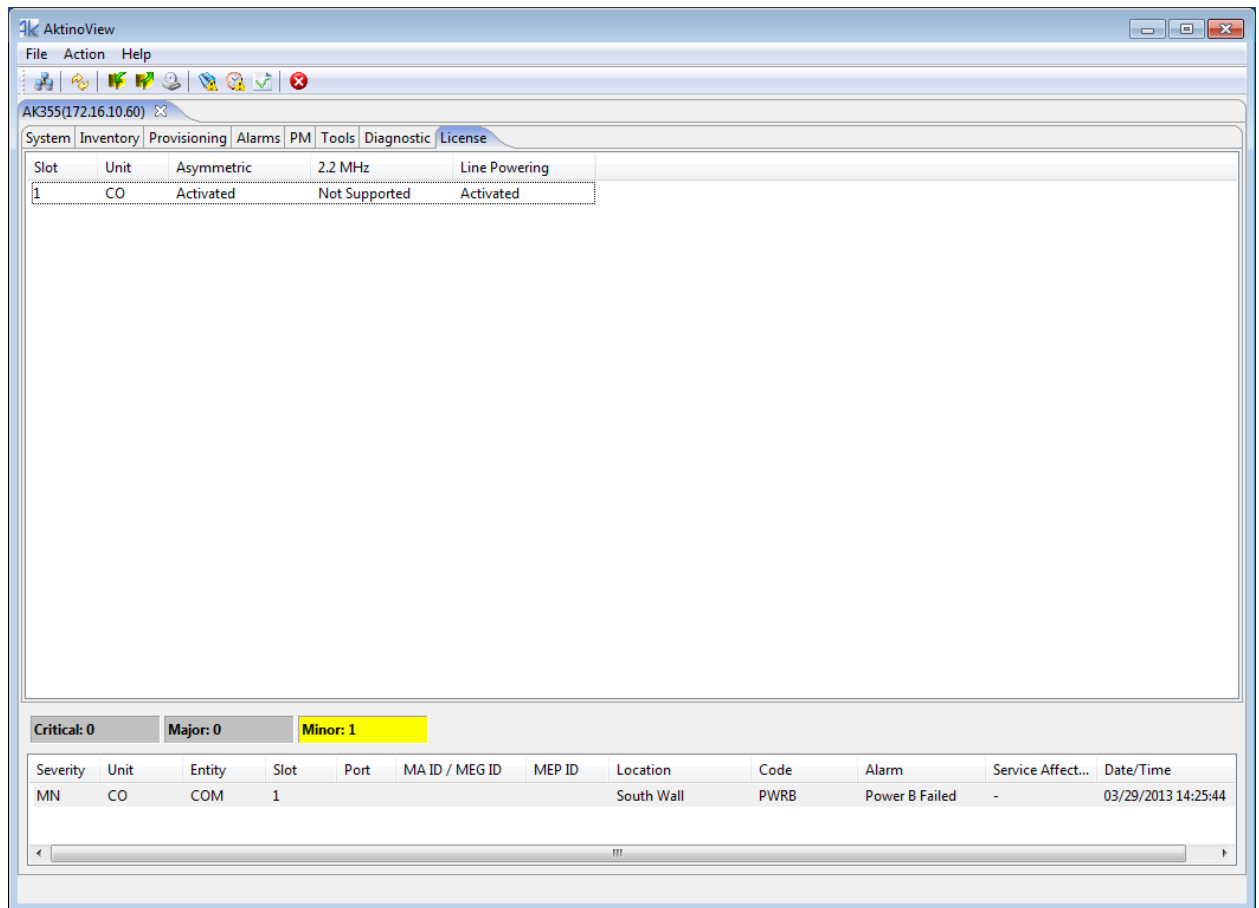


For each pair's tip and ring, the current in milliamps is indicated on itself and between that pair and every other pair being used in the AK355 System. The screen shot above shows a normal result. There should be current flowing between Pair1 and T1 and R1, between Pair 2 and T2 and R2. The current flow

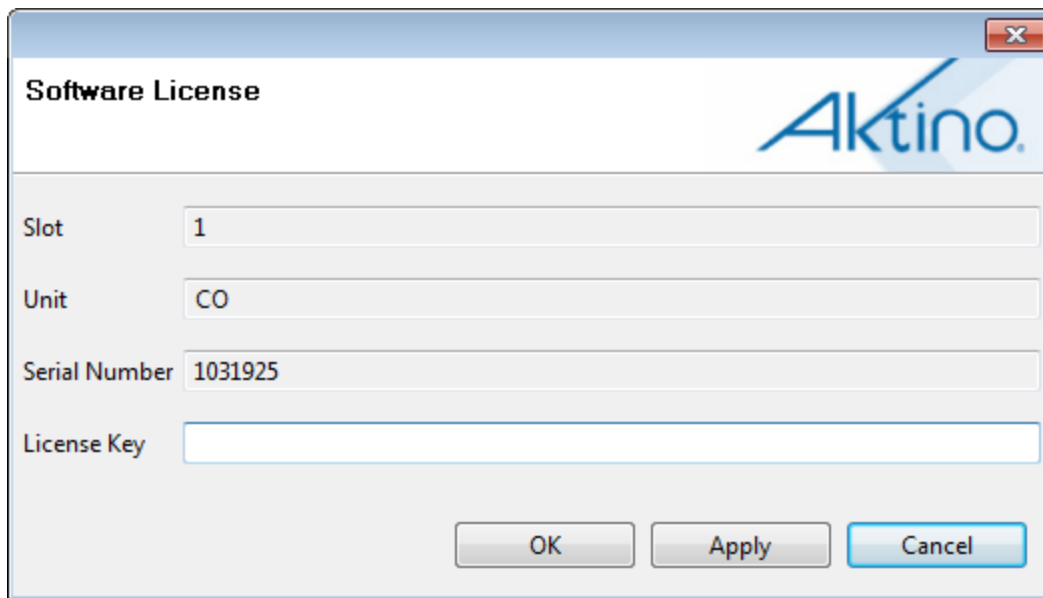
numbers should be close in value. Large differences in the current flow values indicate a problem with that pair. No current should be flowing between pairs. If there is current flowing between pairs, this indicates a problem with those pairs, possible a short.

2.3.11 License

The License tab displays the features that are activated for the AK355 System.



Click on the CO unit to bring up the Software License dialog box. Contact customer service to find out more about how to obtain licenses.



The image shows a 'Software License' dialog box with the Aktino logo in the top right corner. It contains four input fields: 'Slot' with the value '1', 'Unit' with the value 'CO', 'Serial Number' with the value '1031925', and an empty 'License Key' field. At the bottom are three buttons: 'OK', 'Apply', and 'Cancel'.

Field	Value
Slot	1
Unit	CO
Serial Number	1031925
License Key	

See the following table for the Features and Values:

Feature	Values
Asymmetric, 2.2 Mhz, Line Powering	Activated - This feature is activated on the selected slot Not Activated - This feature is not activated on the selected slot Not Supported - This features is not supported on the selected slot

Chapter 3

AktinoView Management Software

DS3 Mode

3.1 Introduction

AktinoView is a Microsoft Windows software package used to manage one or more systems. In AktinoView, the AK355 unit located at the Central Office is referred to as the CO and the AK355 unit located at the Remote Office is referred to as the RT.

3.2 Installation

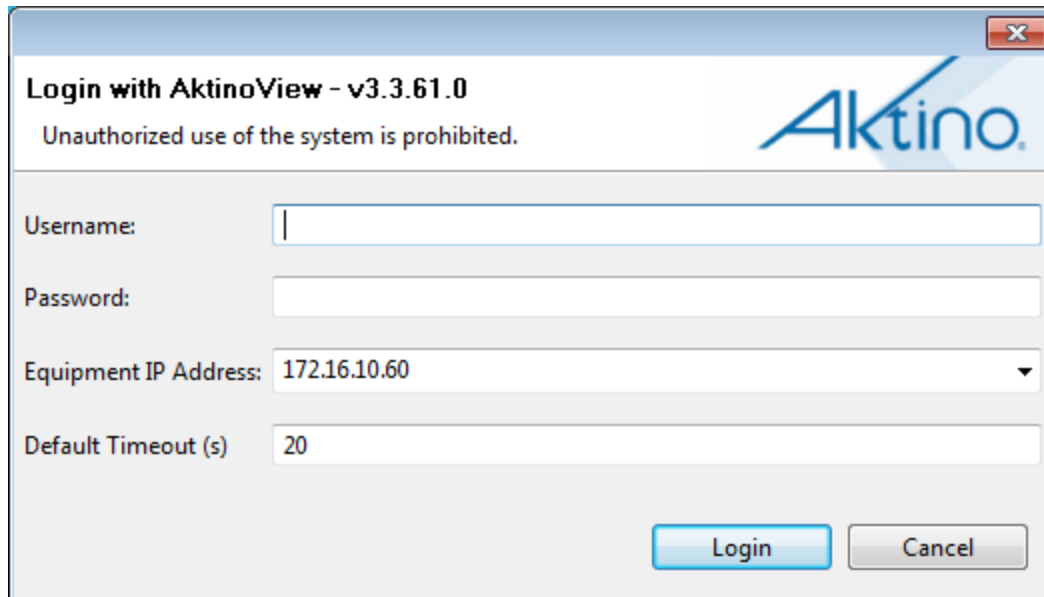
To install AktinoView proceed through the following:

- Insert the AktinoView CD in to the CD ROM drive or download AktinoView from Positron's portal located at <http://www.positronaccess.com>
- Open Windows Explorer and click on the CD drive
- Double-click on install.exe in the AktinoView folder
- Follow the instructions on the screen

3.3 System Management

3.3.1 Logging in to an AK355 System

From the Start Menu select **Aktino > AktinoView**, and you will see a dialog box similar to the following:



Login with AktinoView - v3.3.61.0
 Unauthorized use of the system is prohibited.

Username:

Password:

Equipment IP Address:

Default Timeout (s)

Enter a Username and Password appropriate for the AK355 System. The default Username is "superuser" and the default Password is "superuser". Enter the system's IP Address in the Equipment IP Address field and Click **Login**. The default IP address for the AK355C is 192.168.10.1 and the default IP address for the AK355R is 192.168.10.2

3.3.2 Switching from Ethernet Mode to DS3 Mode (for Systems supporting DS3)

- 1 Go to the Tools tab.
- 2 Right click on the RT Unit. **Note:** Always start this process by switching the RT unit first.
- 3 Select **Switch to DS3 Mode** from the RT drop-down box and then select **OK**. This will initiate a process that will result with the RT rebooting.
- 4 Right click on the CO Unit once the RT Unit disappears.
- 5 Select **Switch to DS3 Mode** from the CO drop-down box and then select **OK**. This will initiate a process that will result with the CO rebooting.
Note: Wait a couple of minutes before continuing with the remainder of this process.
- 6 Go to the File Menu and select **Connect to...** This will bring up the Login to AktinoView dialog box.
- 7 Type in the Username and Password. The default Username is "superuser" and the default Password is also "superuser."
- 8 Click **Login**.
- 9 Follow the same process when returning to Ethernet Mode.

3.3.3 AktinoView Main Window

Once you are logged into the system you will see three menu options:

File Menu

The File Menu provides two options:

Connect to: Allows you to connect to and manage several Aktino systems simultaneously.

Exit: Exits the AktinoView program.

Action Menu

The Action Menu provides four options:

Refresh: Refreshes the system.

System Backup: Opens a dialog box allowing you to save your System Configuration in an XML file to your PC so that you may retrieve and restore the configuration at a later date.

System Restore: Opens a dialog box to import and apply a previously saved System Configuration file. The process of restoring your system configuration will reboot your system.

System Software Upgrade: Opens a dialog box allowing you to upgrade the Aktino System software. (See Appendix A for System Software Upgrade procedures.)

Export: Provides three options: **Alarm Log**, **Alarm History**, and **PM** (Performance Monitoring). These options allow you to export the desired information to a .csv file.

Help Menu

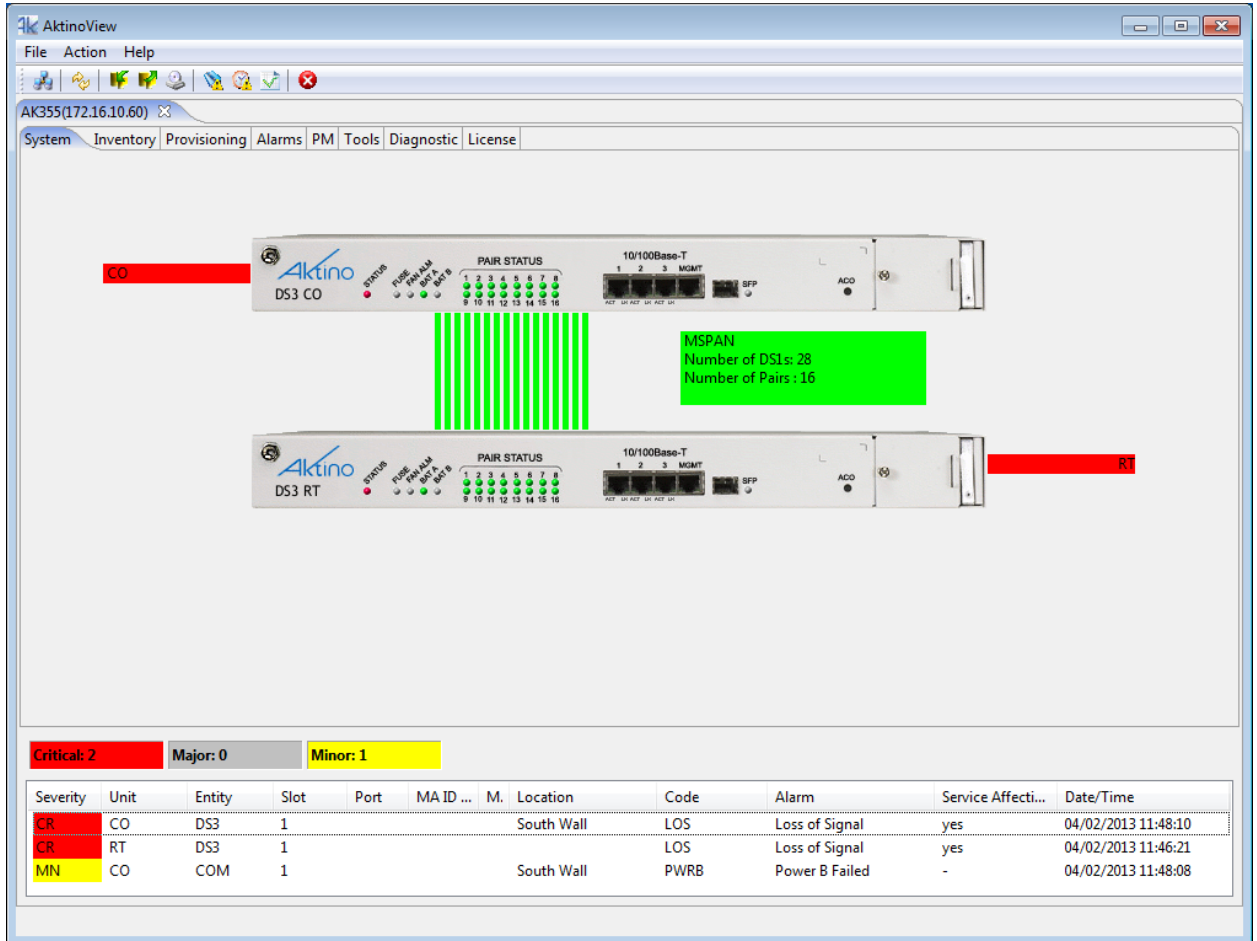
The Help Menu provides one option:.

About: Displays the AktinoView software version information.

AktinoView provides Quick-Launch buttons for all the menus.



Under the Menus and Quick-Launch buttons, AktinoView displays a tab for all the systems currently being managed. Each tab will display the System Name and IP address of the selected system.



When AktinoView connects to a given system, it will display several additional tabs appropriate for the selected system. In this case, AktinoView displays the following tabs for an AK355 System: System, Inventory, Provisioning, Alarms, PM, Tools, Diagnostic, and License.

AktinoView provides Alarm details by right-clicking on the unit. If alarms are present in the system, AktinoView will display them at the bottom of the screen. For more information about a particular alarm, double-click on the alarm for details and trouble-shooting information.

Alarm Details

System ID: AK355_1

IP Address: 172.16.1.81

Unit: CO

Entity: COM

Code: PWRB

Troubleshooting Info: No power detected on power input B
Recommended action:
1. Check B side wiring and Fuse

Cancel

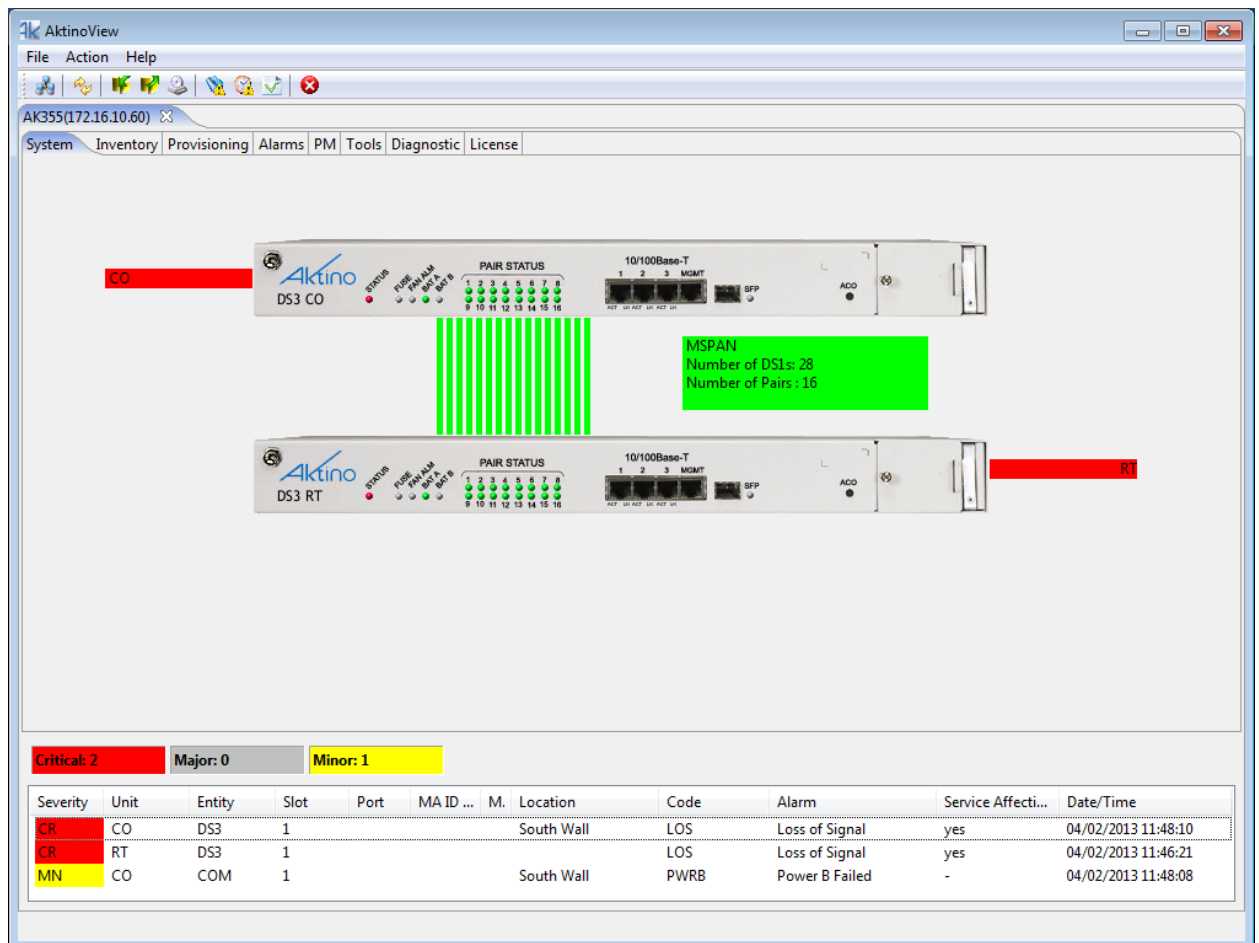
Alarm Details

AktinoView displays detailed alarm information for each system. It displays counters for the active Critical, Major, and Minor alarms, as well as detailed alarm information for each of the alarms present. The columns can be sorted and resized as desired.

Critical: 2		Major: 0		Minor: 1							
Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.4 System

The System tab provides a front panel representation of the AK355 System.



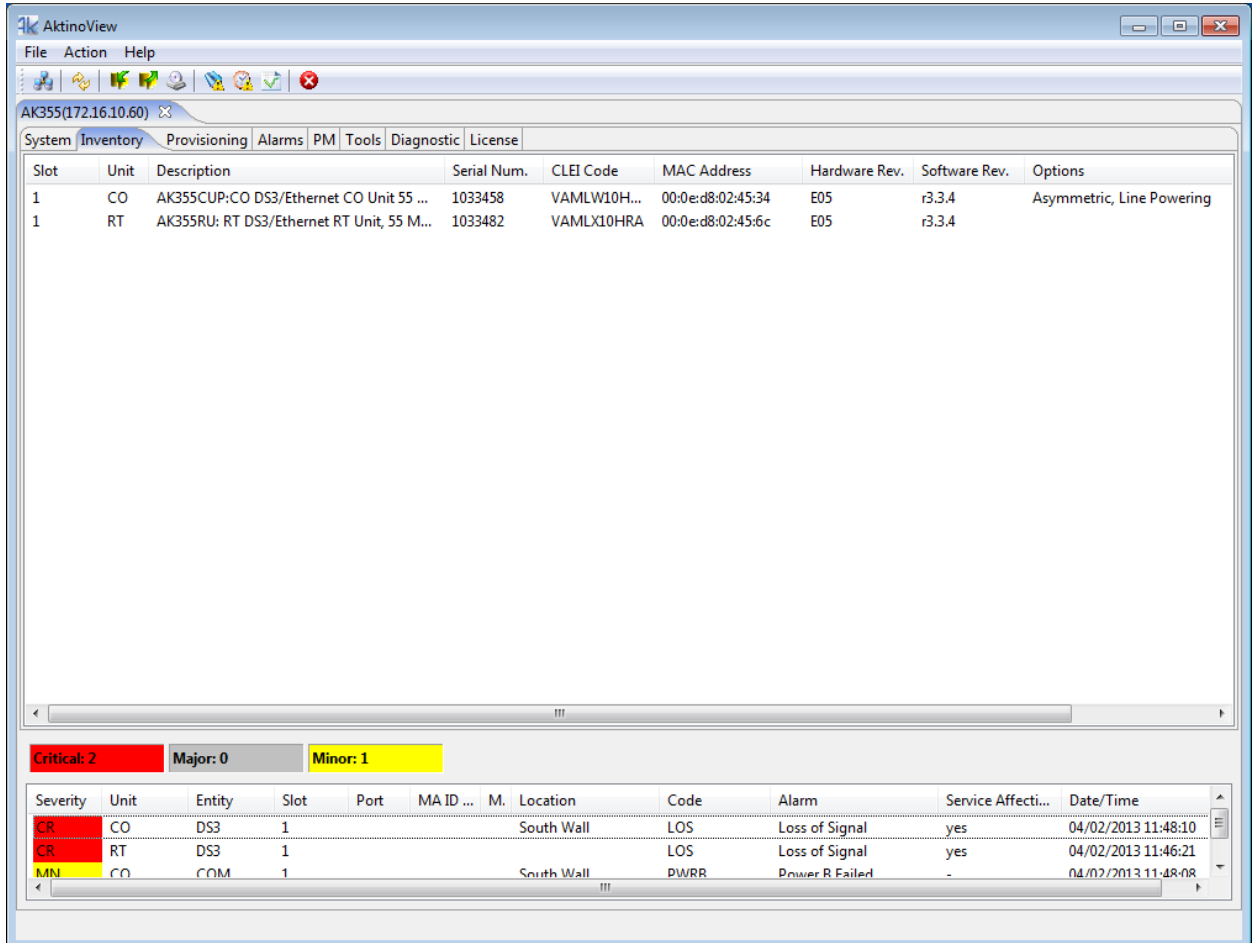
The screenshot shows the AktinoView software interface. The top menu bar includes File, Action, and Help. The main window displays the System tab for AK355(172.16.10.60). The interface shows a front panel representation of the AK355 System, including two DS3 units (DS3 CO and DS3 RT) and a central MSPAN unit. The DS3 CO unit is connected to a red line labeled 'CO' and the DS3 RT unit is connected to a red line labeled 'RT'. The MSPAN unit is connected to both DS3 units. The interface also shows a status bar at the bottom with a table of alarms.

Critical: 2 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.5 Inventory

The Inventory tab provides details for the AK355C and the AK355R comprising the AK355 System.



Slot	Unit	Description	Serial Num.	CLEI Code	MAC Address	Hardware Rev.	Software Rev.	Options
1	CO	AK355CUP:CO DS3/Ethernet CO Unit 55 ...	1033458	VAMLW10H...	00:0e:d8:02:45:34	E05	r3.3.4	Asymmetric, Line Powering
1	RT	AK355RU: RT DS3/Ethernet RT Unit, 55 M...	1033482	VAMLX10HRA	00:0e:d8:02:45:6c	E05	r3.3.4	

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MIN	CO	COM	1				South Wall	PWRR	Power R Failed	-	04/02/2013 11:48:08

It displays a Description for each of the devices, as well as their Serial Number, CLEI Code, Hardware and Software Revision Levels. It also displays any applied feature options.

See the following table for Parameters and Values:

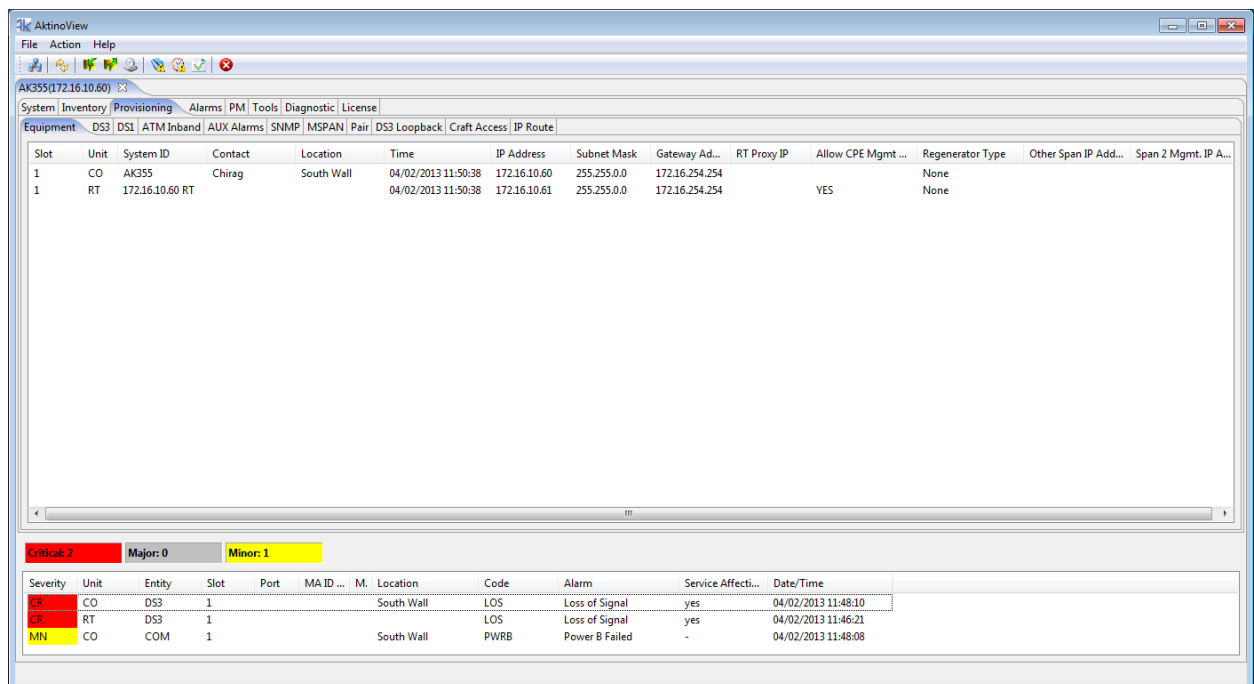
Parameter	Values
Slot	Slot number
Unit	Location
Description	Detailed description
Serial	Serial Number
CLEI Code	Telcordia assigned CLEI code
MAC Address	MAC Address for the device
Hardware Rev.	Hardware Revision Level
Software Rev.	Software Revision Level
Options	Asymmetric: Support for Asymmetric Mode
	2.2 Mhz: Support for 2.2 Mhz Mode
	Line Powering: Support for Line Powering Mode
	SOAM: Support for Ethernet Service OAM

3.3.6 Provisioning

Clicking the Provisioning tab displays all the provisioning sub-sections supported by the AK355 System.

3.3.6.1 Equipment

Selecting the Equipment tab under Provisioning allows equipment provisioning of the system.



Slot	Unit	System ID	Contact	Location	Time	IP Address	Subnet Mask	Gateway Ad...	RT Proxy IP	Allow CPE Mgmt ...	Regenerator Type	Other Span IP Add...	Span 2 Mgmt. IP A...
1	CO	AK355	Chirag	South Wall	04/02/2013 11:50:38	172.16.10.60	255.255.0.0	172.16.254.254			None		
1	RT	172.16.10.60 RT			04/02/2013 11:50:38	172.16.10.61	255.255.0.0	172.16.254.254		YES	None		

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

Clicking on either a CO or RT unit brings up the Equipment dialog box for that specific unit.

×

Equipment

Aktino.

Slot	<input type="text" value="1"/>
Unit	<input type="text" value="CO"/>
System ID	<input type="text" value="AK355_1"/>
Contact	<input type="text" value="Ken"/>
Location	<input type="text" value="East Rack"/>
IP Address	<input type="text" value="172.16.1.81"/>
Subnet Mask	<input type="text" value="255.255.0.0"/>
Gateway Address	<input type="text" value="172.16.254.254"/>
RT Proxy IP	<input type="text"/>
Allow CPE Mgmt Access	<input type="text"/>
Regenerator Type	<input type="text" value="None"/>
Other Span IP Address	<input type="text"/>
Span 2 Mgmt. IP Address	<input type="text"/>
Time	<input type="text" value="03/15/2012"/> <input type="text" value="14"/> : <input type="text" value="39"/> : <input type="text" value="34"/> <input type="button" value="PC Time"/>

Equipment

Aktino.

Slot

1

Unit

RT

System ID

RT for AK355 Legacy

Contact

Location

IP Address

192.168.10.2

Subnet Mask

255.255.255.0

Gateway Address

RT Proxy IP

Allow CPE Mgmt Access

YES

Regenerator Type

None

Other Span IP Address

Span 2 Mgmt. IP Address

Time

03/15/2012

:

:

PC Time

OK

Apply

Cancel

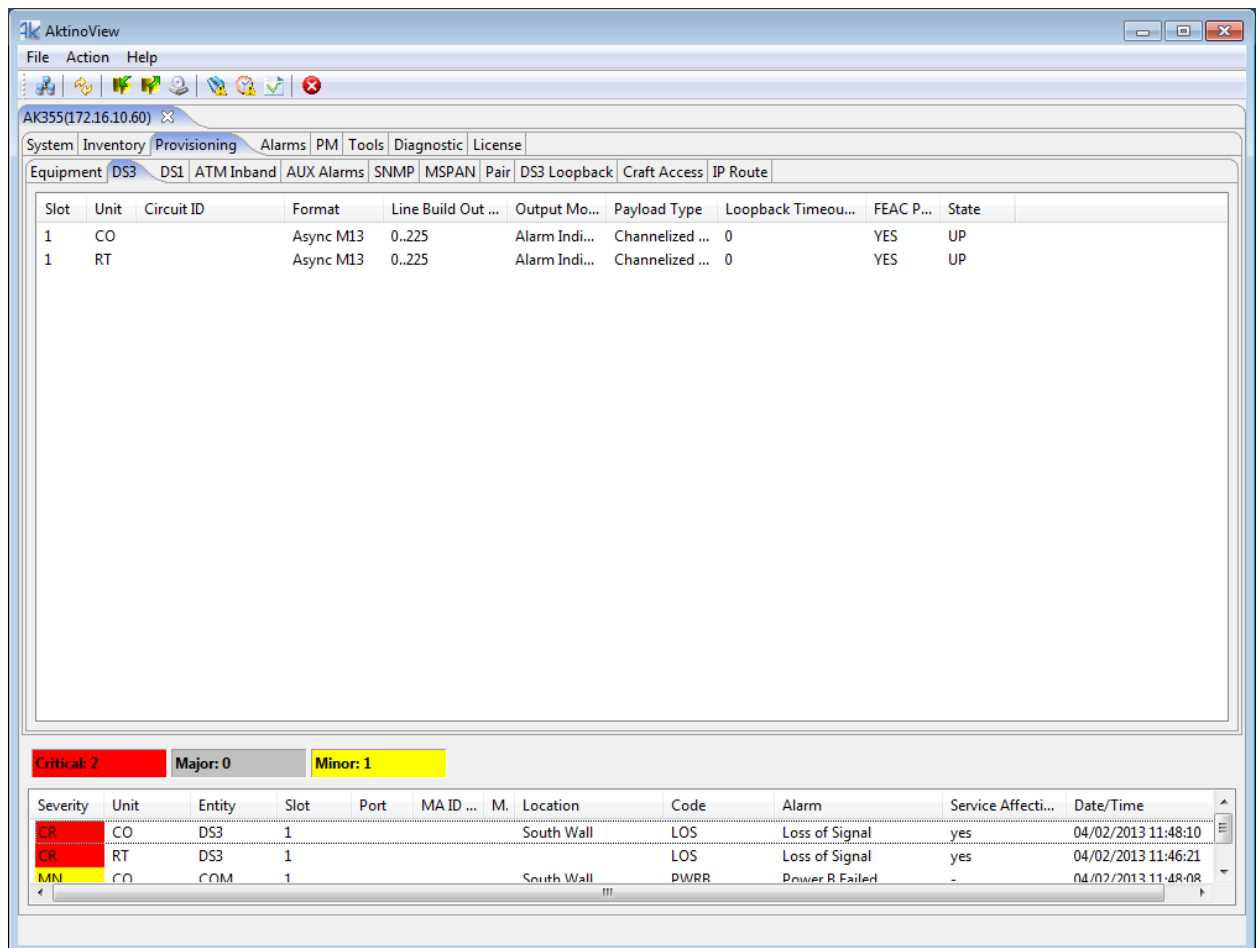
See the following tables for Parameters and Values:

AK355C Equipment Parameters	Values
System ID	User configurable string of up to 20 characters
Contact	User configurable string of up to 64 characters
Location	User configurable string of up to 64 characters
IP Address	IP Address of the unit
Subnet Mask	Subnet Mask of the unit
Gateway Address	Gateway Address of the unit
RT Proxy IP	Proxy IP address of the CRU, used to access the CRU through the MSPAN link
Allow CPE Management Access	Enable or Disable local management access for CRU
Repeater Type	For Regenerator Applications
Other Span IP Address	For Regenerator Applications, indicate the Other Span IP Address (Do not use the same IP Address as the device's management port)
Span 2 Mgmt. IP Address	For Regenerator Applications, indicate the Span 2 management IP address (Do not use the same IP Address as the device's management port)

AK355R Equipment Parameters	Values
System ID	User configurable string of up to 20 characters
Contact	User configurable string of up to 64 characters
Location	User configurable string of up to 64 characters
IP Address	IP Address of the unit
Subnet Mask	Subnet Mask of the unit
Gateway Address	Gateway Address of the unit
Allow CPE Management Access	Enable or Disable local management access for CRU

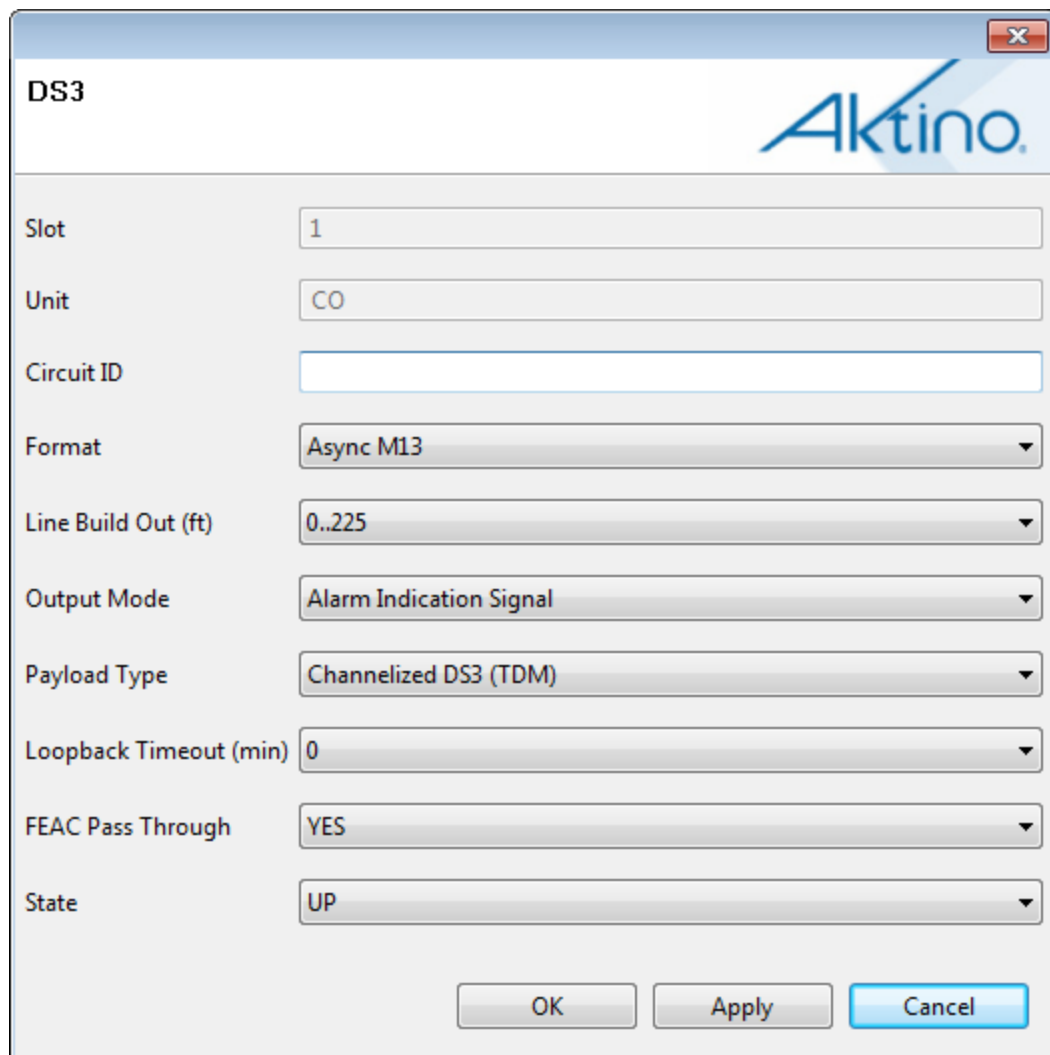
3.3.6.2 DS3

Selecting the DS3 tab under CO unit allows DS3 provisioning of the system.



Double-click on the CO or the RT to bring up the provisioning dialog box for the selected unit. Note that some of the parameters changed on the CO are also reflected on the RT. Double-click on the RT unit to provision the remainder of the RT's parameters and values.

The following is the DS3 CO unit provisioning dialog box:

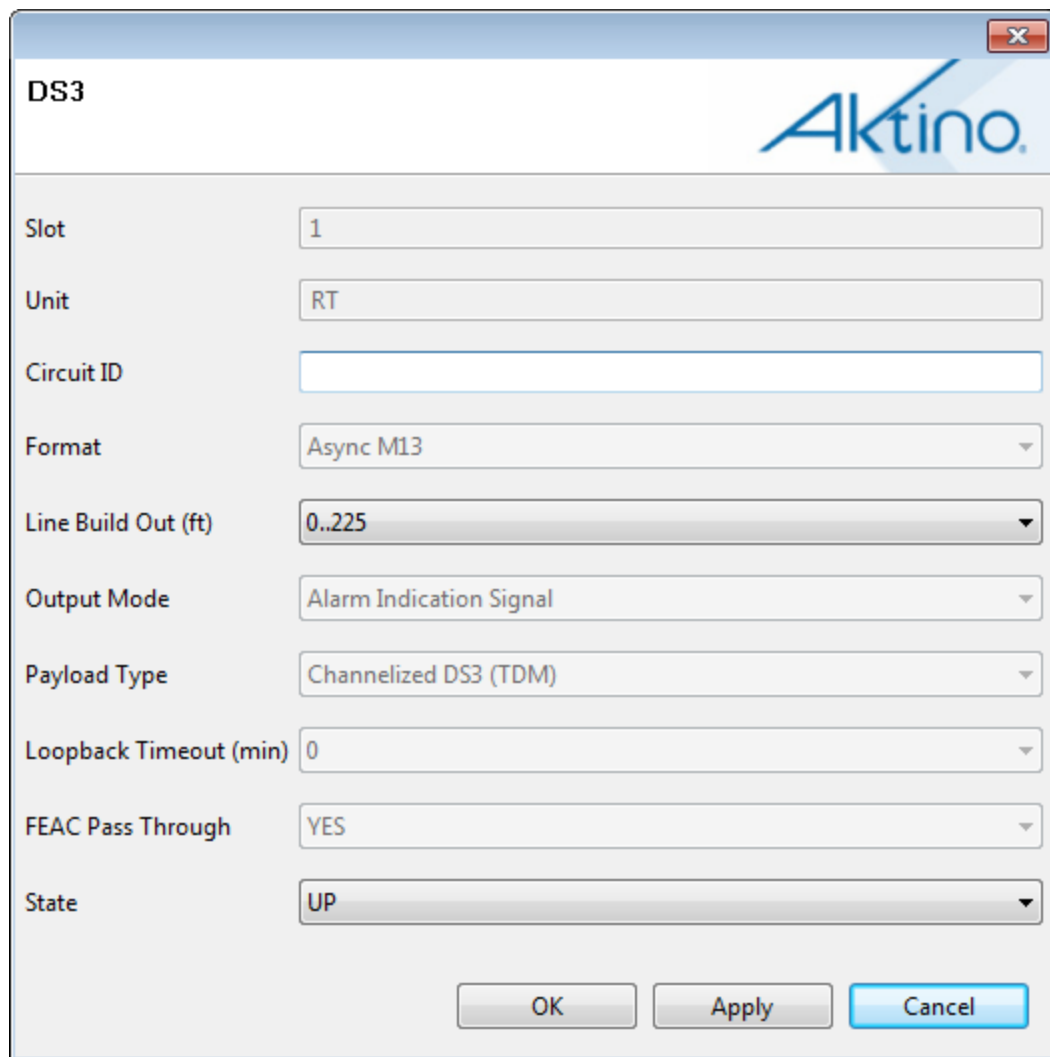


The image shows a software dialog box titled "DS3" with the Aktino logo in the top right corner. The dialog contains several configuration fields for a DS3 CO unit. The fields are arranged in a list on the left, with their corresponding input controls on the right. At the bottom right, there are three buttons: "OK", "Apply", and "Cancel".

Field	Value
Slot	1
Unit	CO
Circuit ID	
Format	Async M13
Line Build Out (ft)	0..225
Output Mode	Alarm Indication Signal
Payload Type	Channelized DS3 (TDM)
Loopback Timeout (min)	0
FEAC Pass Through	YES
State	UP

Buttons: OK, Apply, Cancel

The following is the DS3 RT unit provisioning dialog box:



DS3

Slot 1

Unit RT

Circuit ID

Format Async M13

Line Build Out (ft) 0..225

Output Mode Alarm Indication Signal

Payload Type Channelized DS3 (TDM)

Loopback Timeout (min) 0

FEAC Pass Through YES

State UP

OK Apply Cancel

See the following table for parameters and values:

DS3 CO unit Parameters and Values table

Parameters	Values
DS3 Circuit ID	Allows input of description of the DS3 circuit up to 48 characters.
DS3 Line Format	C-Bit Parity Asynchronous M13
CO unit DS3 Line Build Out	0..225 ft 226..450 ft
Output Mode (Alarm Mode)	Normal - Idle, Alarm Indication Signal (AIS)
Payload Type	Channelized DS3 (TDM) ATM* Scrambled ATM* Clear Channel
Loopback Timeout	0, 20, 60, 3600 (24 hours) minutes
FEAC Pass Through	YES - DS3 FEAC loopback messages from the network are reacted upon by the CO. NO - DS3 FEAC loopback messages from the network are ignored.
State	UP - CO DS3 port is in service. Down - CO DS3 port is out of service.

DS3 RT unit Parameters and Values table

Parameters	Values
DS3 Circuit ID	Allows input of description of the DS3 circuit up to 48 characters.
RT Unit DS3 Line Build Out	0..225 ft 226..450 ft
State	UP - RT DS3 port is in service Down - RT DS3 port is out of service

3.3.6.3 DS1

Selecting the DS1 tab under the CO unit allows DS3 tributary provisioning of the system.

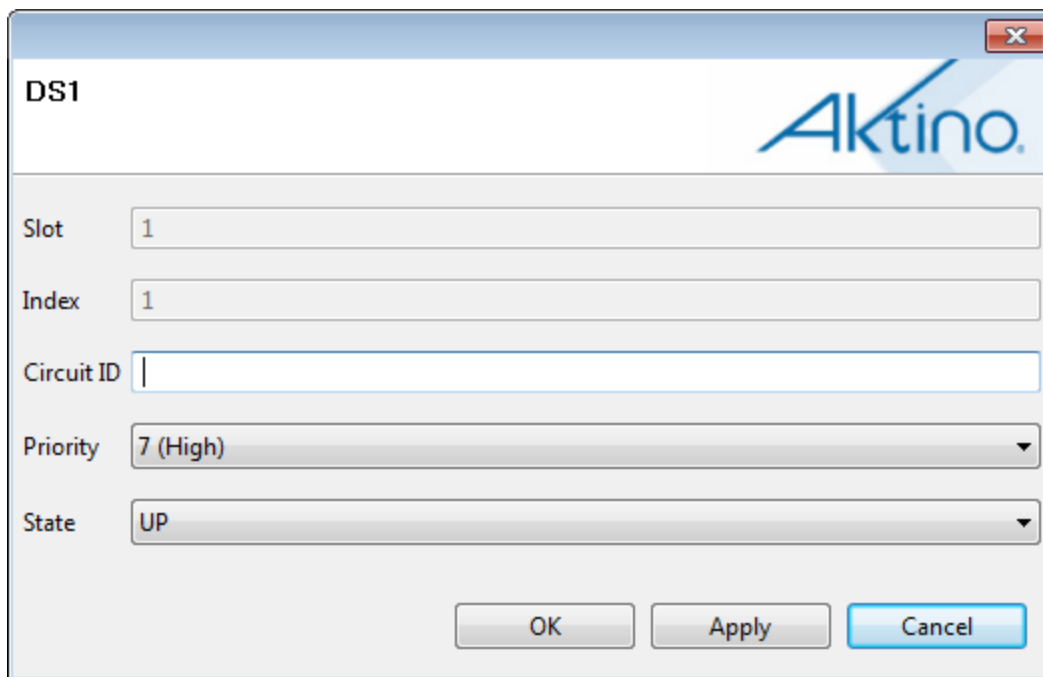
The screenshot shows the AktinoView software interface. The main window displays a table with columns: Slot, Index, Circuit ID, Priority, and State. The table lists 21 rows of DS1 tributaries, all with a priority of 7 (High) and a state of UP. Below the table, there is a summary bar showing alarm counts: Critical: 2, Major: 0, and Minor: 1. At the bottom, an alarm log table is visible with columns: Severity, Unit, Entity, Slot, Port, MA ID, M, Location, Code, Alarm, Service Affecti..., and Date/Time. The log shows three entries: two Critical (CR) alarms for 'Loss of Signal' and one Minor (MN) alarm for 'Power B Failed'.

Slot	Index	Circuit ID	Priority	State
1	1		7 (High)	UP
1	2		7 (High)	UP
1	3		7 (High)	UP
1	4		7 (High)	UP
1	5		7 (High)	UP
1	6		7 (High)	UP
1	7		7 (High)	UP
1	8		7 (High)	UP
1	9		7 (High)	UP
1	10		7 (High)	UP
1	11		7 (High)	UP
1	12		7 (High)	UP
1	13		7 (High)	UP
1	14		7 (High)	UP
1	15		7 (High)	UP
1	16		7 (High)	UP
1	17		7 (High)	UP
1	18		7 (High)	UP
1	19		7 (High)	UP
1	20		7 (High)	UP
1	21		7 (High)	UP

Severity	Unit	Entity	Slot	Port	MA ID ...	M	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRR	Power B Failed	-	04/02/2013 11:48:08

Double-click on the Index to bring up the DS1 provisioning dialog box. Note that this screen is only active if DS3 Payload Type is set to Channelized DS3 (TDM). The MSPAN rate is set the number DS1's set to UP state.

The following is the DS1 provisioning dialog box:



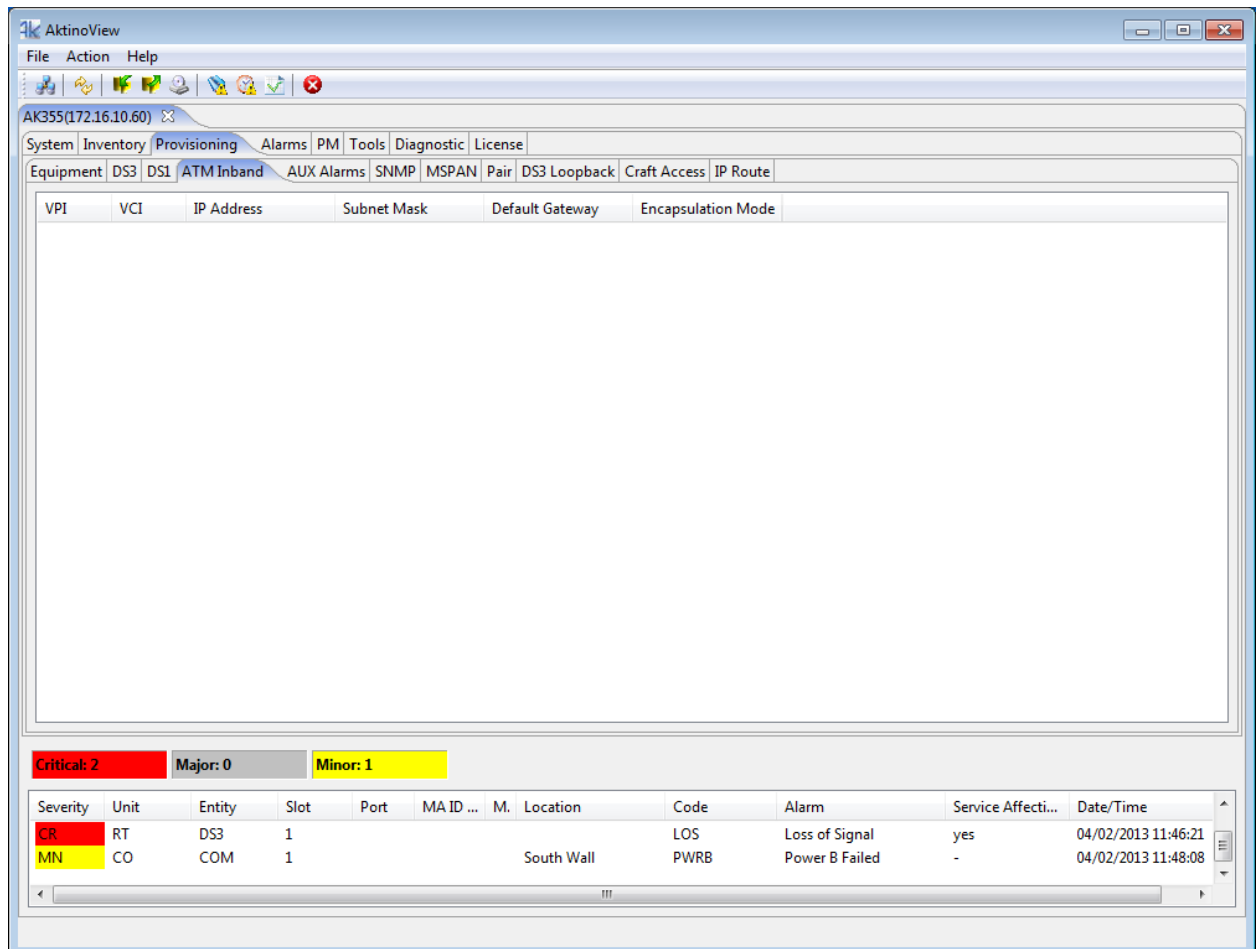
See the following table for parameters and values:

DS1 Provisioning Parameters and Values

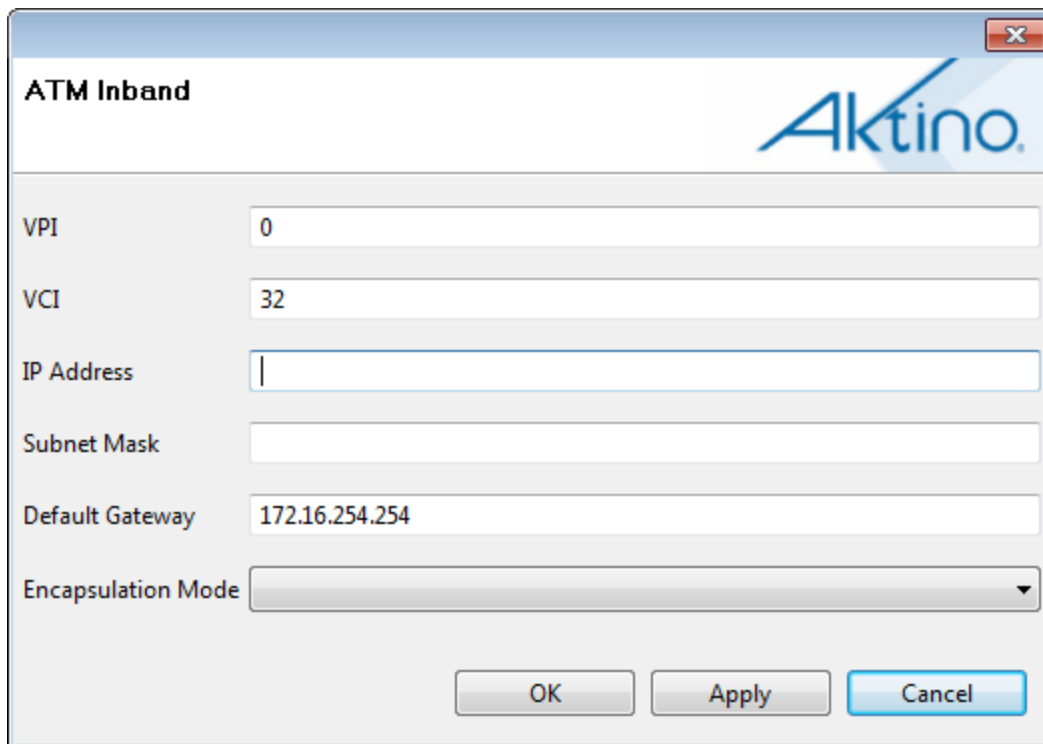
Parameter	Values
Circuit ID	Circuit ID of DS1 up to 48 characters
Priority	0 [Low] through 7 [High] When system needs to downshift the MSPAN rate during adverse conditions (e.g. a pair failed), the priority parameter determines the order of DS1's dropped.
State	Down - DS1 tributary is not transported. UP - DS1 tributary is transported.

3.3.6.4 ATM Inband

Selecting the ATM Inband tab under Provisioning allows ATM Inband Management provisioning of the system. The DS3 Payload Type must be in an ATM mode to allow provisioning this item.



Double-click on the line to bring up the following ATM Inband dialog box:



ATM Inband

VPI: 0

VCI: 32

IP Address:

Subnet Mask:

Default Gateway: 172.16.254.254

Encapsulation Mode:

OK Apply Cancel

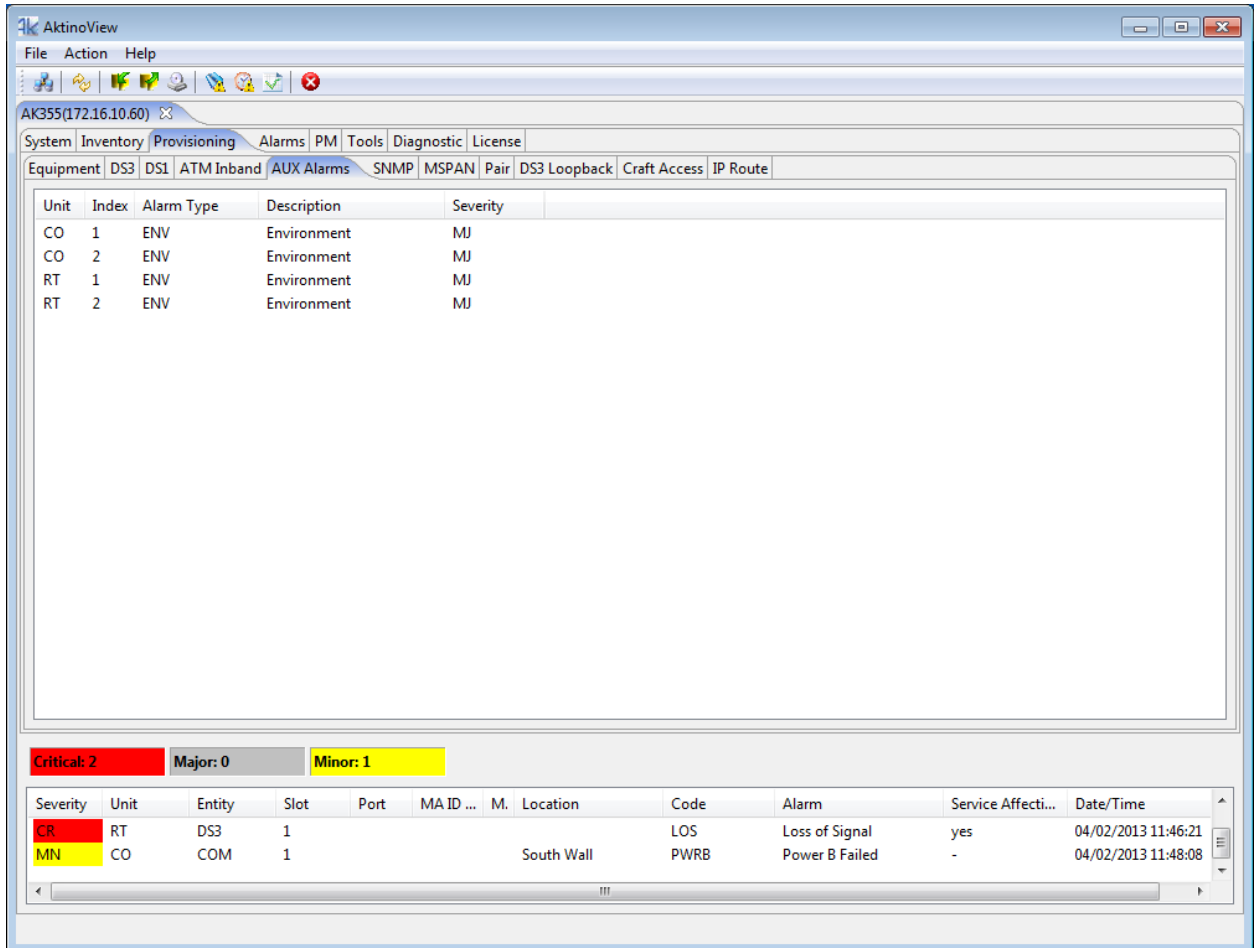
See the following table for parameters and values:

ATM Inband Parameters and Values

Parameters	Values
VPI	Virtual Path Identifier
VCI	Virtual Circuit Identifier
IP Address	IP Address of the Positron unit (must be in a different subnet vs. the local management port).
Subnet Mask	Subnet Mask for the Positron Unit
Default Gateway	Gateway address for the Positron Unit

3.3.6.5 AUX Alarms

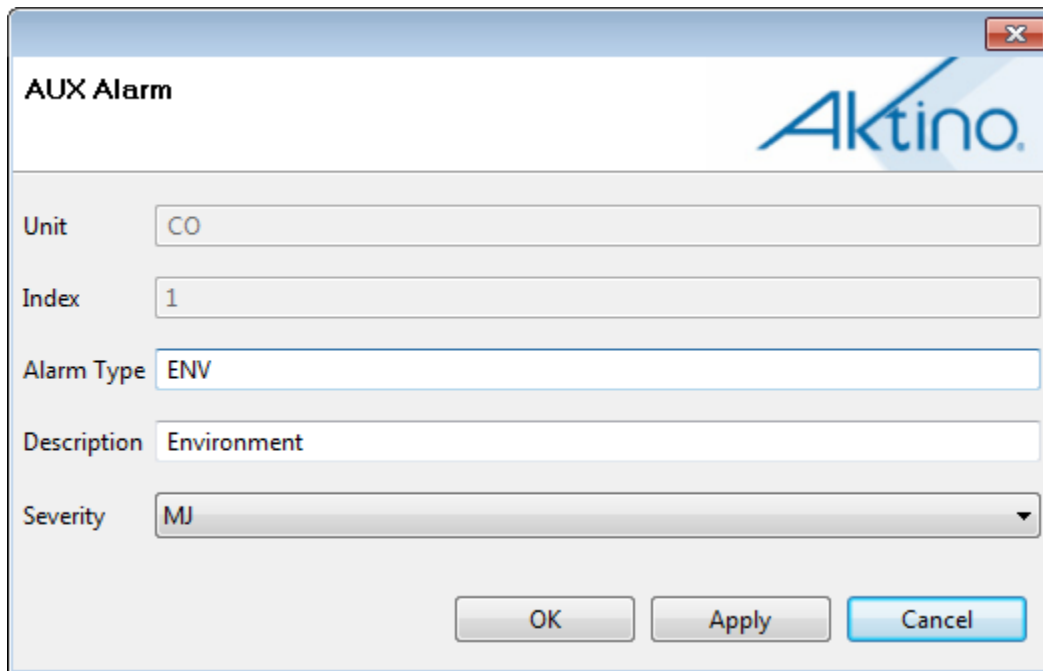
Selecting the AUX Alarms tab under Provisioning allows external alarm provisioning of the system. These parameters determine how the AUX1 and AUX2 input pins on the Positron units react. Note that the alarm input pins are Normally Open (NO).



Unit	Index	Alarm Type	Description	Severity
CO	1	ENV	Environment	MJ
CO	2	ENV	Environment	MJ
RT	1	ENV	Environment	MJ
RT	2	ENV	Environment	MJ

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

Double-click on the Index to bring up the AUX Alarm provisioning dialog.



The screenshot shows a software dialog box titled "AUX Alarm" with the Aktino logo in the top right corner. The dialog contains the following fields and values:

- Unit: CO
- Index: 1
- Alarm Type: ENV
- Description: Environment
- Severity: MJ (selected from a dropdown menu)

At the bottom of the dialog are three buttons: "OK", "Apply", and "Cancel".

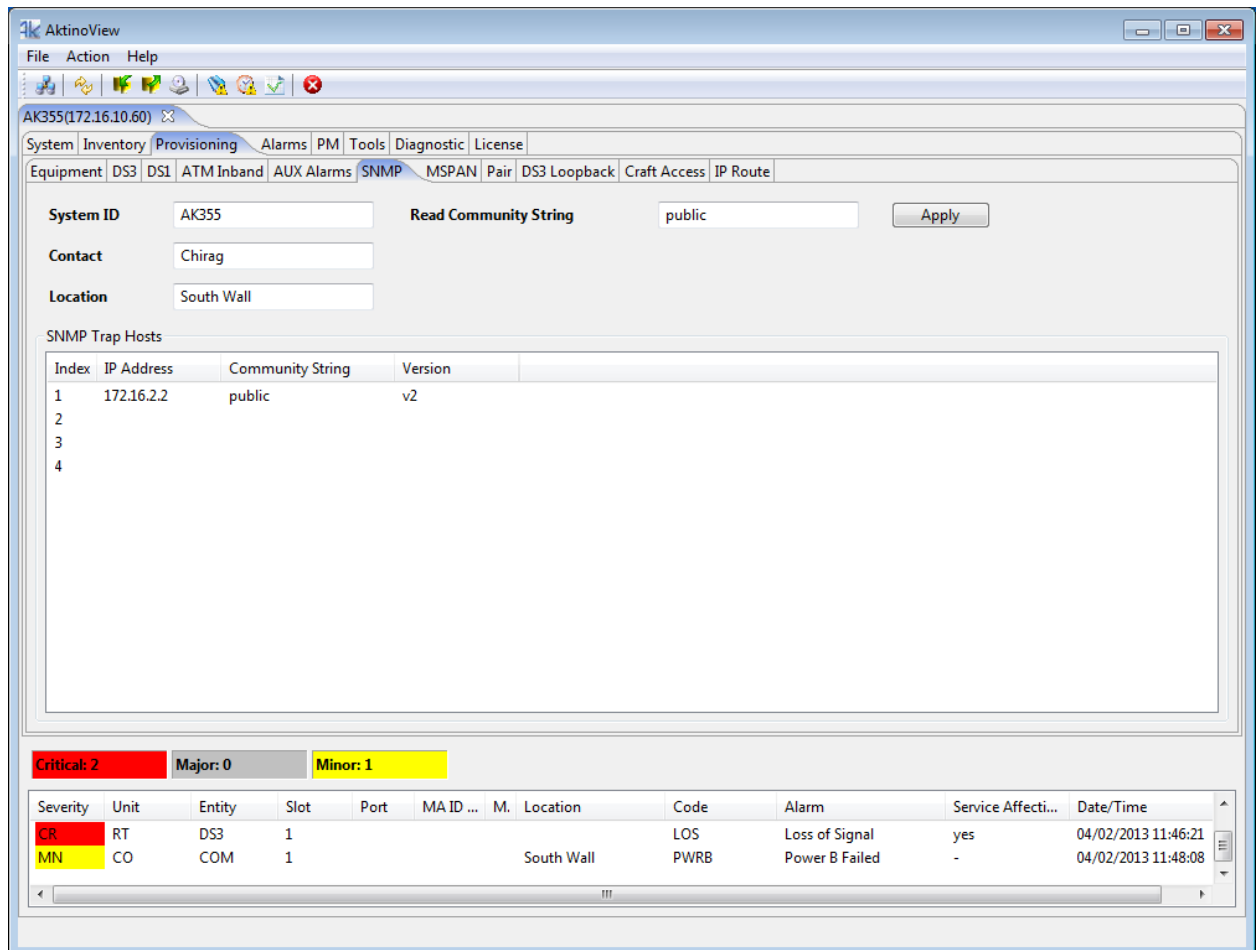
See the following table for Parameters and Values:

AUX Alarm Parameters and Values

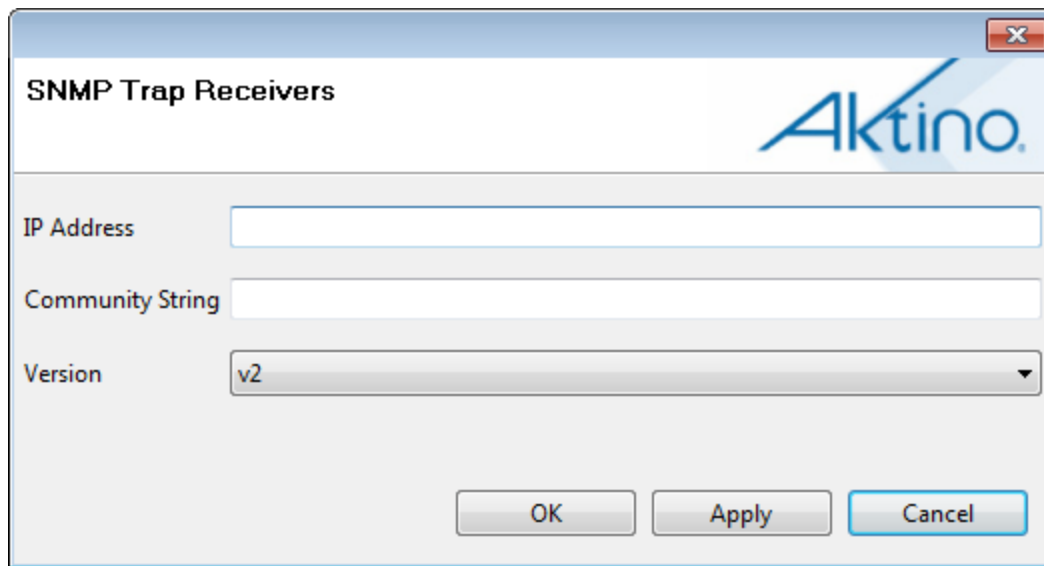
Parameters	Values
Alarm Type	This value is reported as alarm type in the TL 1 alarm message up to 16 characters.
Description	This values is reported as alarm description in the TL1 alarm message up to 48 characters.
Severity	Critical, Major, Minor

3.3.6.6 SNMP

Selecting the SNMP tab allows setting SNMP receiver parameters.



Double-clicking on the Index brings up the SNMP Trap Receivers dialog box enabling SNMP provisioning.



The image shows a Windows-style dialog box titled "SNMP Trap Receivers" with the Aktino logo in the top right corner. The dialog contains three input fields: "IP Address" (a text box), "Community String" (a text box), and "Version" (a dropdown menu currently showing "v2"). At the bottom, there are three buttons: "OK", "Apply", and "Cancel".

SNMP Trap Receivers

Aktino.

IP Address

Community String

Version

OK Apply Cancel

See the following for the Parameters and Values for both of these screens:

SNMP Parameters	Values
System ID	User configurable string of up to 20 characters
Contact	User configurable string of up to 64 characters
Location	User configurable string of up to 64 characters
Read Community String	The SNMP Read Community String for the AK355 System

SNMP Trap Host Parameters	Values
IP Address	IP Address of the SNMP Trap Receiver
Community String	SNMP Community String of the Trap Receiver
Version	SNMP Trap Version Number (v1 or v2)

3.3.6.7 MSPAN

Selecting the MSPAN tab under Provisioning allows MSPAN provisioning of the system.

Note: Configuring Line Powering on an AK355RP is done by connecting to the AktinoView session to the AK355RP instead of connecting to the AK355CPS.

General Parameters

Slot	Unit	State	Circuit ID	Mode	Rate Upstream...	Rate Downstre...	Line Powering	SNR Margin ...	Margin Threshold (d...	Reserve Pairs	PSD Mask	2.2 Mhz
1	CO	UP					-185V	5	3	0	AUTO Select	

Advanced Parameters

Slot	Unit	Reed-Solomon Up...	Reed-Solomon Do...	Latency Upstream	Latency Downstre...	Impulse Prot. Upst...	Impulse Prot. Dow...	Power Back-Off U...	Power Back-Off D...	Max SNR Margin (...)	Rate Alarm Threshold Ups...	Rate A
1	CO	5.30	5.30	2	2	50	50	AUTO	AUTO	50	0	0

Critical: 2 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

Double-clicking on a Slot entry in either the General Parameters area or the Advanced Parameters area provides the MSPAN Parameters dialog box for both General and Advanced Parameters.

MSPAN - General Parameters

General Parameters

Slot: 1

Circuit ID:

Mode:

MSPAN Rate (kbps):

Rate Upstream (kbps):

Rate Downstream (kbps):

Line Powering: -185V

SNR Margin (dB): 5

Margin Threshold (dB): 3

Reserve Pairs: 0

PSD Mask: AUTO Select

2.2 Mhz:

State: UP

Advance Parameters

Reed-Solomon Upstream: 5.30

Reed-Solomon Downstream: 5.30

Latency Upstream: 2

Latency Downstream: 2

Impulse Prot. Upstream (us): 50

Impulse Prot. Downstream (us): 50

Power Back-Off Upstream (dB): AUTO

Power Back-Off Downstream (dB): AUTO

Max SNR Margin (dB): 50

Rate Alarm Threshold (kbps):

Rate Alarm Threshold Upstream (kbps):

Rate Alarm Threshold Downstream (kbps):

☐ Configure Rate Alarm Threshold

OK Apply Cancel

See the following table for Parameters and Values:

MSPAN General Parameters	Values
State	Sets the MSPAN State: Up - MSPAN is in service Down - MSPAN is out of service
Circuit ID	User configurable string of up to 48 characters
Mode	Sets the MSPAN Mode: Symmetric Asymmetric
MSPAN Rate (kbps)	Sets the MSPAN Rate in Symmetric Mode
Rate Upstream	Sets the Upstream MSPAN Rate in Asymmetric Mode
Rate Downstream	Sets the Downstream MSPAN Rate in Asymmetric Mode
Line Powering	Sets Line Powering to: Off, -135v, or -185v
SNR Margin	Sets the SNR Margin: 0 to 18dB
Margin Threshold	Sets the SNR Margin Threshold. If the SNR Margin falls below this threshold, an Alarm will be generated
Reserve Pairs	Sets the number of Reserve Pairs
PSD Mask	Sets the PSD Mask: Auto - Select the PSD Mask automatically Select - M0, M1, M2, M3, M4 or M5
2.2 Mhz	If the 2.2 Mhz feature is enabled: Select - Auto, or No

See the following table for Advanced Parameters and Values:

MSPAN Advanced Parameters	Values
Reed-Solomon Upstream	Calculated Reed-Solomon Overhead percentage Upstream: $RS\% = 2 * INP / Latency$
Reed-Solomon Downstream	Calculated Reed-Solomon Overhead percentage Downstream: $RS\% = 2 * INP / Latency$
Latency Upstream	Sets the Upstream Latency: 0, 1, 2, 4, 8, 12, 16, 20, 32msec
Latency Downstream	Sets the Downstream Latency: 0, 1, 2, 4, 8, 12, 16, 20, 32msec
Impulse Protection Upstream	Length of Upstream Impulse Noise Protection: 50, 125, 250, 500, 750, 1000, 2000, 4000 μ sec
Impulse Protection Downstream	Length of Downstream Impulse Noise Protection: 50, 125, 250, 500, 750, 1000, 2000, 4000 μ sec
Power Back-Off Upstream	Auto, -3 to 16dB
Power Back-Off Downstream	Auto, -3 to 16dB
Rate Alarm Threshold	MSPAN Rate Alarm Threshold for Symmetric Mode
Rate Alarm Threshold Upstream	MSPAN Upstream Rate Alarm Threshold for Asymmetric Mode
Rate Alarm Threshold Downstream	MSPAN Downstream Rate Alarm Threshold for Asymmetric Mode

3.3.6.8 Pair

Selecting the Pair tab under the Provisioning tab allows Pair provisioning of the system.

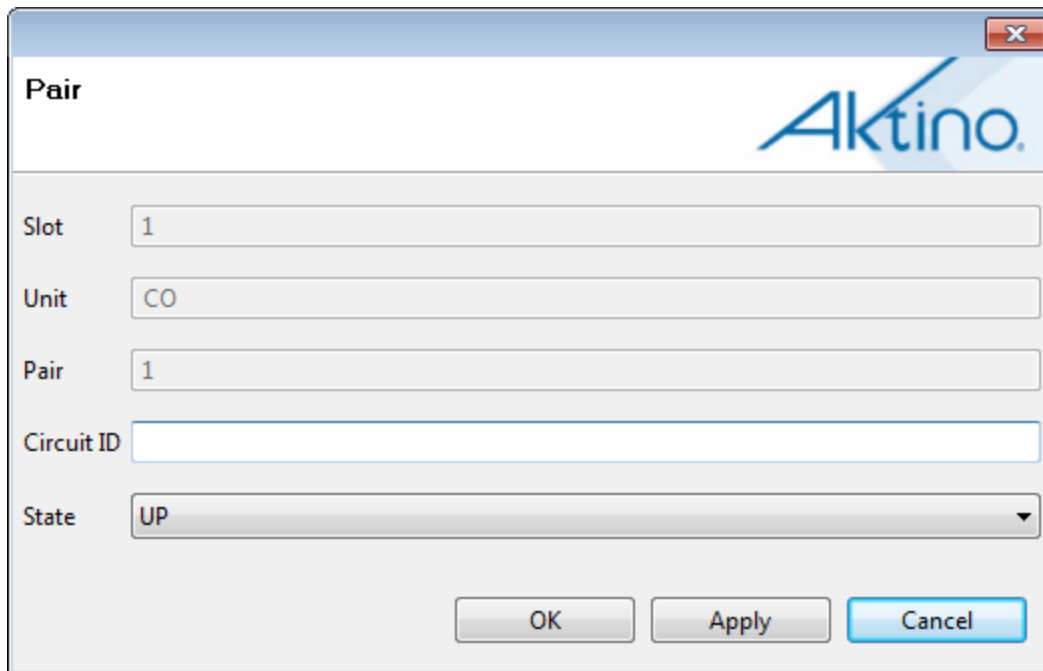
The screenshot displays the AktinoView software interface. The main window has a menu bar (File, Action, Help) and a toolbar. Below the toolbar is a tabbed interface with the following tabs: System, Inventory, Provisioning, Alarms, PM, Tools, Diagnostic, License. The Provisioning tab is active, and within it, the 'Pair' sub-tab is selected. The main area shows a table with the following columns: Slot, Unit, Pair, Circuit ID, and State. The table contains 16 rows of data, all with 'UP' state.

Slot	Unit	Pair	Circuit ID	State
1	CO	1		UP
1	CO	2		UP
1	CO	3		UP
1	CO	4		UP
1	CO	5		UP
1	CO	6		UP
1	CO	7		UP
1	CO	8		UP
1	CO	9		UP
1	CO	10		UP
1	CO	11		UP
1	CO	12		UP
1	CO	13		UP
1	CO	14		UP
1	CO	15		UP
1	CO	16		UP

Below the table, there is a status bar showing 'Critical: 2', 'Major: 0', and 'Minor: 1'. Below this is an alarm log table with columns: Severity, Unit, Entity, Slot, Port, MA ID ..., M, Location, Code, Alarm, Service Affecti..., and Date/Time.

Severity	Unit	Entity	Slot	Port	MA ID ...	M	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MIN	CO	COM	1				South Wall	PWRR	Power R Failed	-	04/02/2013 11:48:08

Double-clicking on the Pair entry to bring up the Pair provisioning dialog box.



See the following table for Pair Provisioning Parameters and Values:

Pair Parameters	Values
Circuit ID	User configurable string of up to 48 characters
State	Sets the Pair State: Up - Pair is in service Down - Pair is out of service

3.3.6.9 DS3 Loopback

Selecting the DS3 Loopback tab under Provisioning allows you to enable DS3 loopbacks on either the CO or RT unit. Right click on the Unit to select the type of DS3 Loopback desired. When a loopback is set, right clicking on the Unit will provide release loopback option.

AK355(172.16.10.60)

System Inventory **Provisioning** Alarms PM Tools Diagnostic License

Equipment DS3 DS1 ATM Inband AUX Alarms SNMP MSPAN Pair **DS3 Loopback** Craft Access IP Route

Slot	Unit	Loopback
1	CO	None
1	RT	None

Critical: 2 **Major: 0** **Minor: 1**

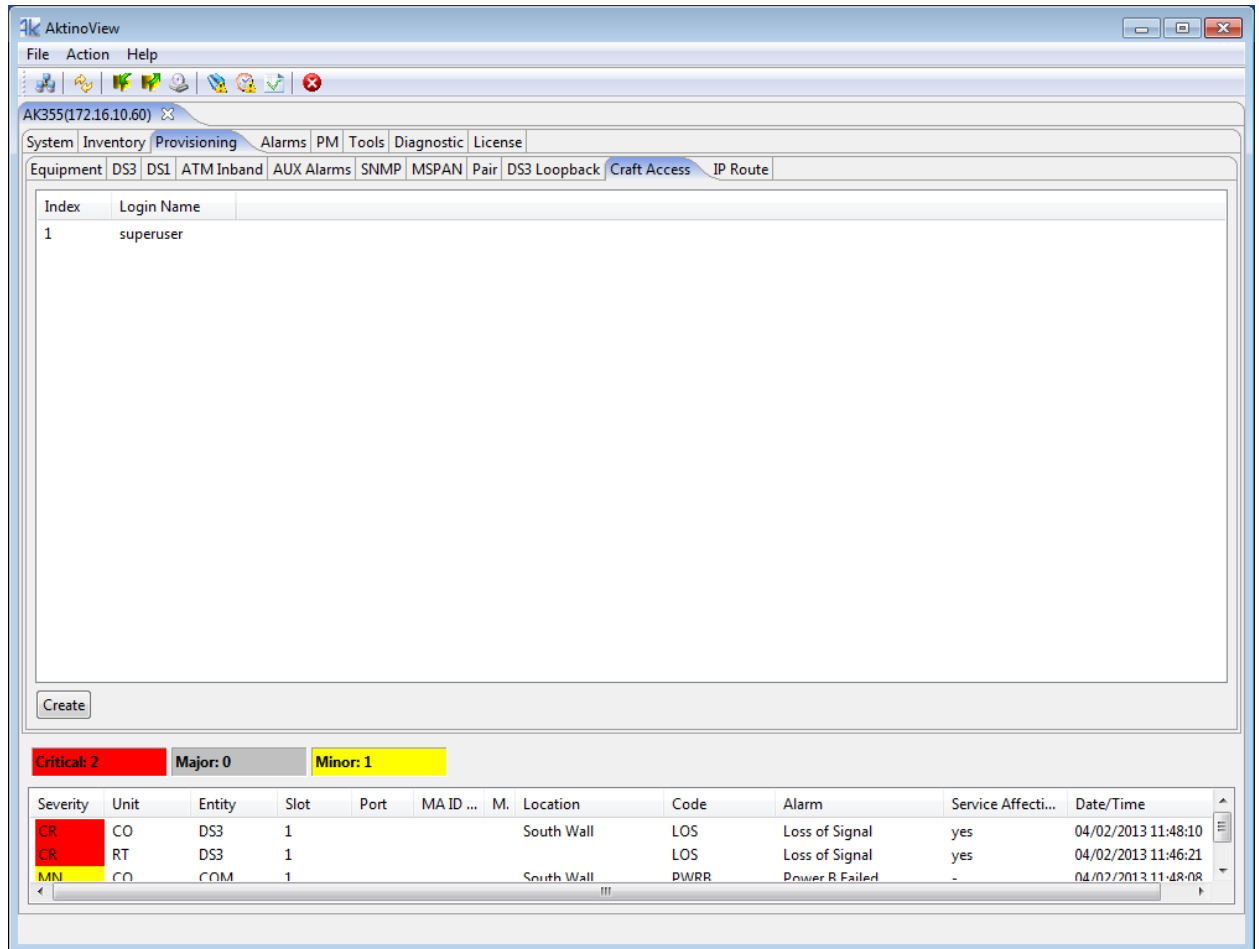
Severity	Unit	Entity	Slot	Port	MA ID ...	M	Location	Code	Alarm	Service Affected	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRR	Power R Failed	-	04/02/2013 11:48:08

The following screen shot from the System tab reveals a loopback set Toward Network.

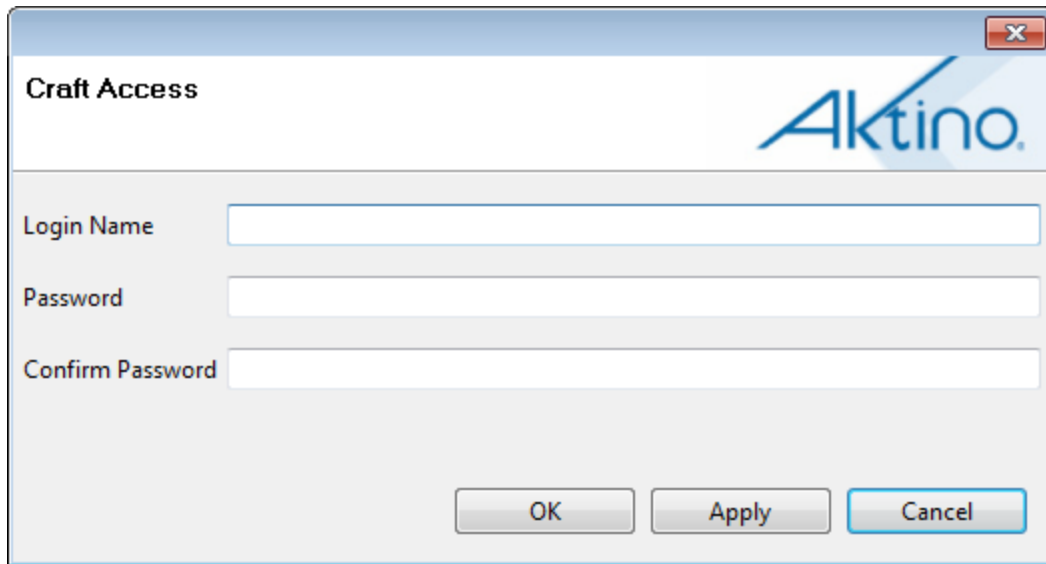
Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MIN	CO	COM	1				South Wall	PWRR	Power B Failed	-	04/02/2013 11:48:08

3.3.6.10 Craft Access

Selecting the Craft Access tab under Provisioning allows User Management Administration.



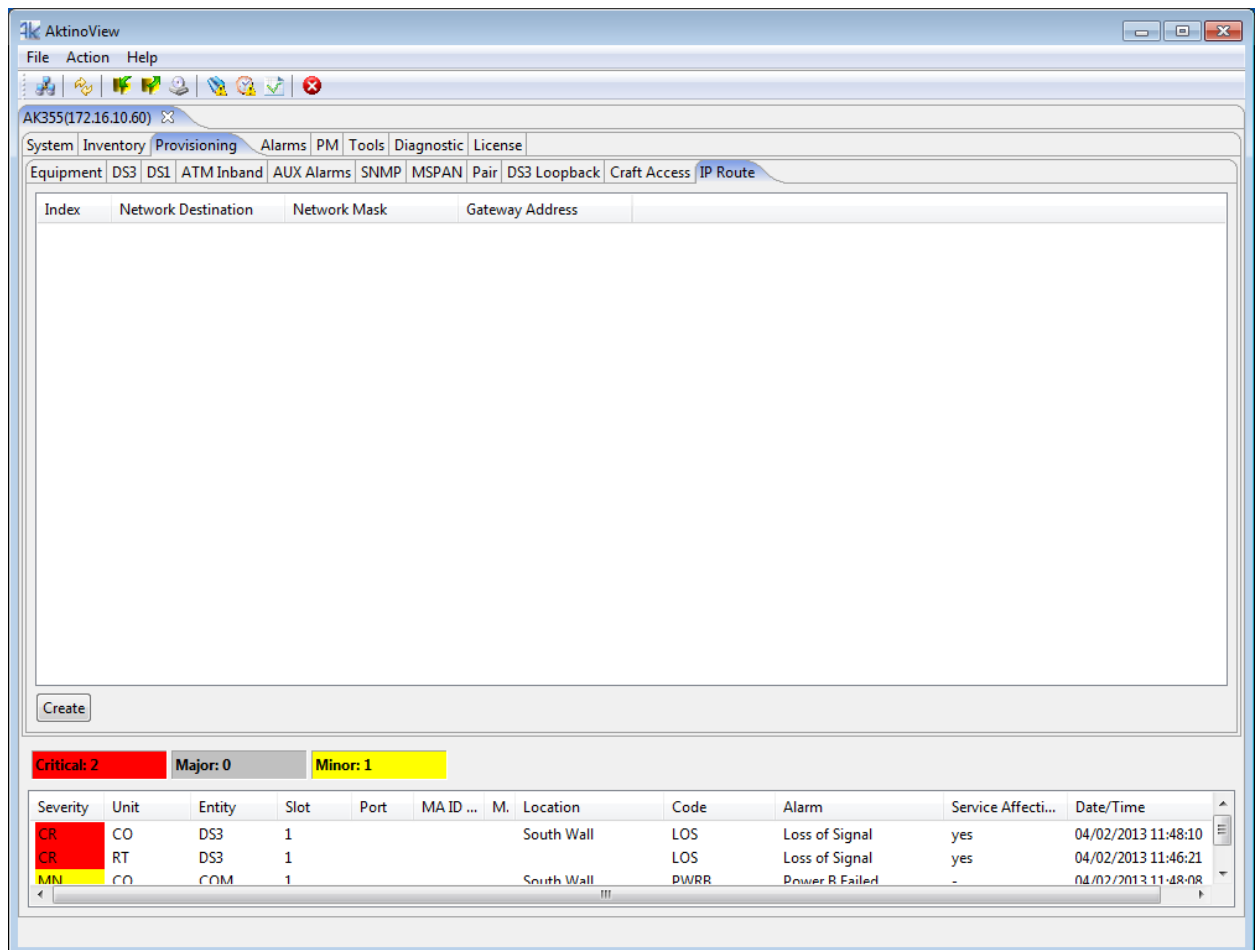
Click on **Create** to bring up the following Craft Access dialog box:



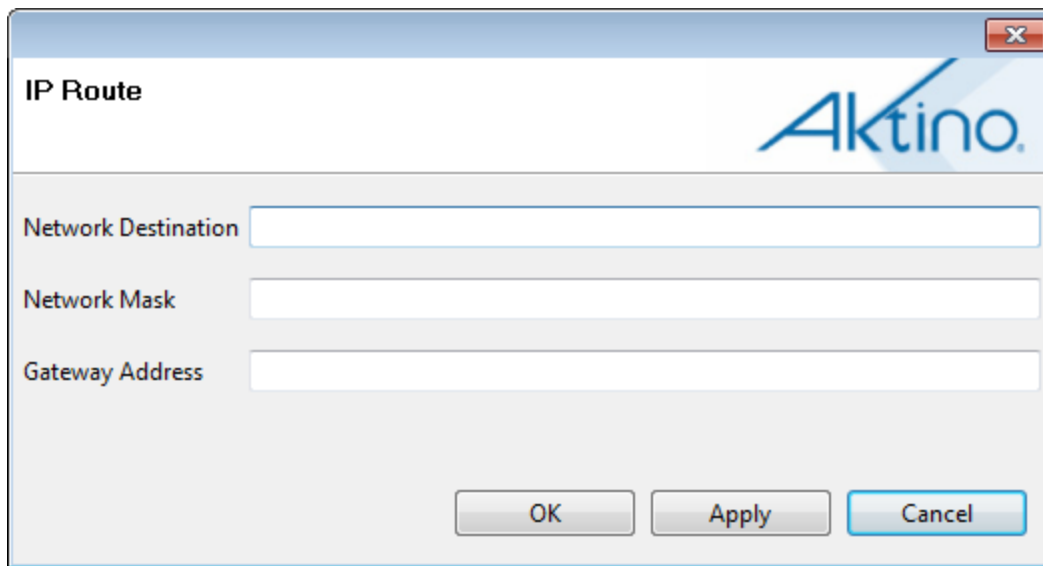
The image shows a software dialog box titled "Craft Access". In the top right corner of the dialog is a standard Windows window control button with a red "X". The Aktino logo is positioned in the top right area of the dialog. The main content area contains three input fields: "Login Name", "Password", and "Confirm Password", each with a corresponding text label to its left. At the bottom of the dialog, there are three buttons: "OK", "Apply", and "Cancel".

3.3.6.11 IP Route

The IP Route tab allows you to provision static routes for the AK355C.



Click the **Create** button to display the following dialog box:



The screenshot shows a window titled "IP Route" with the Aktino logo in the top right corner. The window contains three input fields: "Network Destination", "Network Mask", and "Gateway Address". At the bottom, there are three buttons: "OK", "Apply", and "Cancel".

See the following table for the IP Route Parameters and Values:

IP Route Parameters	Values
Network Destination	Destination Network Address
Network Mask	Network Mask
Gateway Address	Default Gateway Address

3.3.7 Alarms

3.3.7.1 CO > Alarm Log

The CO Alarm Log tab displays a list of all the alarms observed on the AK355C including time-stamp information as to when the alarm was triggered or cleared.

AK355(172.16.10.60)

System Inventory Provisioning **Alarms** PM Tools Diagnostic License

CO RT

Alarm Log Alarm History

Last retrieved time: 04/02/2013 12:01:22

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm
NA	CO	DS3	1				South Wall	LPBKLINE	Line Loopback
NA	CO	DS3	1				South Wall	LPBKLINE	Line Loopback
CR	CO	MSPAN	1				South Wall	LOF	Loss of Frame
CR	CO	MSPAN	1				South Wall	LOF	Loss of Frame
CR	CO	DS3	1				South Wall	LOS	Loss of Signal
NA	CO	COM	1				South Wall	SYSTEM_REB...	System Reboot
MN	CO	COM	1				South Wall	PWRB	Power B Failed
MN	CO	PAIR	1	13			South Wall	LOS	Loss of Signal
CR	CO	MSPAN	1				South Wall	LOF	Loss of Frame
CR	CO	MSPAN	1				South Wall	LOF	Loss of Frame
NA	CO	COM	1				South Wall	SYSTEM_REB...	System Reboot
MN	CO	COM	1				South Wall	PWRB	Power B Failed

Refresh

Critical: 2 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.7.2 CO > Alarm History

The CO Alarm History tab displays the alarms that have been observed by the AK355C and how many times each of the alarms has been observed, as well as the first and last times the alarm has been observed.

AK355(172.16.10.60)

System Inventory Provisioning Alarms PM Tools Diagnostic License

CO RT

Alarm Log Alarm History

Last retrieved time: 04/02/2013 12:01:48

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm
NA	CO	DS3	1					LPBKLINE	Line Loopback
CR	CO	MSPAN	1					LOF	Loss of Frame
CR	CO	DS3	1					LOS	Loss of Signal
NA	CO	COM	1					SYSTEM_REB...	System Reboot
MN	CO	COM	1					PWRB	Power B Failed
MN	CO	PAIR	1	13				LOS	Loss of Signal

Refresh

Critical: 2 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.7.3 RT > Alarm Log

The RT Alarm Log tab displays a list of all the alarms observed on the AK355R including time-stamp information as to when the alarm was triggered or cleared.

AKtinoView

File Action Help

AK355(172.16.10.60)

System Inventory Provisioning Alarms PM Tools Diagnostic License

CO / RT

Alarm Log Alarm History

Last retrieved time: 04/02/2013 12:01:58

Severity	Unit	Entity	Slot	Port	MA ID / MEG ID	MEP ID	Location	Code	Alarm
CR	RT	DS3	1					LOF	Loss of Frame
MN	RT	COM	1					PWRB	Power B Failed
CR	RT	DS3	1					LOS	Loss of Signal
MN	RT	COM	1					PWRB	Power B Failed
CR	RT	DS3	1					LOF	Loss of Frame

Refresh

Critical: 2 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.7.4 Alarm History

The RT Alarm History tab displays the alarms that have been observed by the AK355R and how many times each of the alarms has been observed, as well as the first and last times the alarm has been observed.

The screenshot shows the AktinoView application window. The 'Alarms' tab is selected, and the 'Alarm History' sub-tab is active. The main area displays a table of alarm history. Below the table, a summary bar shows the status: Critical: 2 (red), Major: 0 (grey), and Minor: 1 (yellow). The table below the summary bar lists the following data:

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8 Performance Monitoring (PM)

The PM tab allows you to display detailed Performance related information for the AK355 System's Ethernet Ports, MSPAN interfaces, and individual MSPAN Pairs. This PM data is provided for both the CO and RT sides of the system

3.3.8.1 CO > DS3

DS3 performance monitoring shows the errors coming INTO the AK355C. Ninety six fifteen minute time period bins and seven 24 hour time period bins display the DS3's performance monitoring. Select Refresh to update screen.

Ingress Cell Count: 0 **Egress Cell Count:** 0

15 Minutes

Ending Time Period	CVL	ESL	SESL	LOSSL	CVP	CVCP	ESP	ESCP	SESP	SESCP	SASP	AISSP	UASP	UASCP	EFS (%)
04/02/2013 12:02	0	149	149	149	0	0	0	0	0	0	0	0	149	0	0.00
04/02/2013 12:00	0	712	712	712	0	0	0	0	0	0	0	0	712	0	0.00

24 Hours

Ending Time Period	CVL	ESL	SESL	LOSSL	CVP	CVCP	ESP	ESCP	SESP	SESCP	SASP	AISSP	UASP	UASCP	EFS (%)
04/02/2013	0	861	861	861	0	0	0	0	0	0	0	0	861	0	0.00

Refresh now

Critical: 2 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

See the following table for Performance Monitoring Parameters and Values:

Parameters	Values
Ingress Cell Count	Numbers of ATM cells flowing into either CO or RT Positron DS3 port (ATM modes only)
Egress Cell Count	Numbers of ATM cells flowing out of either CO or RT Positron DS3 port (ATM modes only).
CVL	Line Code Violations
ESL	Line Errored Seconds
SESL	Line Severly Errored Seconds
LOSSL	Line Loss of Signal Seconds
CVP	Path Code Violations
CVCP	Path Code Violations CP-bit Parity
ESP	Path Errored Seconds
ESCP	Path Errored Seconds CP-bit Parity
SESP	Path Severly Errored Seconds CP-bit Parity
SESP	Path Severly Errored Seconds
SASP	SEF/AIS Second C-bit Parity
AISSP	Path Alarm Indications Status Seconds
UASP	Path Unavailable Seconds
EFS%	Error Free Seconds %

3.3.8.2 CO > MSPAN

The MSPAN tab displays the upstream PM information for the MSPAN. This PM data is separated into three sections:

- 1 The heading section provides summary information for the MSPAN including upstream MSPAN Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary Information:

Capacity (Kbps):	98168	Rate (Kbps):	43232	Margin (dB):	27.44	State:	DATA
PSD Mask:	M1	TX Utilization (%):		RX Utilization (%):		2.2 MHz:	NO

15 Minutes

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013 12:03	0	0	0	0	98100	98200	43232	43232	27.42	27.44			100.00
04/02/2013 12:00	0	0	0	76	0	98216	0	43232	0.00	27.45			89.33

24 Hours

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013	0	0	0	76	0	98216	0	43232	0.00	27.45			91.75

Refresh **now** **Slot 1**

Critical: 2 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID ...	M. Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1			South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1			South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.3 CO > Pair > Summary

The Summary tab displays the upstream Pair Summary information for all the Pairs supported by the MSPAN. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary

Time Period	Slot	Unit	Pair	Remote Pair	Capacity (kb...	Rate (kb...	Margin (...)	Voltage (v)	Line Current (mA)	Ground Current (...)
04/02/2013 12:03:47	1	CO	1	1	6104	2916	27.47	185.08	27.80	0.00
04/02/2013 12:03:48	1	CO	3	3	6084	2892	27.44	185.08	28.00	0.00
04/02/2013 12:03:49	1	CO	4	4	6084	2876	27.47	185.08	28.20	0.00
04/02/2013 12:03:49	1	CO	5	5	6156	2976	27.41	185.08	28.20	0.00
04/02/2013 12:03:50	1	CO	6	6	6092	2892	27.47	185.08	28.20	0.00
04/02/2013 12:03:50	1	CO	7	7	6176	2996	27.36	185.08	28.80	0.00
04/02/2013 12:03:51	1	CO	2	2	6152	2968	27.44	185.08	27.80	0.00
04/02/2013 12:03:51	1	CO	8	8	6140	2936	27.47	185.08	28.60	0.00
04/02/2013 12:03:51	1	CO	9	9	6124	2944	27.39	185.08	27.80	0.00
04/02/2013 12:03:52	1	CO	10	10	6148	2964	27.39	185.08	27.80	0.00
04/02/2013 12:03:52	1	CO	11	11	6180	2980	27.48	185.08	27.40	0.00
04/02/2013 12:03:53	1	CO	12	12	6108	2912	27.44	185.08	27.20	0.00
04/02/2013 12:03:53	1	CO	13	13	6136	2952	27.39	185.08	27.40	0.00
04/02/2013 12:03:54	1	CO	14	14	6156	2968	27.41	185.08	27.40	0.00
04/02/2013 12:03:54	1	CO	15	15	6096	2892	27.47	185.08	27.20	0.00
04/02/2013 12:03:55	1	CO	16	16	6192	3008	27.41	185.08	27.20	0.00

Refresh now Slot 1

Critical: 2 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.4 CO > Pair > Current 15 Minutes

The 15 Minutes tab displays the upstream Pair PM information for all the Pairs supported by the MSPAN for the last 15-minute interval. The page can be provisioned to refresh automatically, and time-stamp is displayed for each of the entries.

Summary | **Current 15 Minutes** | **Current 24 Hours** | **History**

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin (...	EFS (%)
04/02/2013 12:04:10	1	CO	1	0	0	0	0	6096	6116	2916	2920	27.39	27.52	100.00
04/02/2013 12:04:11	1	CO	2	0	0	0	0	6148	6164	2968	2972	27.41	27.52	100.00
04/02/2013 12:04:11	1	CO	3	0	0	0	0	6072	6092	2892	2896	27.38	27.50	100.00
04/02/2013 12:04:12	1	CO	4	0	0	0	0	6072	6092	2872	2876	27.41	27.53	100.00
04/02/2013 12:04:12	1	CO	5	0	0	0	0	6152	6172	2968	2976	27.38	27.52	100.00
04/02/2013 12:04:13	1	CO	6	0	0	0	0	6084	6108	2892	2900	27.41	27.55	100.00
04/02/2013 12:04:13	1	CO	7	0	0	0	0	6164	6184	2992	2996	27.30	27.42	100.00
04/02/2013 12:04:14	1	CO	8	0	0	0	0	6128	6148	2932	2940	27.41	27.52	100.00
04/02/2013 12:04:14	1	CO	9	0	0	0	0	6120	6140	2936	2944	27.33	27.47	100.00
04/02/2013 12:04:15	1	CO	10	0	0	0	0	6140	6164	2960	2968	27.30	27.48	100.00
04/02/2013 12:04:16	1	CO	11	0	0	0	0	6168	6184	2976	2980	27.38	27.50	100.00
04/02/2013 12:04:16	1	CO	12	0	0	0	0	6096	6116	2912	2916	27.33	27.48	100.00
04/02/2013 12:04:17	1	CO	13	0	0	0	0	6136	6152	2952	2956	27.36	27.50	100.00
04/02/2013 12:04:17	1	CO	14	0	0	0	0	6148	6168	2960	2968	27.34	27.48	100.00
04/02/2013 12:04:18	1	CO	15	0	0	0	0	6084	6112	2892	2896	27.39	27.52	100.00
04/02/2013 12:04:18	1	CO	16	0	0	0	0	6176	6196	3004	3012	27.30	27.44	100.00

Refresh | now | Slot 1

Critical: 2 | **Major: 0** | **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.5 CO > Pair > Current 24 Hours

The Current 24 Hours tab displays the upstream Pair PM information for all the Pairs supported by the MSPAN for the current day. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary | Current 15 Minutes | **Current 24 Hours** | History

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin (...	EFS (%)
04/02/2013 12:04:41	1	CO	1	0	0	0	78	0	6116	0	2956	0.00	27.52	92.15
04/02/2013 12:04:42	1	CO	2	0	0	0	78	0	6168	0	2980	0.00	27.58	92.15
04/02/2013 12:04:42	1	CO	3	0	0	0	78	0	6100	0	2900	0.00	27.50	92.15
04/02/2013 12:04:43	1	CO	4	0	0	0	78	0	6096	0	2884	0.00	27.55	92.16
04/02/2013 12:04:43	1	CO	5	0	0	0	78	0	6176	0	2976	0.00	27.52	92.16
04/02/2013 12:04:44	1	CO	6	0	0	0	78	0	6112	0	2908	0.00	27.58	92.17
04/02/2013 12:04:44	1	CO	7	0	0	0	78	0	6188	0	3000	0.00	27.55	92.17
04/02/2013 12:04:45	1	CO	8	0	0	0	78	0	6148	0	2940	0.00	27.56	92.18
04/02/2013 12:04:45	1	CO	9	0	0	0	78	0	6140	0	2944	0.00	27.55	92.18
04/02/2013 12:04:46	1	CO	10	0	0	0	78	0	6164	0	2968	0.00	27.52	92.18
04/02/2013 12:04:46	1	CO	11	0	0	0	78	0	6192	0	2988	0.00	27.58	92.18
04/02/2013 12:04:47	1	CO	12	0	0	0	78	0	6120	0	2916	0.00	27.58	92.19
04/02/2013 12:04:47	1	CO	13	0	0	0	78	0	6156	0	2960	0.00	27.50	92.19
04/02/2013 12:04:48	1	CO	14	0	0	0	78	0	6172	0	2976	0.00	27.52	92.20
04/02/2013 12:04:48	1	CO	15	0	0	0	78	0	6112	0	2904	0.00	27.52	92.20
04/02/2013 12:04:49	1	CO	16	0	0	0	78	0	6200	0	3012	0.00	27.50	92.21

Refresh now Slot 1

Critical: 2 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID ...	M	Location	Code	Alarm	Service Affect...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.6 CO > Pair > History

The History tab displays the upstream PM information for the Pairs supported by the MSPAN. This PM data is separated into three sections and the PM can be displayed for each of the Pairs of the MSPAN.

- 1 The heading section provides summary information for the MSPAN including upstream Pair Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary

Capacity (Kbps):	6104	Rate (Kbps):	2912	Margin (dB):	27.48
Line Voltage (V):	185.08	Current (mA):	27.8	Ground Current (mA):	0.0
State:	ACTIVE	Remote Pair:	1		

15 Minutes

Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin ...	EFS (%)
04/02/2013 12:05	0	0	0	0	6096	6116	2912	2920	27.39	27.52	100.00
04/02/2013 12:00	0	0	0	78	0	6116	0	2956	0.00	27.52	89.04

24 Hours

Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin ...	EFS (%)
04/02/2013	0	0	0	78	0	6116	0	2956	0.00	27.52	92.44

Refresh now Slot 1 Pair 1

Alarm Summary: Critical: 2 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.7 RT > DS3

DS3 performance monitoring shows the errors coming INTO the RT unit. Ninety six fifteen minute time period bins and seven 24 hour time period bins display the DS3's performance monitoring. Select Refresh to update screen.

The screenshot displays the AktinoView application window. The main menu includes File, Action, and Help. The toolbar contains various icons for navigation and actions. The left sidebar shows a tree view with 'AK355(172.16.10.60)' expanded, and sub-items 'System', 'Inventory', 'Provisioning', 'Alarms', 'PM' (selected), 'Tools', 'Diagnostic', and 'License'. The 'PM' tab is active, showing 'DS3' performance monitoring. The 'DS3' tab is selected, with 'MSPAN' and 'Pair' sub-tabs. The 'Ingress Cell Count' and 'Egress Cell Count' are both 0. The '15 Minutes' section shows a table of performance metrics for two time periods. The '24 Hours' section shows a table of performance metrics for one time period. A 'Refresh' button and a 'now' dropdown are located below the tables. At the bottom, a summary bar shows 'Critical: 2', 'Major: 0', and 'Minor: 1'. Below this is a table of alarms.

Ending Time Period	CVL	ESL	SESL	LOSSL	CVP	CVCP	ESP	ESCP	SESP	SESCP	SASP	AISSP	UASP	UASCP	EFS (%)
04/02/2013 12:05	0	344	344	344	0	0	0	0	0	0	0	0	344	0	0.00
04/02/2013 12:00	0	823	823	823	0	0	0	0	0	0	0	0	823	0	0.00

Ending Time Period	CVL	ESL	SESL	LOSSL	CVP	CVCP	ESP	ESCP	SESP	SESCP	SASP	AISSP	UASP	UASCP	EFS (%)
04/02/2013	0	1167	1167	1167	0	0	0	0	0	0	0	0	1167	0	0.00

Refresh now

Critical: 2 Major: 0 Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.8 RT > MSPAN

The MSPAN tab displays the upstream PM information for the MSPAN. This PM data is separated into three sections:

- 1 The heading section provides summary information for the MSPAN including upstream MSPAN Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary Information:

Capacity (Kbps):	109872	Rate (Kbps):	43232	Margin (dB):	27.41	State:	DATA
PSD Mask:	M1	TX Utilization (%):		RX Utilization (%):	2.2 MHz	NO	

15 Minutes

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013 12:05	0	0	0	0	109140	109876	43232	43232	27.16	27.42			100.00
04/02/2013 12:00	0	0	0	187	0	110136	0	43232	0.00	27.58			77.28

24 Hours

Ending Time Period	CRC	ES	SES	UAS	Min Capacity	Max Capacity	Min Rate	Max Rate	Min Mar...	Max Mar...	TX Util (%)	RX Util (%)	EFS (%)
04/02/2013	0	0	0	187	0	110136	0	43232	0.00	27.58			84.17

Refresh **now** **Slot 1**

Critical: 2 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.9 RT > Pair > Summary

The RT side, Pair Summary tab displays the upstream Pair Summary information for all the Pairs supported by the MSPAN. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

AK355(172.16.10.60)

System Inventory Provisioning Alarms **PM** Tools Diagnostic License

CO RT

DS3 MSPAN Pair

Summary Current 15 Minutes Current 24 Hours History

Time Period	Slot	Unit	Pair	Remote Pair	Capacity (kb...)	Rate (kb...)	Margin (...)	Voltage (v)	Line Current (mA)	Ground Current (...)
04/02/2013 12:06:18	1	RT	1	1	6560	2660	27.38			
04/02/2013 12:06:18	1	RT	2	2	6784	2884	27.36			
04/02/2013 12:06:19	1	RT	3	3	6604	2704	27.31			
04/02/2013 12:06:19	1	RT	4	4	6736	2820	27.31			
04/02/2013 12:06:20	1	RT	5	5	6864	2988	27.27			
04/02/2013 12:06:20	1	RT	6	6	6912	2984	27.42			
04/02/2013 12:06:21	1	RT	7	7	6976	3064	27.39			
04/02/2013 12:06:21	1	RT	8	8	6816	2904	27.30			
04/02/2013 12:06:21	1	RT	9	9	7028	3072	27.42			
04/02/2013 12:06:23	1	RT	10	10	6764	2864	27.31			
04/02/2013 12:06:23	1	RT	11	11	6736	2820	27.34			
04/02/2013 12:06:24	1	RT	12	12	6744	2852	27.27			
04/02/2013 12:06:24	1	RT	13	13	6952	3060	27.30			
04/02/2013 12:06:25	1	RT	15	15	6876	2968	27.31			

Refresh now Slot 1

Critical: 2 **Major: 0** **Minor: 1**

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRR	Power B Failed	-	04/02/2013 11:48:08

3.3.8.10 RT > Pair > Current 15 Minutes

The Current 15 Minutes tab displays the upstream Pair PM information for all the Pairs supported by the MSPAN for the last 15-minute interval. The page can be provisioned to refresh automatically, and time-stamp is displayed for each of the entries.

The screenshot shows the AktinoView application window. The main menu includes File, Action, and Help. The toolbar contains various icons for navigation and actions. The breadcrumb path is AK355(172.16.10.60) > System > Inventory > Provisioning > Alarms > PM > Tools > Diagnostic > License. The left sidebar shows a tree view with CO, RT, DS3, MSPAN, and Pair. The 'Pair' tab is selected, and the 'Current 15 Minutes' sub-tab is active. The main area displays a table of performance metrics for 15 pairs over a 15-minute period.

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Mir
04/02/2013 12:06:45	1	RT	1	0	0	0	0	6544	6584	2656	2672	
04/02/2013 12:06:45	1	RT	2	0	0	0	0	6748	6812	2880	2892	
04/02/2013 12:06:46	1	RT	3	0	0	0	0	6552	6648	2696	2712	
04/02/2013 12:06:46	1	RT	4	0	0	0	0	6700	6756	2812	2824	
04/02/2013 12:06:47	1	RT	5	0	0	0	0	6828	6892	2984	2992	
04/02/2013 12:06:48	1	RT	6	0	0	0	0	6880	6932	2972	2996	
04/02/2013 12:06:48	1	RT	7	0	0	0	0	6936	7000	3052	3068	
04/02/2013 12:06:49	1	RT	8	0	0	0	0	6780	6836	2904	2916	
04/02/2013 12:06:49	1	RT	9	0	0	0	0	6980	7040	3064	3080	
04/02/2013 12:06:50	1	RT	10	0	0	0	0	6744	6788	2860	2872	
04/02/2013 12:06:50	1	RT	11	0	0	0	0	6704	6760	2812	2844	
04/02/2013 12:06:51	1	RT	12	0	0	0	0	6712	6780	2848	2860	
04/02/2013 12:06:51	1	RT	13	0	0	0	0	6924	6984	3052	3064	
04/02/2013 12:06:52	1	RT	14	0	0	0	0	7000	7068	3096	3116	
04/02/2013 12:06:52	1	RT	15	0	0	0	0	6852	6900	2964	2980	

Below the table, there is a 'Refresh' button, a 'now' dropdown menu, and a 'Slot' dropdown menu set to '1'.

At the bottom, there is a summary bar showing 'Critical: 2', 'Major: 0', and 'Minor: 1'. Below this is a table of active alarms:

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRR	Power B Failed	-	04/02/2013 11:48:08

3.3.8.11 RT > Pair > Current 24 Hours

The Current 24 Hours tab displays the upstream Pair PM information for all the Pairs supported by the MSPAN for the current day. The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

The screenshot shows the AktinoView application window. The main menu includes File, Action, and Help. The toolbar contains various icons for system management. The breadcrumb navigation shows: System > Inventory > Provisioning > Alarms > PM > Tools > Diagnostic > License. The current view is for 'CO RT' under 'DS3 MSPAN Pair'. The 'Current 24 Hours' tab is selected, showing a table of performance metrics for various time periods.

Time Period	Slot	Unit	Pair	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin (...	EFS (%)
04/02/2013 12:10:24	1	RT	1	0	0	0	187	0	6604	0	2808	0.00	27.52	87.07
04/02/2013 12:10:24	1	RT	2	0	0	0	187	0	6812	0	2968	0.00	27.53	87.07
04/02/2013 12:10:25	1	RT	3	0	0	0	187	0	6656	0	2720	0.00	27.59	87.08
04/02/2013 12:10:25	1	RT	4	0	0	0	187	0	6772	0	2840	0.00	27.63	87.08
04/02/2013 12:10:26	1	RT	5	0	0	0	187	0	6904	0	2992	0.00	27.59	87.09
04/02/2013 12:10:26	1	RT	6	0	0	0	187	0	6940	0	3000	0.00	27.58	87.09
04/02/2013 12:10:27	1	RT	8	0	0	0	187	0	6860	0	2920	0.00	27.67	87.09
04/02/2013 12:10:28	1	RT	9	0	0	0	187	0	7060	0	3116	0.00	27.47	87.10
04/02/2013 12:10:28	1	RT	10	0	0	0	187	0	6804	0	2872	0.00	27.48	87.10
04/02/2013 12:10:29	1	RT	11	0	0	0	187	0	6764	0	2844	0.00	27.58	87.11
04/02/2013 12:10:29	1	RT	12	0	0	0	187	0	6796	0	2864	0.00	27.66	87.11
04/02/2013 12:10:30	1	RT	7	0	0	0	187	0	7004	0	3072	0.00	27.61	87.12
04/02/2013 12:10:30	1	RT	13	0	0	0	187	0	7000	0	3108	0.00	27.53	87.12
04/02/2013 12:10:30	1	RT	14	0	0	0	187	0	7084	0	3116	0.00	27.67	87.12
04/02/2013 12:10:31	1	RT	15	0	0	0	187	0	6912	0	2988	0.00	27.52	87.13
04/02/2013 12:10:31	1	RT	16	0	0	0	187	0	7272	0	3320	0.00	27.77	87.13

Below the table, there is a 'Refresh' button, a 'now' dropdown menu, and a 'Slot' dropdown menu set to '1'.

Summary: Critical: 2, Major: 0, Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.8.12 RT > Pair > History

The History tab displays the upstream PM information for the Pairs supported by the MSPAN. This PM data is separated into three sections and the PM can be displayed for each of the Pairs of the MSPAN.

- 1 The heading section provides summary information for the MSPAN including upstream Pair Capacity, Rate, and SNR Margin values.
- 2 The 15-Minutes section provides PM data for 15-Minute intervals for the last 24-hours.
- 3 The 24-Hours section provides PM data for the previous 7 days.

The page can be provisioned to refresh automatically, and time-stamp information is displayed for each of the entries.

Summary Information:

Capacity (Kbps):	6568	Rate (Kbps):	2668	Margin (dB):	27.34
State:	ACTIVE	Remote Pair:	1		

15 Minutes

Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin ...	EFS (%)
04/02/2013 12:10	0	0	0	0	6544	6584	2656	2672	27.28	27.50	100.00
04/02/2013 12:00	0	0	0	187	0	6604	0	2808	0.00	27.52	77.28

24 Hours

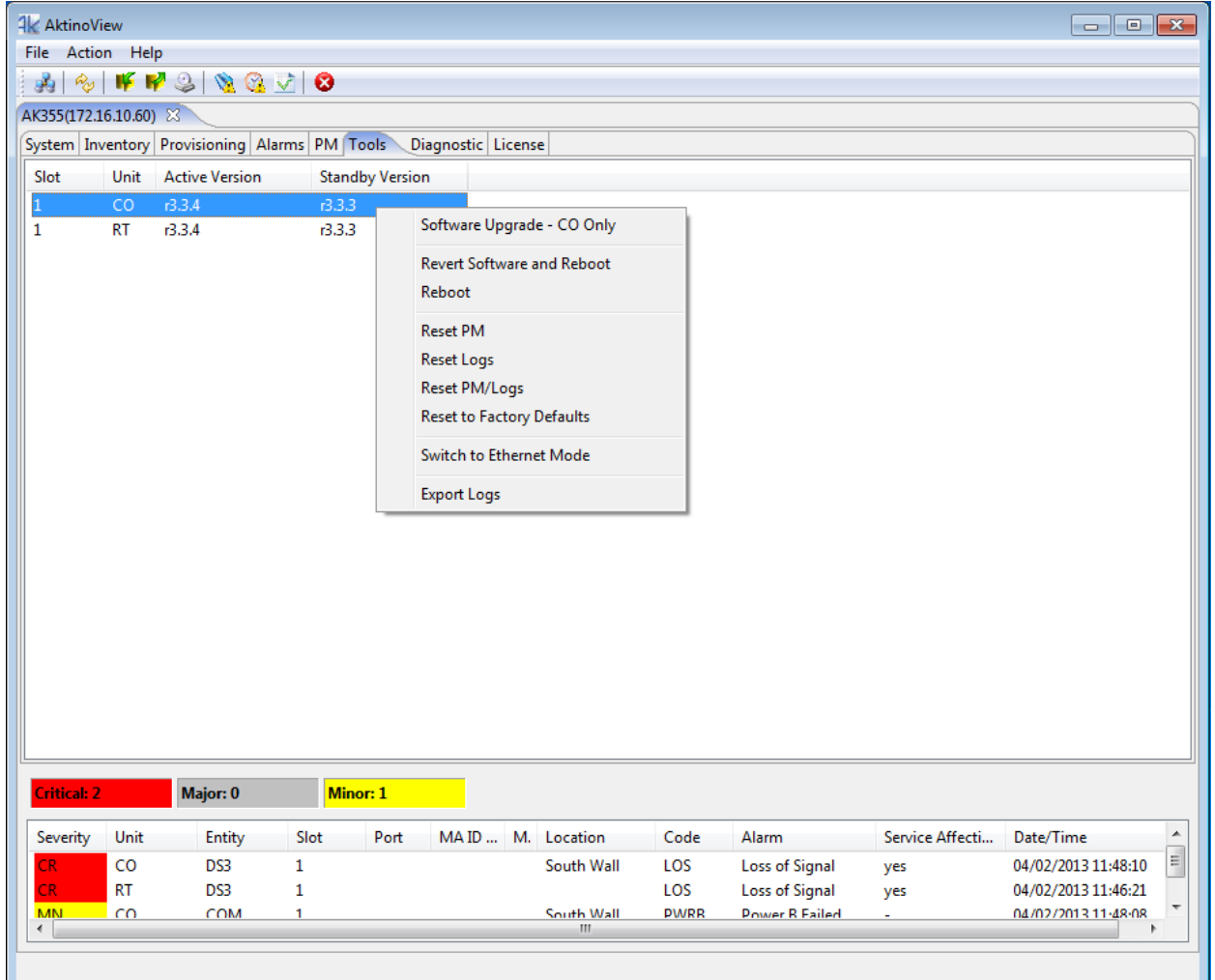
Ending Time Period	CS	ES	SES	UAS	Min Capacity (k...	Max Capacity (k...	Min Rate (kb...	Max Rate (kb...	Min Margin (...	Max Margin ...	EFS (%)
04/02/2013	0	0	0	187	0	6604	0	2808	0.00	27.52	87.25

Alarm Summary: Critical: 2, Major: 0, Minor: 1

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRB	Power B Failed	-	04/02/2013 11:48:08

3.3.9 Tools

The Tools tab displays the Active and Standby Firmware versions for each components of the AK355 System.



Right-Clicking on an AK355C allows you to select the following system management options:

Software Upgrade - CO Only

Upgrades the firmware in the CO.

Revert Software and Reboot

Reboots the CO, and when the unit reboots, the unit selects the firmware version in the Standby partition.

Reboot

Reboots the CO, and when the unit reboots, the unit selects the firmware version in the Active partition.

Reset PM

Resets only the Performance Monitoring data in the CO.

Reset Logs

Resets only the Alarm Logs in the CO.

Reset PM/Log

Resets only the Alarm Logs in the CO.

Switch to Factory Defaults

Resets the CO to factory defaults.

Switch to Ethernet Mode/DS3 Mode (for Systems supporting DS3)

Switches the CO to the desired mode.

Export Logs

Opens a dialog box enabling you to export the CO System Alarm and Performance Monitoring (PM) logs.

Right-Clicking on an RT allows you to select the following system management options:

Revert Software and Reboot

Reboots the RT, and when the unit reboots, the unit selects the firmware version in the Standby partition.

Reboot

Reboots the RT, and when the unit reboots, the unit selects the firmware version in the Active partition.

Reset PM

Resets only the Performance Monitoring data in the RT.

Reset Logs

Resets only the Alarm Logs in the RT.

Reset PM/Logs

Resets only the Alarm Logs in the RT.

Switch to Factory Defaults

Resets the RT to factory defaults.

Switch to Ethernet Mode/DS3 Mode (for Systems supporting DS3)

Switches the RT to the desired mode.

3.3.10 Diagnostic

Diagnostics can be run on the AK355 System. There are two types of tests: Single Ended Loop Test (SELT) and Dual Ended Loop Test (DELT).

3.3.10.1 **SELT**

Single Ended Loop Test (SELT) provides diagnostics for each pair. Follow this procedure to run SELT:

- 1 SELT is service effecting. The remote unit must be disconnected to run the test.
- 2 The Pairs need to be calibrated. To get distance from the chassis, remove the MSPAN connector from the chassis. If removal of the MSPAN connector is not possible, calibration can be done at any point in the loop, including the MDF. This point will be the start of the Line Length test.
- 3 Click on the Calibrate button to start the calibration process. The Status of the calibration is indicated.
- 4 Connect the pairs back to the Outside Plant. Ensure that the remote unit is NOT connected.
- 5 Click on Start Testing button to run the SELT test. The Status of the SELT test is indicated.

The results can be exported to an Excel csv file by clicking on the Export Test Result button.

The results of the SELT test are indicated below:

SELT Test Results Table:

Slot	Unit	Pair	Line Length (ft)	Tip To Ground Resistance (ohms)	Ring To Ground Resistance (ohms)	Tip To Ring Resistance (ohms)
1	CO	1	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	2	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	3	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	4	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	5	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	6	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	7	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	8	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	9	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	10	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	11	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	12	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	13	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	14	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	15	Unavailable	Unavailable	Unavailable	Unavailable
1	CO	16	Unavailable	Unavailable	Unavailable	Unavailable

Summary: Critical: 2, Major: 0, Minor: 1

Alarm Log:

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:46:21
MN	CO	COM	1				South Wall	PWRR	Power B Failed	-	04/02/2013 11:48:08

For each pair, the following test results are available:

- **Line Length.** This is the physical line length, it is AWG diagnostic. If there are large differences in the line length of the pairs, it indicates possibly a short, open, ground fault, or bridge tap. If the pair is open in the middle of a loop, the length will indicate where it exists.
- **Tip to Ground Resistance. Ring to Ground Resistance. Tip to Ring Resistance.** The results should show "Open" for all pairs since the remote is not connected. IF there is resistance on any pair, this indicates that there may be a problem.

3.3.10.2 DELT

Dual Ended Loop Test (DELT) provides diagnostics for each pair. Follow this procedure to run DELT:

- 1 DELT is service effecting. The remote unit must be connected to run the test.
- 2 Click on Start Testing button to run the DELT test. The Status of the DELT test is indicated.
- 3 The results can be exported to an Excel csv file by clicking on the Export Test Result button.

The results of the DELT test are indicated below:

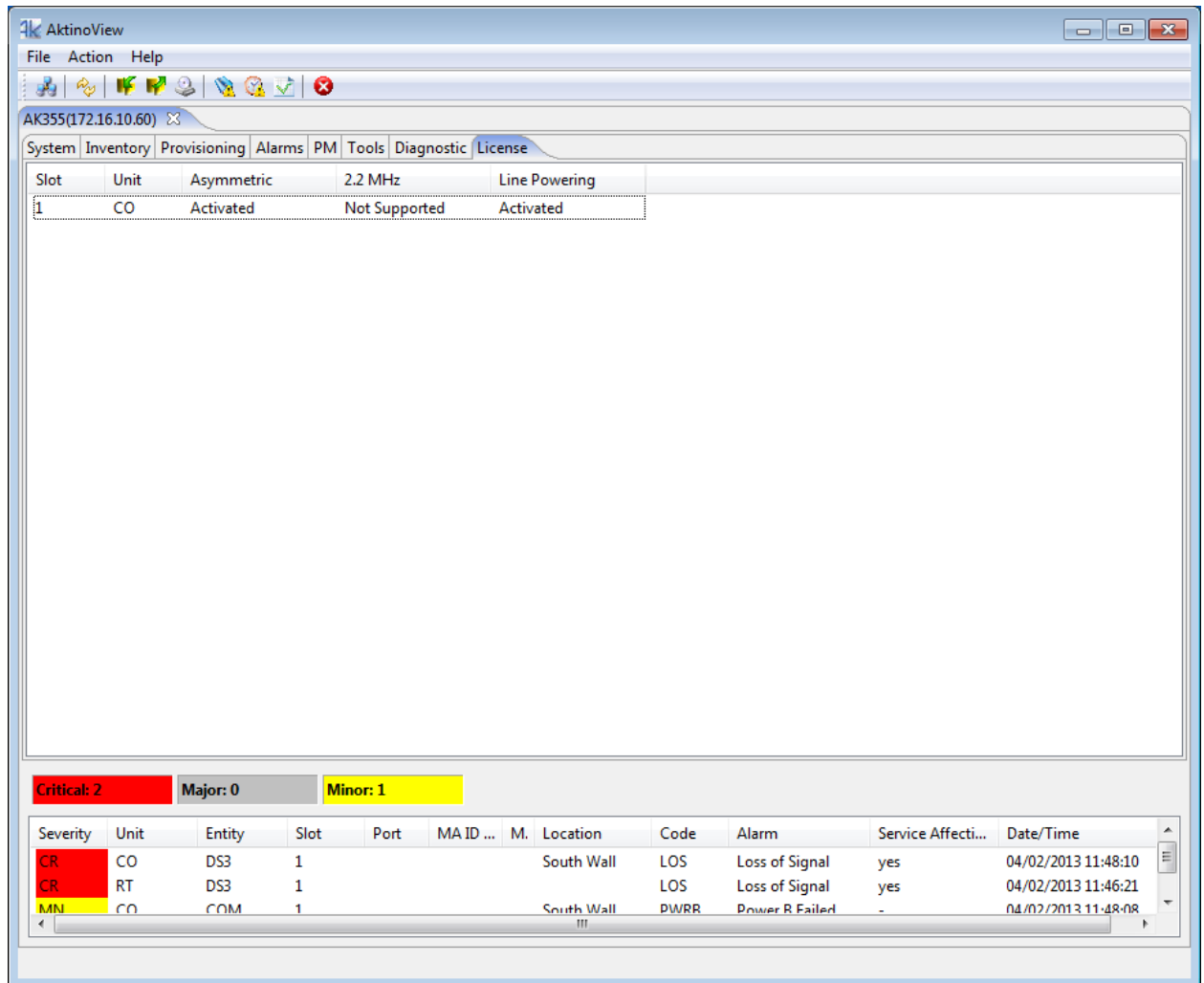
The screenshot shows the AktinoView software interface. The top menu bar includes File, Action, and Help. Below the menu is a toolbar with various icons. The main window displays the 'Diagnostic' tab, which is further divided into 'SELT' and 'DELT' sub-tabs. The 'DELT' sub-tab is active, showing a table with columns for Unit, Pair, T1, R1, T2, R2, T3, R3, T4, R4, T5, R5, T6, R6, T7, R7, T8, R8, T9, R9, T10, R10, T11, R11, T12, and R12. Below the table, there are buttons for 'Export Test Result' and 'Start Testing', a 'Slot' dropdown menu set to '1', and a 'Status' label indicating 'Not Started'. A note on the right states 'Unit Type for T and R values is mA'. At the bottom, there is a summary bar showing 'Critical: 2', 'Major: 0', and 'Minor: 1'. Below this is a table of alarm events.

Severity	Unit	Entity	Slot	Port	MA ID ...	M.	Location	Code	Alarm	Service Affecti...	Date/Time
CR	CO	DS3	1				South Wall	LOS	Loss of Signal	yes	04/02/2013 11:48:10
CR	RT	DS3	1					LOS	Loss of Signal	yes	04/02/2013 11:46:21
MIN	CO	COM	1				South Wall	PWRR	Power R Failed	-	04/02/2013 11:48:08

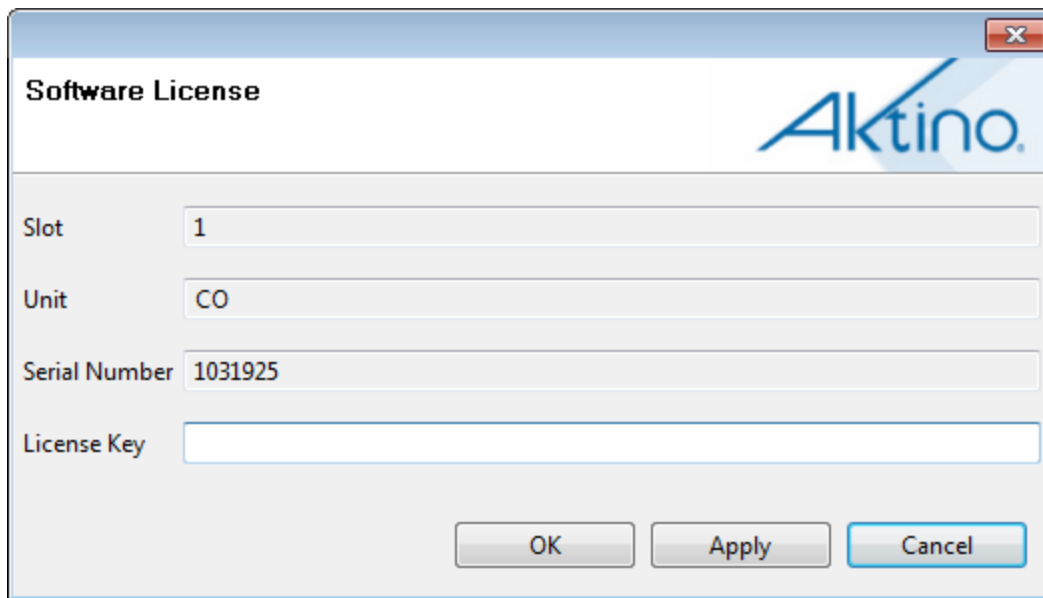
For each pair's tip and ring, the current in milliamps is indicated on itself and between that pair and every other pair being used in the AK355 System. The screen shot above shows a normal result. There should be current flowing between Pair1 and T1 and R1, between Pair 2 and T2 and R2. The current flow numbers should be close in value. Large differences in the current flow values indicate a problem with that pair. No current should be flowing between pairs. If there is current flowing between pairs, this indicates a problem with those pairs, possible a short.

3.3.11 License

The License tab displays the features that are activated for the various units of the AK355 System.



Click on the CO unit to bring up the Software License dialog box. Contact customer service to find out more about how to obtain licenses.



Software License

Aktino

Slot: 1

Unit: CO

Serial Number: 1031925

License Key:

OK Apply Cancel

See the following table for the Features and Values:

Feature	Values
Asymmetric, 2.2 Mhz, Line Powering	Activated - This feature is activated on the selected slot Not Activated - This feature is not activated on the selected slot Not Supported - This features is not supported on the selected slot

Chapter 4

Technical and Regulatory Specifications

4.1 AK355 Technical Specifications

System

- Bandwidth over 16 pairs:
DS3 **: 45 Mbps Asymmetric or Symmetric at CSA Reaches with Full Disturbance.
Ethernet: 100 Mbps Symmetric at 4 Kft 100 Mbps Asymmetric, 55 Mbps Symmetric at CSA Reaches with Full Disturbance.
- System Latency: 2 ms
- Resiliency: Carrier Grade Automatic Pair Failure Protection
- BER: 10^{-12}

Standard Interfaces: DS3**

- Number of BNC Ports: 2 Per Card
- Line Code/Rate: B3ZS/44.736 Mbps \pm 20 ppm
- Framing: C-bit Parity or M13
- Payload Mode: Clear Channel, TDM, ATM, Scrambled ATM,
- Timing: Internal or Line

Standard Interfaces: Ethernet

- Interfaces: Three 10/100BaseT RJ45 and one 100 BaseFX or 1000BaseX SFP port
- Compliance: IEEE 802.3

Outside Plant Pairs

- Technology: MIMO on DMT
- Number of pairs: 2 to 16
- Connector: 50-pin Telco
- Compliance: T1.417 (Spectral)
- IEEE 802.3

Management Interfaces

- 10/100T RJ45

Front Panel Indicators

- Status, Fuse, Fan Alarm, Battery A/B Alarm, SFP Status, Ethernet Link and Activity
- Outside Plant Pair Status (16)

Layer 2 Features

- VLAN Tagging: IEEE 802.1q Support
- Stacked VLAN Tagging
- Priorities: IEEE 802.1p, Port, or IP DSCP
- Dynamic Bridging: 8K MAC Addresses
- Metro Ethernet Forum Certified (MEF9, MEF14)

Electrical Specifications

- AK355CP and AK355CP E units
 - Power Input: -42 to -56.7 Vdc
 - Max Heat Dissipation: 65 Watts
- AK355R and AK355R E units
 - Line Powered by CO Unit or
 - Local Power Input: -42 to -56.7 Vds
 - Max Heat Dissipation: 60 Watts
 - Provides 48 Vdc, 15 Watt output
- AK355CPS Unit
 - Line Powered by by the AK355RP Unit
 - Local Power Input: -42 to -56.7 Vdc
 - Max Heat Dissipation: 60 Watts
 - 48Vdc output
- AK355RP Unit
 - Power Input: -42 to -56.7 Vdc
 - Max Heat Dissipation: 65 Watts

Environmental Specifications

- Operating Temperature: - 40 to + 65° C
- Storage Temperature: - 40 to +70° C
- Relative Humidity: Up to 95%, Non-condensing

Mechanical

- Chassis Dimensions: 1.75" High (1RU) x 17.2" Wide x 10.5" Deep
- Weight: Approximately 10 lbs.

Alarm Contacts

- Critical, Major, Minor, SysID
- Alarm-Cutoff Pushbutton
- Auxiliary alarm inputs (2)

Network Management

- TL1, SNMP
- EMS or AktinoView
- DS3 ATM Inband Management**
- Ethernet VLAN Inband Management

Regulatory Approval

- NEBS
- UL60950
- FCC Part 15 Class A

*24 AWG copper pair

**AK355 System supporting DS3

Chapter 5

Maintenance

5.1 **AK355 Fans and Filters**

The fans for the AK355 Systems should be replaced as needed. Ordering information for fans can be found at the end of this document.

The filters for the systems should be replaced every six months. Care should be taken when replacing filters to ensure collected dust on the filters does not enter into the equipment. Ordering information for filters can be found at the end of this document.

Chapter 6

Safety and Warnings

Safety and Warnings

To ensure your safety when servicing and installing this equipment, please take the following precautions:

A 7.5 to 10A UL listed use/circuit breaker must be installed ahead of this unit in the end use building installation.

A fuse panel must be installed near the unit in accordance with the National Electrical Code so that it is accessible to the operator.

A fuse panel must be provided as part of the building installation wiring in order to provide a UL required disconnect point.

The Positron products accept 48Vdc for powering. The 48Vdc voltage range must be between -42.5Vdc to -56.5Vdc.

Be careful when installing or modifying telephone lines; dangerous voltages can be present. It is unsafe to install telephone wiring during a lightning storm.

Only qualified personnel should service this system.

The equipment must be connected to a protective ground in accordance with the instructions provided in this manual. Improper grounding may result in an electrical shock.

Follow local grounding practice to ensure a good frame ground connection to the Positron chassis. The frame ground is required for secondary voltage protection.

For performance and safety reasons, only power supplies listed for use with telephone equipment by a locally recognized organization should be used with Positron equipment.

All wiring external to the product should follow the local wiring codes.

Use of this product in a manner other than defined in this installation guide may cause damage to equipment or injury to personnel.

If a problem has been isolated to this unit, do not attempt to repair. The unit's components are not user serviceable and therefore must not be replaced. Please return the unit to Positron for repair.

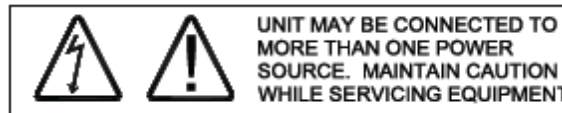
All fuses on the unit are located in non accessible areas and are not field serviceable. Please return the unit to Positron for repair.

Observe local practice electrostatic discharge precautions when handling electronic equipment. Do not hold electronic plugs by their edge. Do not touch components or circuitry. Use a grounding wrist strap attached to grounding connection point on the left side of the chassis. Use only ESD-protective packaging materials when transporting equipment.

Care should be taken when installing in a closed or multi-unit rack to ensure that the maximum operating ambient temperature of 65°C (149°F) is not exceeded.

Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Connect the unit only to a properly rated supply circuit. Reliable earthing (grounding) of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).



During installation and service do not connect the chassis to a live power source. Ensure that fuses are removed from the fuse panel.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: AK355 & AK5000 Product Family 3 Document 180-0037-001 R06A

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

This product is intended for installation in Restricted Access Locations only.

Mounting of equipment in a rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

The Positron Multi Pair span interface is designed to coordinate with a standard 300 Vdc gas discharge tube protector. Carbon block protectors shall not be used. The 300Vdc gas tube protector shall have the performance characteristics as follows:

- DC Breakdown Voltage (Max.) 475 V @ 2000V/sec
- Impulse Breakdown Voltage (Max.) 650 V max @ 100 V/ μ sec

NOTE: If line powering is enabled, voltage on MSPAN pairs is either -135Vdc or -185Vdc.

The effective capacitance of the units between the connection points for the conductors of the tip and ring is 46.2 μ F. The effective capacitance of the units between the connection point for one conductor of tip or ring and earth is 0.25 μ F.

At the time of installation, a system assessment shall be carried out to ensure that the effective capacitance of the total system, including the capacitance of the equipment, does not exceed the values specified in Figure 2 of UL60950-21.

At the time of installation, it shall be checked that the voltage rating of the wiring of the telecommunication network is adequate for the normal Positron unit's circuit voltage, together with superimposed transients.

At the time of installation it shall be checked that all multi-pair span circuits to be connected together are all RFT-V circuits. In practical terms as all equipment supplied by Positron only uses RFT-V circuits, then it should be checked that the multi-pair span of Positron equipment is not connected to any other vendor's equipment.

WARNING: The intra-building ports of the equipment are suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building ports of the equipment **MUST NOT** be metalically connected to interfaces which connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metalically to OSP wiring.

SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.

Chapter 7

Warranty and Customer Service

Positron will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found in your Positron customer web portal:

<http://portal.positronaccess.com/login.asp>

Positron Sales Pricing/Availability

949-258-0545

Positron Technical Support

Pre-Sales Applications/Post-Sales Technical Assistance:

949-258-0545

7days/week, 24 hours/day

Positron Repair

Return for Repair/Upgrade:

949-258-0545

<http://ticketmaster.positronaccess.com/>

Repair and Return Address

Contact Customer Service prior to returning equipment to Positron.

Positron Access Systems, Inc.

4931 Birch Street

Newport Beach CA 92660

Chapter 8

Positron Products

Positron Products (AK355)

Part Number	Description
AK355C	AK355 CO Unit, DS3/Ethernet, 45Mbps DS3 or up to 100Mbps Ethernet at CSA, Local Powered
AK355C P	AK355 CO Unit DS3/Ethernet, 45Mbps DS3 and up to 100Mbps Ethernet at CSA, with Line Power Option
AK355C E	AK355 CO Unit, Ethernet Only up to 100Mbps at CSA, Local Powered
AK355C PE	AK355 CO Unit, Ethernet Only up to 100Mbps at CSA, with Line Power Option
AK355CPS	AK355 CO Unit, DS3/Ethernet, 45Mbps DS3 and up to 100Mbps Ethernet as CSA, Local Powered or Line Powered
AK355CPS E	AK355 CO Unit, Ethernet Only up to 100Mbps at CSA, Local Powered or Line Powered
AK355R	AK355 RT Unit, DS3/Ethernet, 45Mbps DS3 and up to 100Mbps Ethernet at CSA, Local Powered or Line Powered
AK355RP	AK355 RT Unit DS3/Ethernet Unit, 45Mbps DS3 and up to 100Mbps Ethernet at CSA, with Line Power Option
AK355R E	AK355 RT Unit, Ethernet Only up to 100Mbps at CSA, Local Powered or Line Powered
AK355RP E	AK355 RT Unit, Ethernet Only up to 100Mbps at CSA, with Line Power Option
AK355RPT	AIR AK355 Regenerator, DS3/Ethernet
AK355RPTRC	AIR AK355 Regenerator, DS3/Ethernet, Reverse Line Powered
AK355RPT E	AIR AK355 Regenerator, Ethernet Only
AK355RPTRC E	AIR AK355 Regenerator, Ethernet Only, Reverse Line Powered
AK355TR	AK355 Tracer Card
AK355NTE00	AK355 Self Contained DS3/Ethernet Network Termination Unit
AKCOPS	AK355 CO Unit Power Supply, Universal Input, -48Vdc Output 320W
AKRTPS	AK355 RT Unit Power Supply, Universal Input, -48Vdc Output 130W
AK300FAN	Fan Asy, Spare AK300/355/555
AK300FL6	AK355 Air Filter (6-Pack)
AK300CON	AK355 Connector Kit

Appendices

Appendix A:

System Software Upgrade

Proceed through the following steps to perform the System Software Upgrade:

Note: All MSPAN connections must be up.

- 1 Go to <http://www.positronaccess.com>
- 2 Select Partners > Partner Login.
- 3 Select the **Registered Users Click Here to Login** option if you are already a registered user.

Note: If you are not a registered user, select the **Partner Portal Request Form** option and allow 24-48 hours for your account to be setup.
- 4 Enter Name and Password into the **FileMan Login** dialog box located on the Customer/Partner Portal.
- 5 Select **Firmware - Unified General Release AK355**.
- 6 Select the appropriate software version.
- 7 Select the corresponding self-extracting .exe file and store the file in the place of your choice on your PC.
- 8 Extract the files from the self-extracting .exe file to a location of your choice.
- 9 Go to the tool bar and select Action Menu > System Software Upgrade... This will bring up the System Software Upgrade dialog box.
- 10 Select the system you want to upgrade and then click on the **Upgrade** button.
- 11 Select the folder with the firmware files created in step 8 and click the **OK** button.
- 12 Select **Yes** to switch and reboot after upgrade if you choose to upgrade immediately. Otherwise, you can switch and reboot manually later.
- 13 Select **OK** to confirm the selected system(s) will be upgraded to the desired version.

The system will begin the process of upgrading the system. Note that this process will take a few minutes. The RT's will be the first to reboot followed by the CO's.