Packet Size (Bytes)

This parameter sets the maximum over-the-air packet size in bytes. A smaller maximum Packet Size is beneficial when many remote stations or repeater stations are trying to access the channel. The default setting is 1550 bytes.

As radios dispatched from the factory have a Packet Size set to the maximum value of 1550 bytes, if a new radio is installed in an existing Field Access Network (network), the Packet Size must be changed to ensure it is the same value for all radios in the network. The new radio will not register an existing network if the Packet Size is not the same as the other radios in the network.

This packet size includes the wireless protocol header and security payload (0 to 16 bytes). The length of the security header depends on the level of security selected.

When the security setting is 0, the maximum user data transfer over-the-air is 1516 bytes.

When encryption is enabled, the entire packet of user data (payload) is encrypted. If authentication is being used, the security frame will be added (up to 16 bytes). The wireless protocol header is then added which is proprietary to the Aprisa SR. This is not encrypted.

Packet Time to Live (ms)

This Time To Live (TTL) parameter sets the time a packet is allowed to live in the system before being dropped if it cannot be transmitted over the air. It is used to prevent old, redundant packets being transmitted through the Aprisa SR network. The default setting is 1500 ms.

In the case of serial poll SCADA networks such as MODBUS and IEC 60870.50.101, it is important to ensure the replies from the RTU are in the correct sequence and are not timed out replies from Master requests. If the TTL value is too long, the SCADA master will detect sequence errors.

It is recommended to use a TTL which is half the serial SCADA timeout. This is commonly called the ‘scan timeout’ or ‘link layer time out’ or ‘retry timeout’.

When using TCP protocols, a TTL of 1500 ms is recommended because a TCP re-transmission usually occurs after approximately 3 second.

In SCADA networks which use both serial and Ethernet, it is recommended that the TTL is set to half the serial SCADA timeout for serial remotes, and 1500 ms for Ethernet (TCP) remotes. For example, if the serial SCADA timeout is 1000 ms, a remote radio which is connected to the serial RTU should be set to 500 ms, a remote radio which is connected to a Ethernet (TCP) RTU should have a 1500 ms timeout.

In this case, the base station TTL should be set to 1500 ms as well; or which ever is the longer TTL of serial or Ethernet.

Packet Filtering

Each Aprisa SR radio can filter packets not destined for itself. The Packet Filtering parameter controls this functionality.

In an Aprisa SR network, all communication from remote stations is destined for the base station in the Aprisa SR network communication protocol. In a repeater network, a remote station will send a message to the base station. The repeater station will receive this and then repeat the message. The repeated message will then be received by the base station. Other remote stations connected to the repeater station will receive this message and depending on the Packet Filtering parameter, either forward this packet or discard it.

This filtering capability can provide the ability for remote stations to communicate with each other when connected to a repeater, particularly useful in the event of losing communication with a SCADA Master, assuming the Aprisa SR network is still operational.

Note: IP Header Compression must be disabled for this feature to operate correctly (see 'IP Header Compression Ratio' on page 101).

Option	Function
Disabled	Every packet received by the radio will be forwarded to the relevant interface.
Automatic	The radio will filter (discard) packets not destined for itself according to the Aprisa SR traffic protocols

The default setting is Automatic.

Note: The Aprisa SR network is transparent to the protocol being transmitted; therefore the Packet Filtering parameter is based on the Aprisa SR addressing and network protocols, not the user (SCADA, etc.) traffic protocols.

Serial Data Stream Mode

This parameter controls the traffic flow in the radio serial ports.

Option	Function
Broadcast	Serial port traffic from the network is broadcast on all serial ports on this radio. This will include the RS-232 port derived from the USB port.
Segregate	Serial port traffic from the network from a specific port number is directed to the respective serial port only.

The default setting is Broadcast.

TRAFFIC SETTINGS

Serial Data Priority

The Serial Data Priority controls the priority of the serial customer traffic relative to the Ethernet customer traffic. If equal priority is required to Ethernet traffic, this setting must be the same as the Ethernet Data Priority setting (see 'Ethernet Data Priority' on page 100).

The serial data priority can be set to Very High, High, Medium and Low. The default setting is Very High.

A queuing system is used to prioritize traffic from the serial and Ethernet interfaces for over the air transmission. A weighting may be given to each data type and this is used to schedule the next transmission over the air e.g. if there are pending data packets in multiple buffers but serial data has a higher weighting it will be transmitted first. The serial buffer is 20 serial packets (1 packet can be up to 512 bytes).

There are four priority queues in the Aprisa SR: Very High, High, Medium and Low. Data is added to one of these queues depending on the priority setting. Data leaves the queues from highest priority to lowest: the Very High queue is emptied first, followed by High then Medium and finally Low.

Ethernet Data Priority

The Ethernet Data Priority controls the priority of the Ethernet customer traffic relative to the serial customer traffic. If equal priority is required to serial traffic, this setting must be the same as the Serial Data Priority setting (see 'Serial Data Priority' on page 100)

The Ethernet Data Priority can be set to Very High, High, Medium and Low. The default setting is Very High.

A queuing system is used to prioritize customer traffic from the serial and Ethernet interfaces for over the air transmission. A weighting may be given to each data type and this is used to schedule the next transmission over the air e.g. if there are pending data packets in multiple buffers but serial data has a higher weighting it will be transmitted first. The Ethernet buffer is 10 Ethernet packets (1 packet can be up to Ethernet MTU, 1500 bytes).

There are four priority queues in the Aprisa SR: Very High, High, Medium and Low. Data is added to one of these queues depending on the priority setting. Data leaves the queues from highest priority to lowest: the Very High queue is emptied first, followed by High then Medium and finally Low.

Ethernet Management Priority

The Ethernet Management Priority controls the priority of the Ethernet management traffic relative to Ethernet customer traffic.

The Ethernet Management Priority can be set to Very High, High, Medium and Low. The default setting is Medium.

Background Bulk Data Transfer Rate

This parameter sets the data transfer rate for large amounts of management data.

Option	Function
High	Utilizes more of the available capacity for large amounts of management data. Highest impact on user traffic.
Medium	Utilizes a moderate of the available capacity for large amounts of management data. Medium impact on user traffic.
Low	Utilizes a minimal of the available capacity for large amounts of management data. Lowest impact on user traffic.

The default setting is high.

DATA COMPRESSION

IP Header Compression Ratio

The IP Header Compression implements TCP/IP ROHC v2 (Robust Header Compression v2. RFC4995, RFC5225, RFC4996) to compress the IP header. IP Header Compression allows for faster point to point transactions, but only in a star network.

IP Header Compression module comprises of two main components, Compressor and Decompressor. Both these components maintain some state information for an IP flow to achieve header compression. However, for reasons like packet drops or station reboots this state information can go out of sync between compressor and decompressor resulting in compression and/or decompression failure resulting in loss of packets.

The Compression Ratio controls the rate at which compressor and decompressor synchronize state information with each other. Frequent synchronization results in reduced ratio.

Option	Function
Compression Disabled	Disables IP Header Compression.
High	State information is synchronized less frequently thus achieving the best compression ratio.
Medium	State information is synchronization less frequently than 'High' setting but more frequently than 'Low' setting.
Low	State information is synchronized frequently thus reducing the compression ratio.

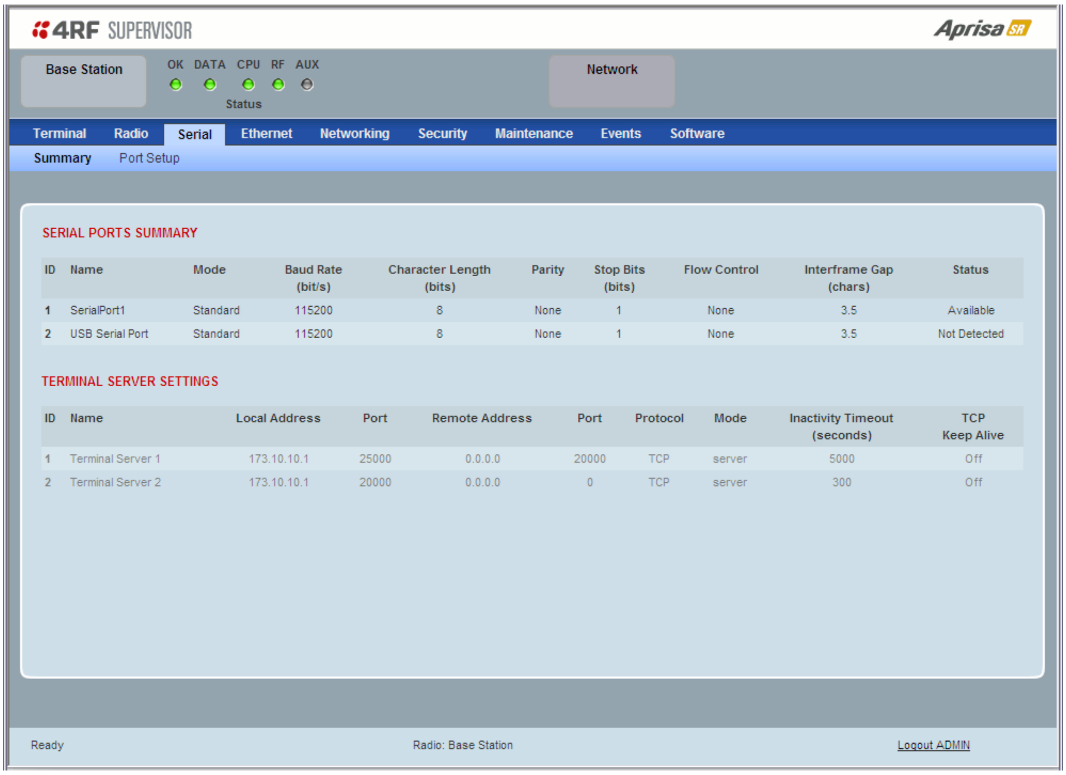
The default setting is High.

When IP Header Compression is enabled, it is important that the Network Radius is set correctly. If it was incorrectly set to 1, header compression could not be interpreted by radius 2 radios.

Serial

Serial > Summary

This page displays the current settings for the serial port parameters.



SERIAL PORTS SUMMARY

ID	Name	Mode	Baud Rate (bit/s)	Character Length (bits)	Parity	Stop Bits (bits)	Flow Control	Interframe Gap (chars)	Status
1	SerialPort1	Standard	115200	8	None	1	None	3.5	Available
2	USB Serial Port	Standard	115200	8	None	1	None	3.5	Not Detected

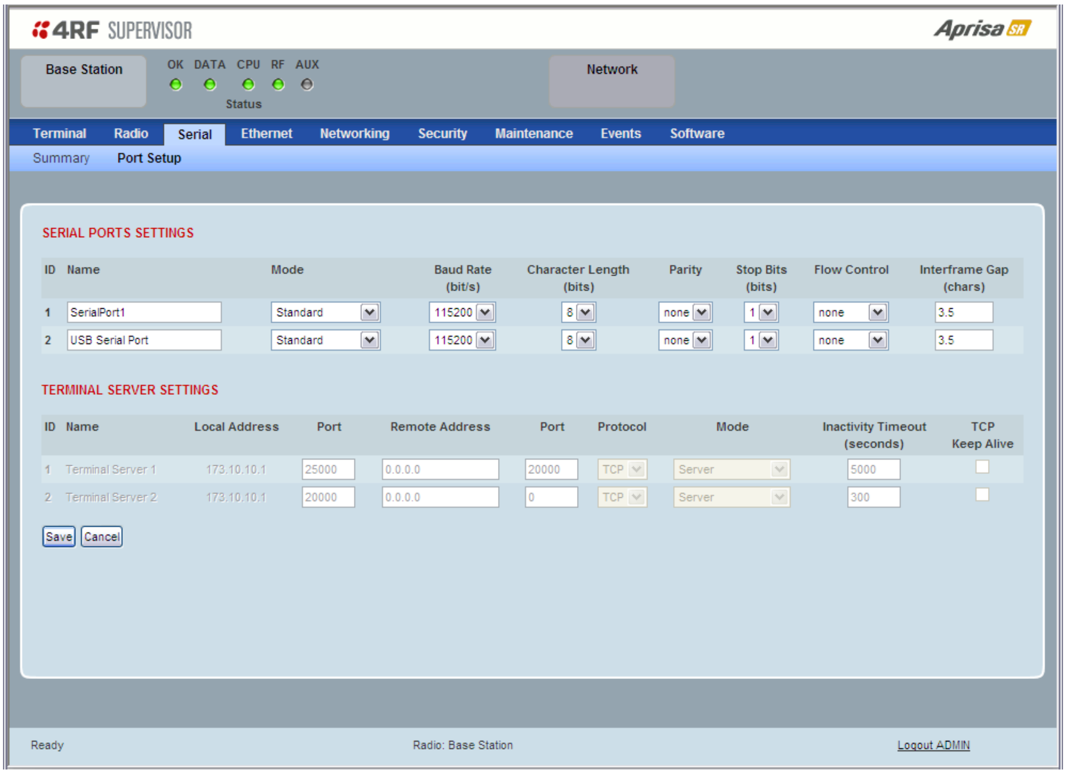
TERMINAL SERVER SETTINGS

ID	Name	Local Address	Port	Remote Address	Port	Protocol	Mode	Inactivity Timeout (seconds)	TCP Keep Alive
1	Terminal Server 1	173.10.10.1	25000	0.0.0.0	20000	TCP	server	5000	Off
2	Terminal Server 2	173.10.10.1	20000	0.0.0.0	0	TCP	server	300	Off

See ‘Serial > Port Setup’ on page 103 for configuration options.

Serial > Port Setup

This page provides the setup for the serial port settings.



SERIAL PORTS SETTINGS

ID	Name	Mode	Baud Rate (bit/s)	Character Length (bits)	Parity	Stop Bits (bits)	Flow Control	Interframe Gap (chars)
1	SerialPort1	Standard	115200	8	none	1	none	3.5
2	USB Serial Port	Standard	115200	8	none	1	none	3.5

TERMINAL SERVER SETTINGS

ID	Name	Local Address	Port	Remote Address	Port	Protocol	Mode	Inactivity Timeout (seconds)	TCP Keep Alive
1	Terminal Server 1	173.10.10.1	25000	0.0.0.0	20000	TCP	Server	5000	□
2	Terminal Server 2	173.10.10.1	20000	0.0.0.0	0	TCP	Server	300	□

SERIAL PORTS SETTINGS

Note: The current Aprisa SR has one serial port so there will be only one record.

Name

This parameter sets the port name which can be up to 32 characters.

Option	Function
SerialPort1	This is the normal RS-232 serial port provided with the RJ45 connector.
USB Serial Port	This is the additional RS-232 serial port provided with the USB Host Port ⭠ connector with a USB to RS-232 RJ45 converter cable (see ‘USB RS-232 Serial Port’ on page 43).

Mode

This parameter defines the mode of operation of the serial port. The default setting is Standard.

Option	Function
Disabled	The serial port is not required.
Standard	The serial port is communicating with serial ports on other stations.
Terminal Server	A base station Ethernet port can communicate with both Ethernet ports and serial ports on remote stations. RS-232 traffic is encapsulated in IP packets (see ‘Serial > Port Setup’ TERMINAL SERVER SETTINGS on page 105).

Baud Rate (bit/s)

This parameter sets the baud rate to 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bit/s. The default setting is 115200 bit/s.

Character Length (bits)

This parameter sets the character length to 7 or 8 bits. The default setting is 8 bits.

Parity

This parameter sets the parity to Even, Odd or None. The default setting is None.

Stop Bits (bits)

This parameter sets the number of stop bits to 1 or 2 bits. The default setting is 1 bit.

Flow Control

This parameter sets the flow control of the serial port. The default setting is Disabled.

Option	Function
None	The Aprisa SR radio port (DCE) CTS is in a permanent ON (+ve) state. This does not go to OFF if the radio link fails.
CTS-RTS	CTS / RTS hardware flow control between the DTE and the Aprisa SR radio port (DCE) is enabled. If the Aprisa SR buffer is full, the CTS goes OFF. In the case of radio link failure the signal goes to OFF (-ve) state.

In terminal server mode, the serial packet is no different from an Ethernet packet and travels through various packet queues before being transmitted over the air. Thus, the serial flow control has no affect in terminal server mode.

Inter-Frame Gap (chars)

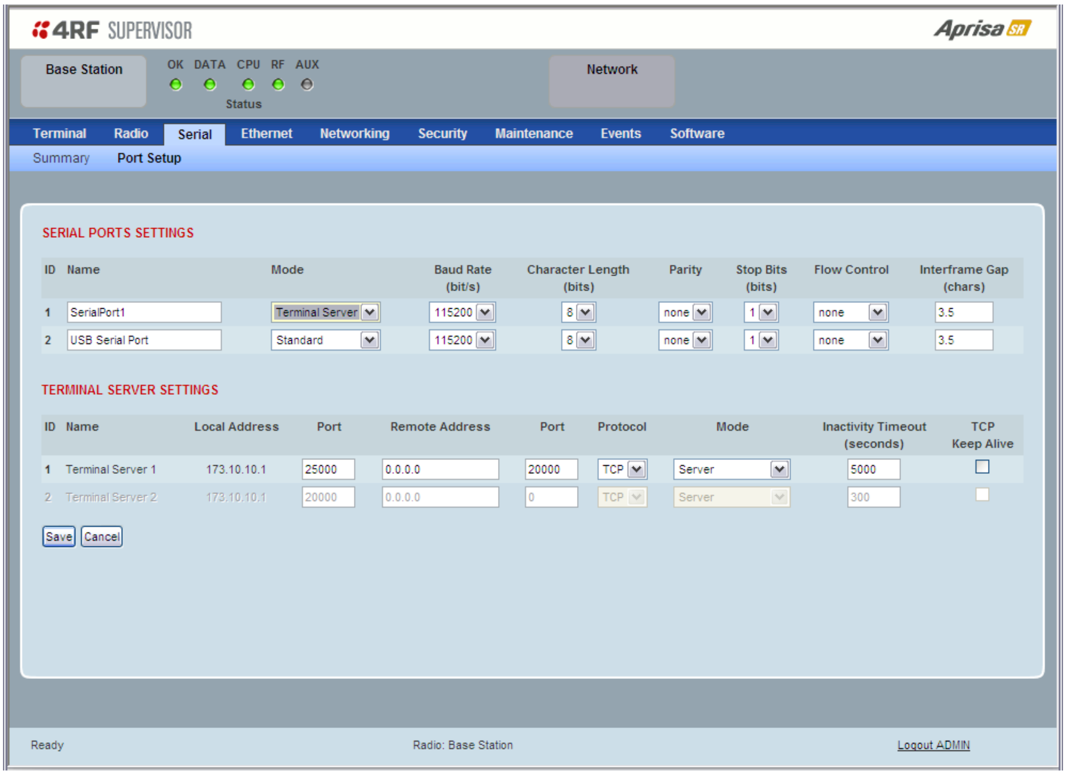
This parameter defines the gap between successive serial data frames. It is used to delimit the serial data to define the end of a packet. The Inter-Frame Gap limits are 0.5 to 16 chars. The default setting is 3.5 chars.

TERMINAL SERVER SETTINGS

This menu item is only applicable if the serial port has an operating mode of Terminal Server.

The Terminal Server operating mode provides encapsulation of serial data into an IP packet (TCP or UDP).

A server connected to a base station Ethernet port can communicate with all remote station Ethernet ports and serial ports.



SERIAL PORTS SETTINGS

ID	Name	Mode	Baud Rate (bit/s)	Character Length (bits)	Parity	Stop Bits (bits)	Flow Control	Interframe Gap (chars)
1	SerialPort1	Terminal Server	115200	8	none	1	none	3.5
2	USB Serial Port	Standard	115200	8	none	1	none	3.5

TERMINAL SERVER SETTINGS

ID	Name	Local Address	Port	Remote Address	Port	Protocol	Mode	Inactivity Timeout (seconds)	TCP Keep Alive
1	Terminal Server 1	173.10.10.1	25000	0.0.0.0	20000	TCP	Server	5000	□
2	Terminal Server 2	173.10.10.1	20000	0.0.0.0	0	TCP	Server	300	□

Note: The current Aprisa SR has one serial port so there will be only one record.

Local Address

This parameter displays the IP address of this radio.

Port

This parameter sets the port number of the local serial port.

The valid port number range is greater than or equal to 1024 and less than or equal to 49151 but with exclusions of 0, 5445, 6445, 9930 or 9931. The default setting is 20000.

Remote Address

This parameter sets the IP address of the server connected to the base station Ethernet port.

Port

This parameter sets the port number of the server connected to the base station Ethernet port. The default setting is 0.

Protocol

This parameter sets the IP protocol used for terminal server operation. The default setting is TCP.

Mode

This parameter defines the mode of operation of the terminal server connection. The default setting is Client and Server.

Option	Function
Client	The radio will attempt to establish a TCP connection with the specified remote unit.
Server	The radio will listen for a TCP connection on the specified local port. Data received from any client shall be forwarded to the associated serial port while data received from that serial port shall be forwarded to every client with an open TCP connection. If no existing TCP connections exist, all data received from the associated serial port shall be discarded.
Client and Server	The radio will listen for a TCP connection on the specified local port and if necessary, establish a TCP connection with the specified remote unit. Data received from any client shall be forwarded to the associated serial port while data received from that serial port shall be forwarded to every client with an open TCP connection.

Inactivity Timeout (seconds)

This specifies the duration (in seconds) to automatically terminate the connection with the remote TCP server if no data has been received from either the remote TCP server or its associated serial port for the duration of the configured inactivity time.

TCP Keep Alive

A TCP keepalive is a message sent by one device to another to check that the link between the two is operating, or to prevent the link from being broken.

If the TCP Keep Alive is enabled, the radio will be notified if the TCP connection fails.

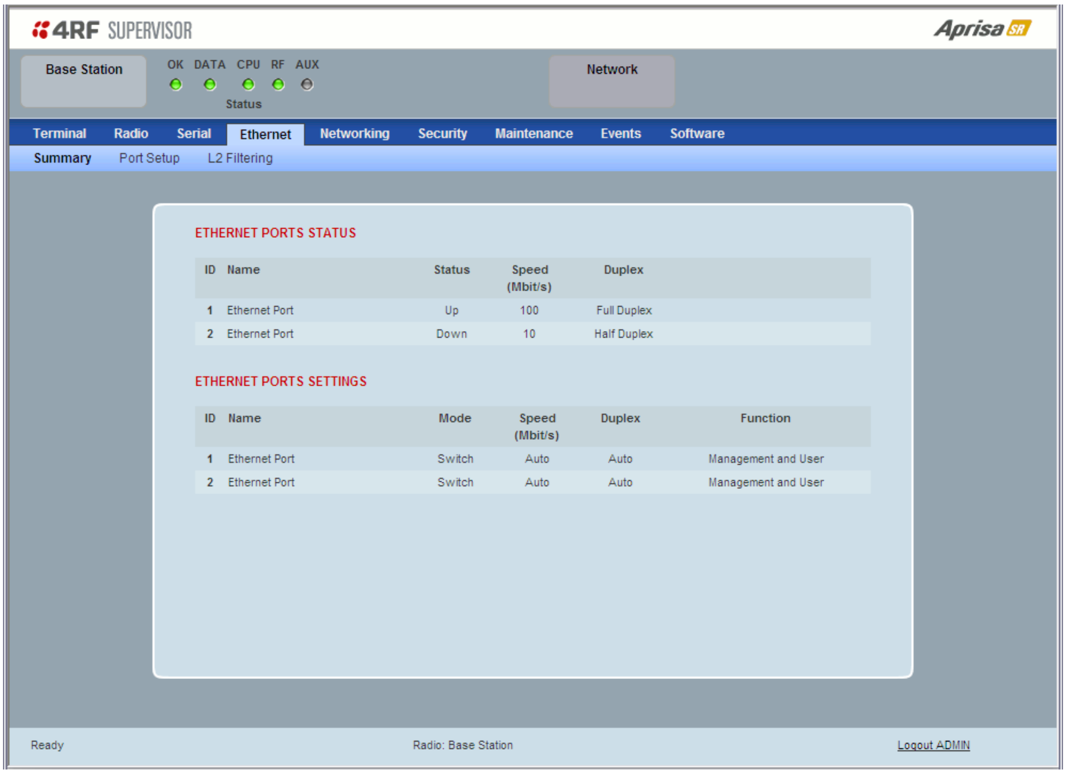
If the TCP Keep Alive is disabled, the radio relies on the Inactivity Timeout to detect a TCP connection failure. The default setting is disabled.

Note: An active TCP Keep Alive will generate a small amount of extra network traffic.

Ethernet

Ethernet > Summary

This page displays the current settings for the Ethernet port parameters and the status of the ports.



ETHERNET PORTS STATUS

ID	Name	Status	Speed (Mbit/s)	Duplex
1	Ethernet Port	Up	100	Full Duplex
2	Ethernet Port	Down	10	Half Duplex

ETHERNET PORTS SETTINGS

ID	Name	Mode	Speed (Mbit/s)	Duplex	Function
1	Ethernet Port	Switch	Auto	Auto	Management and User
2	Ethernet Port	Switch	Auto	Auto	Management and User

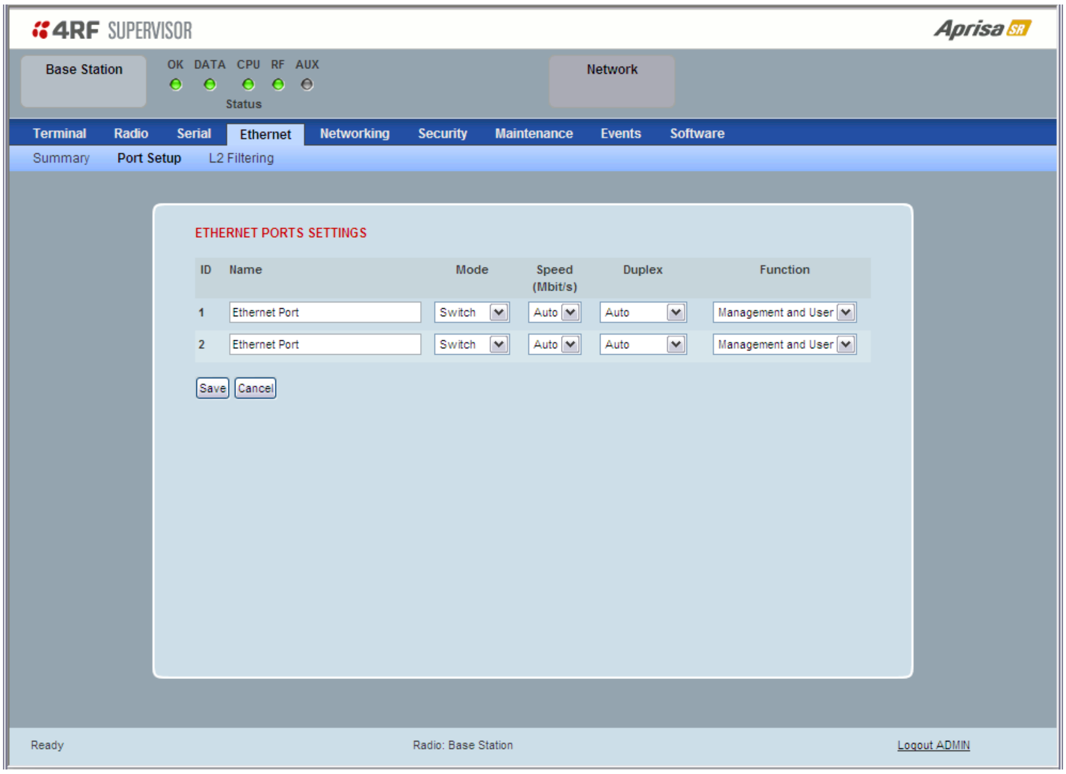
Ready

Radio: Base Station

See ‘Ethernet > Port Setup’ for configuration options.

Ethernet > Port Setup

This page provides the setup for the Ethernet ports settings.



ETHERNET PORTS SETTINGS

ID	Name	Mode	Speed (Mbit/s)	Duplex	Function
1	Ethernet Port	Switch	Auto	Auto	Management and User
2	Ethernet Port	Switch	Auto	Auto	Management and User

ETHERNET PORT SETTINGS

Mode

This parameter controls the Ethernet traffic flow. The default setting is Standard.

Option	Function
Standard	Enables Ethernet data communication over the radio link.
Switch	Ethernet traffic is switched locally between the two Ethernet ports and communicated over the radio link
Disabled	Disables Ethernet data communication over the radio link.

Speed (Mbit/s)

This parameter controls the traffic rate of the Ethernet port. The default setting is Auto.

Option	Function
Auto	Provides auto selection of Ethernet Port Speed
10	The Ethernet Port Speed is manualy set to 10 Mbit/s
100	The Ethernet Port Speed is manualy set to 100 Mbit/s

Duplex

This parameter controls the transmission mode of the Ethernet port. The default setting is Auto.

Option	Function
Auto	Provides auto selection of Ethernet Port duplex setting.
Half Duplex	The Ethernet Port is manualy set to Half Duplex.
Full Duplex	The Ethernet Port is manualy set to Full Duplex.

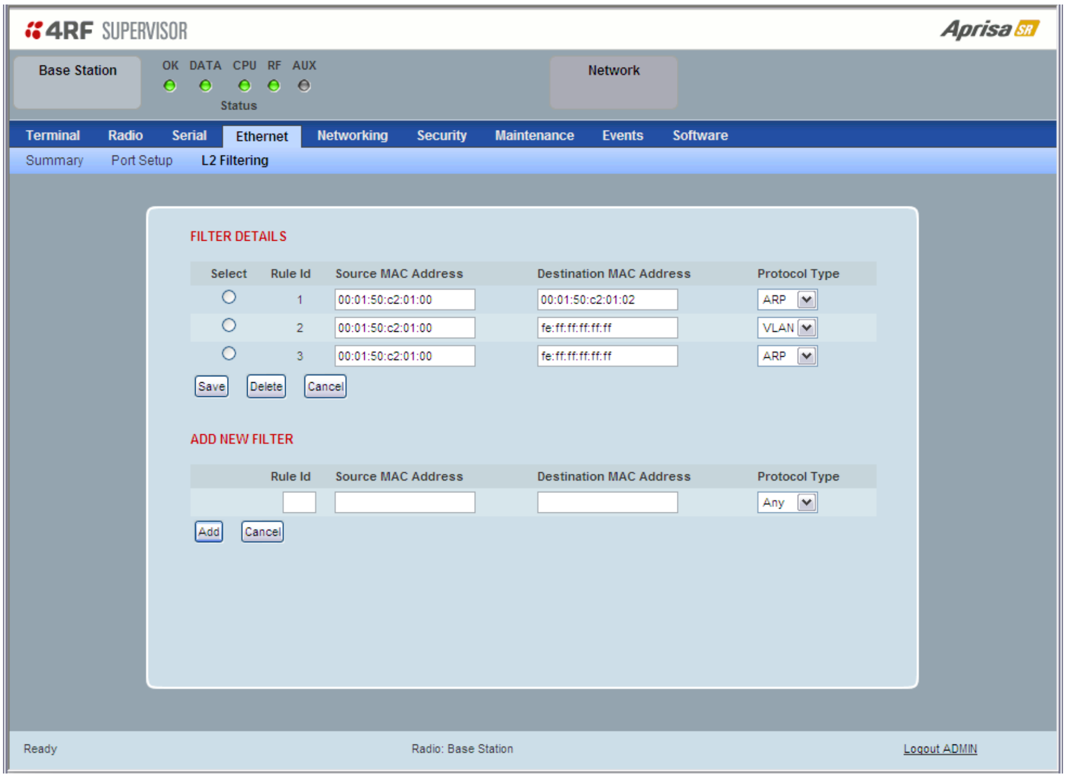
Function

This parameter controls the use for the Ethernet port. The default setting is Management and User.

Option	Function
Management Only	The Ethernet port is only used for management of the network.
Management and User	The Ethernet port is used for management of the network and User traffic over the radio link.
User Only	The Ethernet port is only used for User traffic over the radio link.

Ethernet > L2 Filtering

This page is only available if the Ethernet traffic option has been licensed (see ‘Maintenance > Licence’ on page 140).



FILTER DETAILS

Select	Rule Id	Source MAC Address	Destination MAC Address	Protocol Type
○	1	00:01:50:c2:01:00	00:01:50:c2:01:02	ARP
○	2	00:01:50:c2:01:00	fe:ff:ff:ff:ff:ff	VLAN
○	3	00:01:50:c2:01:00	fe:ff:ff:ff:ff:ff	ARP

ADD NEW FILTER

Rule Id	Source MAC Address	Destination MAC Address	Protocol Type
			Any

FILTER DETAILS

L2 Filtering provides the ability to filter radio link traffic based on specified Layer 2 MAC addresses.

Traffic originating from specified Source MAC Addresses destined for specified Destination MAC Addresses that meets the protocol type criteria will be transmitted over the radio link.

Traffic that does not meet the filtering criteria will not be transmitted over the radio link.

Source MAC Address

This parameter sets the filter to the Source MAC address of the packet in the format ‘hh:hh:hh:hh:hh:hh’.

If the Source MAC Address is set to ‘FF:FF:FF:FF:FF:FF’, traffic will be accepted from any source MAC address.

Destination MAC Address

This parameter sets the filter to the Destination MAC address of the packet in the format ‘hh:hh:hh:hh:hh:hh’.

If the Destination MAC Address is set to ‘FF:FF:FF:FF:FF:FF’, traffic will be delivered to any destination MAC address.

Protocol Type

This parameter sets the Ethernet Type accepted ARP, VLAN, IPv4, IPv6 or Any type.

Example:

In the screen shot, the rules are configured in the base station which controls the radio link traffic from base station to remote / repeater stations.

Traffic from a device with the MAC address 00:01:50:c2:01:00 is forwarded over the radio link if it meets the criteria:

- Rule 1 If the Ethernet Type is ARP going to any destination MAC address or
- Rule 2 If the Ethernet Type is Any and the destination MAC address is 01:00:50:c2:01:02 or
- Rule 3 If the Ethernet Type is VLAN tagged packets going to any destination MAC address

Special L2 Filtering Rules:

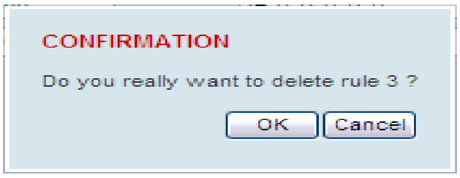
Unicast Only Traffic

This L2 filtering allows for Unicast only traffic and drop broadcast and multicast traffic. This filtering is achieved by adding the two rules:

Rule	Source MAC Address	Destination MAC Address	Protocol Type
Allow ARPS	FF:FF:FF:FF:FF:FF	FF:FF:FF:FF:FF:FF	ARP
Allow Unicasts from Any source	FF:FF:FF:FF:FF:FF	**FE**:FF:FF:FF:FF:FF	Any

To delete a L2 Filter:

1. Click on an existing rule ‘Select’.
2. Click on Delete.



CONFIRMATION

Do you really want to delete rule 3 ?

3. Click on OK.

ADD NEW FILTER

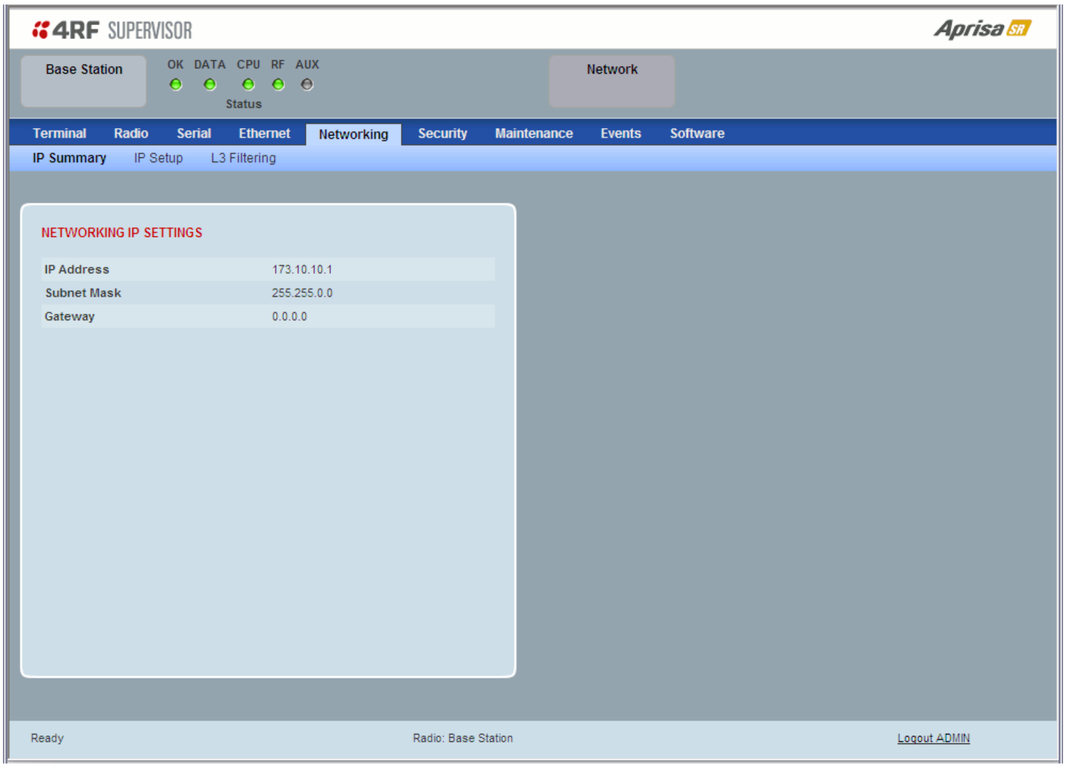
To add a L2 Filter:

1. Enter the Rule ID number. This is a unique rule number between 1 and 25.
2. Enter the Source MAC address of the packet or ‘FF:FF:FF:FF:FF:FF’ to accept traffic from any MAC address.
3. Enter the Destination MAC address of the packet or ‘FF:FF:FF:FF:FF:FF’ to deliver traffic to any MAC address.
4. Select the Protocol Type to ARP, VLAN, IPv4, IPv6 or Any type.
5. Click on Add.

Networking

Networking > IP Summary

This page displays the current settings for the Networking IP Settings.



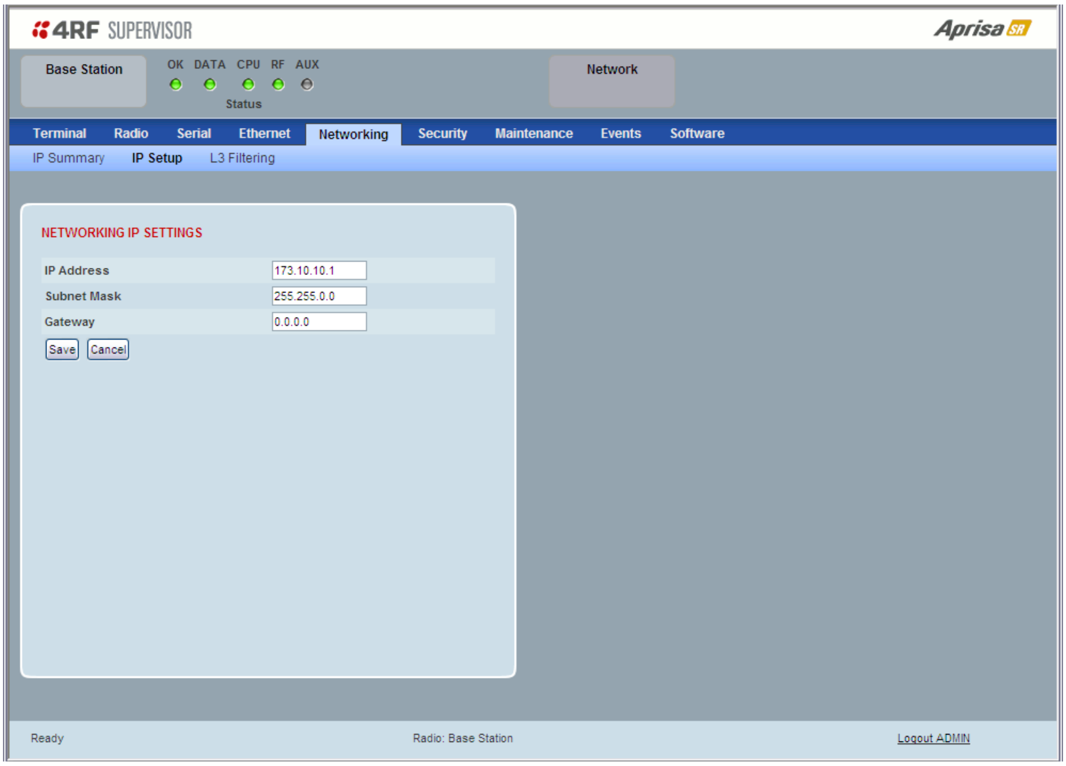
NETWORKING IP SETTINGS

IP Address	173.10.10.1
Subnet Mask	255.255.0.0
Gateway	0.0.0.0

See ‘Networking > IP Setup’ for configuration options.

Networking > IP Setup

This page provides the setup for the Networking IP Settings.



NETWORKING IP SETTINGS

IP Address	173.10.10.1
Subnet Mask	255.255.0.0
Gateway	0.0.0.0

NETWORKING IP SETTINGS

IP Address

Set the static IP Address of the radio assigned by your site network administrator using the standard format xxx.xxx.xxx.xxx. The default IP address is in the range 169.254.50.10.

Subnet Mask

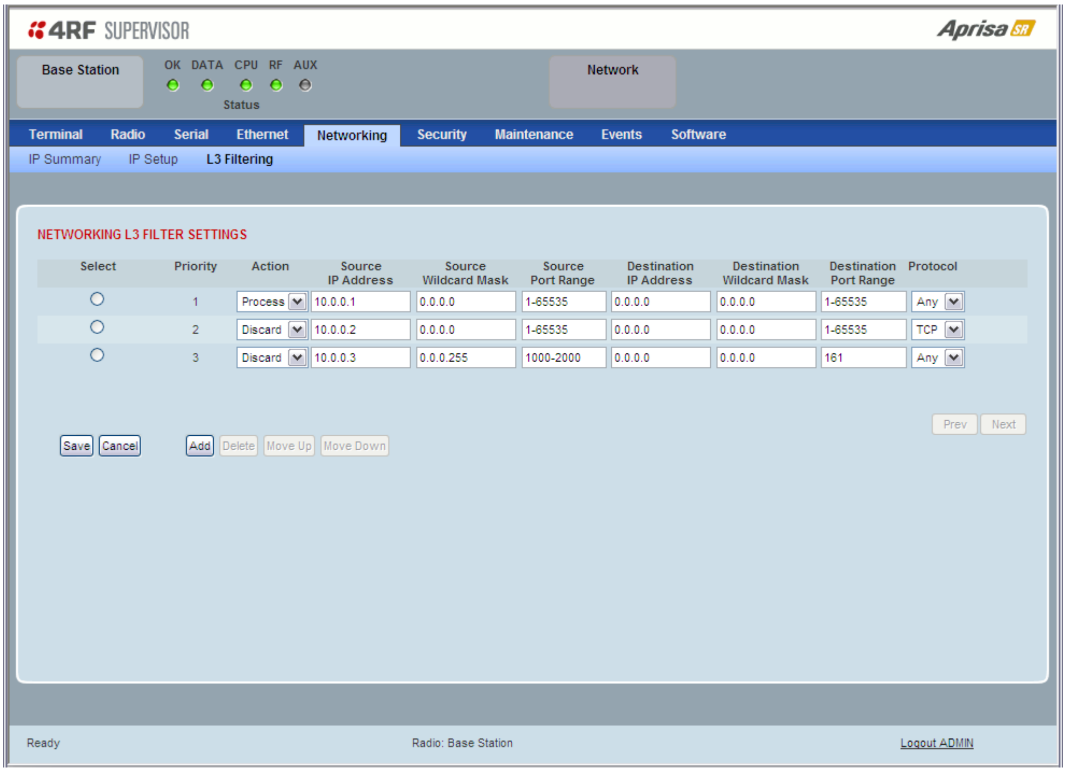
Set the Subnet Mask of the radio using the standard format xxx.xxx.xxx.xxx. The default subnet mask is 255.255.0.0.

Gateway

Set the Gateway address of the radio, if required, using the standard format xxx.xxx.xxx. The default Gateway is 0.0.0.0.

Networking > L3 Filtering

This page is only available if the Ethernet traffic option has been licensed (see ‘Maintenance > Licence’ on page 140).



NETWORKING L3 FILTER SETTINGS

Select	Priority	Action	Source IP Address	Source Wildcard Mask	Source Port Range	Destination IP Address	Destination Wildcard Mask	Destination Port Range	Protocol
○	1	Process	10.0.0.1	0.0.0.0	1-65535	0.0.0.0	0.0.0.0	1-65535	Any
○	2	Discard	10.0.0.2	0.0.0.0	1-65535	0.0.0.0	0.0.0.0	1-65535	TCP
○	3	Discard	10.0.0.3	0.0.0.255	1000-2000	0.0.0.0	0.0.0.0	161	Any

NETWORKING L3 FILTER SETTINGS

L3 Filtering provides the ability to evaluate traffic and take specific action based on the filter criteria.

This filtering can also be used for L4 TCP/UDP port filtering which in most cases relates to specific applications as per IANA official and unofficial well-known ports.

Entering a * into any to field will automatically enter the wildcard values when the data is saved.

Priority

This parameter shows the priority order in which the filters are processed.

Action

This parameter defines the action taken on the packet when it meets the filter criteria.

Option	Function
Process	Processes the packet if it meets the filter criteria
Discard	Discards the packet if it meets the filter criteria

Source IP Address

If the source IP address is set to 0.0.0.0, any source IP address will meet the filter criteria.

Source Wildcard Mask

This parameter defines the mask applied to the Source IP Address. 0 means that it must be a match.

If the Source Wildcard Mask is set to 0.0.0.0, the complete Source IP Address will be evaluated for the filter criteria.

If the Source Wildcard Mask is set to 0.0.255.255, the first 2 octets of the Source IP Address will be evaluated for the filter criteria.

If the Source Wildcard Mask is set to 255.255.255.255, none of the Source IP Address will be evaluated for the filter criteria.

Note: The Source Wildcard Mask operation is the inverse of subnet mask operation

Source Port Range

This parameter defines the port or port range for the source. To specify a range, insert a dash between the ports e.g 1000-2000. If the Source Port Range is set to 1-65535, traffic from any source port will meet the filter criteria.

Destination IP Address

This parameter defines the destination IP address of the filter. If the destination IP address is set to 0.0.0.0, any destination IP address will meet the filter criteria.

Destination Wildcard Mask

This parameter defines the mask applied to the Destination IP Address. 0 means that it must be a match.

If the Destination Wildcard Mask is set to 0.0.0.0, the complete Destination IP Address will be evaluated for the filter criteria.

If the Destination Wildcard Mask is set to 0.0.255.255, the first 2 octets of the Destination IP Address will be evaluated for the filter criteria.

If the Destination Wildcard Mask is set to 255.255.255.255, none of the Destination IP Address will be evaluated for the filter criteria.

Note: The Destination Wildcard Mask operation is the inverse of subnet mask operation

Destination Port Range

This parameter defines the port or port range for the destination. To specify a range, insert a dash between the ports e.g 1000-2000. If the destination port range is set to 1-65535, traffic to any destination port will meet the filter criteria.

Protocol

This parameter defines the Ethernet packet type that will meet the filter criteria.

Controls

The Delete button deletes the selected entry.

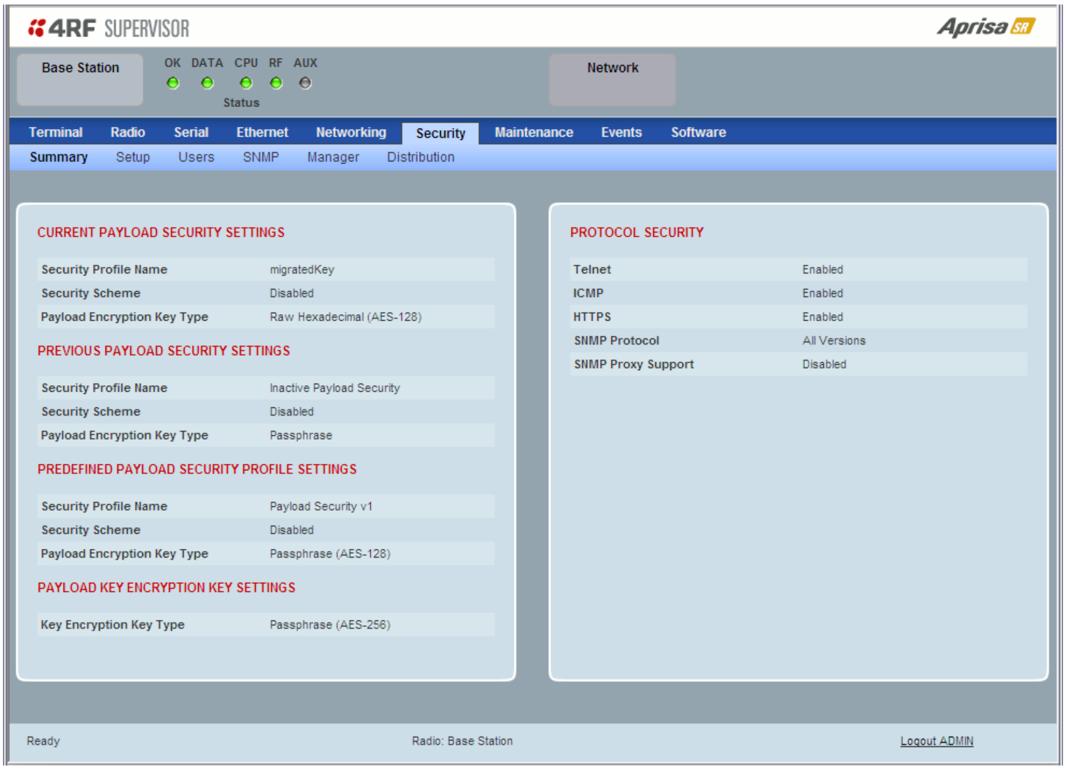
The Move Up button moves the selected entry above the entry above it increasing it’s process priority.

The Move Down button moves the selected entry below the entry above it reducing it’s process priority.

Security

Security > Summary

This page displays the current settings for the Security parameters.



CURRENT PAYLOAD SECURITY SETTINGS

Security Profile Name	migratedKey
Security Scheme	Disabled
Payload Encryption Key Type	Raw Hexadecimal (AES-128)

PREVIOUS PAYLOAD SECURITY SETTINGS

Security Profile Name	Inactive Payload Security
Security Scheme	Disabled
Payload Encryption Key Type	Passphrase

PREDEFINED PAYLOAD SECURITY PROFILE SETTINGS

Security Profile Name	Payload Security v1
Security Scheme	Disabled
Payload Encryption Key Type	Passphrase (AES-128)

PAYLOAD KEY ENCRYPTION KEY SETTINGS

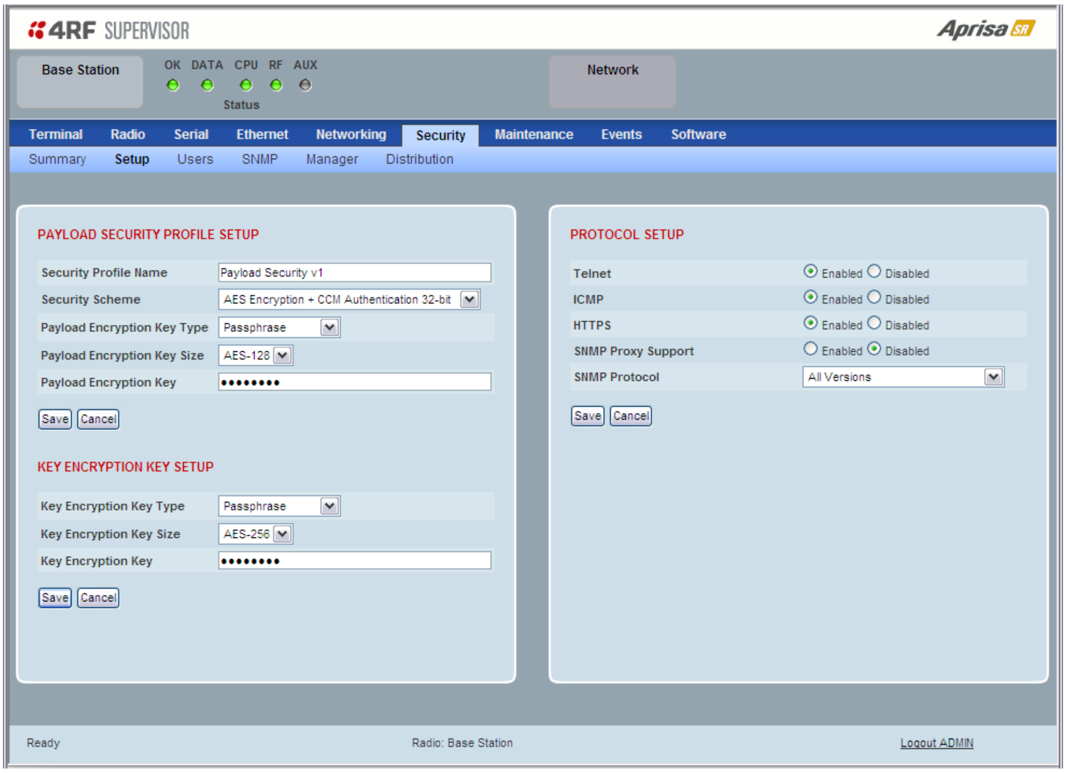
Key Encryption Key Type	Passphrase (AES-256)

PROTOCOL SECURITY

Telnet	Enabled
ICMP	Enabled
HTTPS	Enabled
SNMP Protocol	All Versions
SNMP Proxy Support	Disabled

See ‘Security > Setup’ and ‘Security > Manager’ for configuration options.

Security > Setup


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Users SNMP Manager Distribution
Save Cancel
Ready
Radio: Base Station
Logout ADMIN

PAYLOAD SECURITY PROFILE SETUP

Security Profile Name	Payload Security v1
Security Scheme	AES Encryption + CCM Authentication 32-bit
Payload Encryption Key Type	Passphrase
Payload Encryption Key Size	AES-128
Payload Encryption Key	••••••••

KEY ENCRYPTION KEY SETUP

Key Encryption Key Type	Passphrase
Key Encryption Key Size	AES-256
Key Encryption Key	••••••••

PROTOCOL SETUP

Telnet	● Enabled ○ Disabled
ICMP	● Enabled ○ Disabled
HTTPS	● Enabled ○ Disabled
SNMP Proxy Support	○ Enabled ● Disabled
SNMP Protocol	All Versions

PAYLOAD SECURITY PROFILE SETUP

Security Profile Name

This parameter enables the user to predefine a security profile with a specified name.

Security Scheme

This parameter sets the security scheme to one of the values in the following table:

Security Level
Disabled (No encryption and no Message Authentication Code)
AES Encryption + CCM Authentication 128 bit
AES Encryption + CCM Authentication 64 bit
AES Encryption + CCM Authentication 32 bit
AES Encryption only
CCM Authentication 128 bit
CCM Authentication 64 bit
CCM Authentication 32 bit

The default setting is Disabled.

Payload Encryption Key Type

This parameter sets the Payload Encryption Key Type:

Option	Function
Pass Phrase	Use the Pass Phrase password format for standard security.
Raw Hexidecimal	Use the Raw Hexidecimal password format for better security. It must comply with the specified encryption key size e.g. if Encryption Type to AES128, the encryption key must be 16 bytes (32 chars)

The default setting is Pass Phrase.

Payload Encryption Key Size

This parameter sets the Encryption Type to AES128, AES192 or AES256. The default setting is AES128.

The higher the encryption size the better the security.

Payload Encryption Key

This parameter sets the Payload Encryption password. This key is used to encrypt the payload.

Pass Phrase

Good password policy:

- contains at least eight characters, and
- contains at least one upper case letter, and
- contains at least one lower case letter, and
- contains at least one digit or another character such as !@#$%^&(){}[]<>... , and
- is not a term in a familiar language or jargon, and
- is not identical to or derived from the accompanying account name, from personal characteristics or from information from one's family/social circle, and
- is easy to remember, for instance by means of a key sentence

Raw Hexidecimal

The Raw Hexidecimal password must comply with the specified encryption key size e.g. if Encryption Type to AES128, the encryption key must be 16 bytes (32 chars).

KEY ENCRYPTION KEY SETUP

The Key Encryption Key provides the ability to encrypt the Payload Encryption Key so it can be safely transmitted over the radio link to remote radios.

The Key Encryption Key Type, Key Encryption Key Size and Key Encryption Key must be the same on all radios in the network.

Key Encryption Key Type

This parameter sets the Payload Encryption Key Type:

Option	**Function**
Pass Phrase	Use the Pass Phrase password format for standard security.
Raw Hexidecimal	Use the Raw Hexidecimal password format for better security. It must comply with the specified encryption key size e.g. if Encryption Type to AES128, the encryption key must be 16 bytes (32 chars)

The default setting is Pass Phrase.

Key Encryption Key Size

This parameter sets the Encryption Type to AES128, AES192 or AES256. The default setting is AES128.

The higher the encryption type the better the security.

Key Encryption Key

This parameter sets the Key Encryption password. This is used to encrypt the payload encryption key.

PROTOCOL SETUP

Telnet option

This parameter option determines if you can manage the radio via a Telnet session. The default setting is disabled.

ICMP option (Internet Control Message Protocol)

This parameter option determines whether the radio will respond to a ping. The default setting is disabled.

HTTPS option

This parameter option determines if you can manage the radio via a HTTPS session (via a Browser). The default setting is enabled.

SNMP Proxy Support

This parameter option enables an SNMP proxy server in the base station. This proxy server reduces the radio link traffic during SNMP communication to remote / repeater stations. This option applies to the base station only. The default setting is disabled.

This option can also be used if the radio has Serial Only interfaces.

SNMP Protocol

This parameter sets the SNMP Protocol:

Option	**Function**
Disabled	All SNMP functions are disabled.
All Versions	Allows all SNMP protocol versions.
SNMPv3 Only	Only SNMPv3 transactions will be accepted.
SNMPv3 With Authentication Only	Only SNMPv3 transactions authenticated using HMAC-MD5 or HMAC-SHA will be accepted.

The default setting is All Versions.

The default SNMPv3 with Authentication User Details provided are:

User Name	**Authentication Type**	**Context Name**	**Authentication Passphrase**
noAuthUser	-	noAuth	noAuthUser
authUserMD5	MD5	auth	authUserMD5
authUserSHA	SHA	auth	authUserSHA

SNMPv3 Authentication Passphrase

The Authentication Passphrases can be changed via SNMP (not SuperVisor).

When viewing / managing the details of the users via SNMP, the standard SNMP-USER-BASED-SM-MIB interface is used. This interface can be used to change the Authentication Passphrase of the users.

The Authentication Passphrase of the user required to be changed cannot be changed by the same user i.e a different user must be used for the transactions.

To change a user authentication passphrase:

1. SET the usmUserStatus object for that user to ‘Not In Service’
2. GET the usmUserSpinLockobject
3. SET the usmUserSpinLockobject with the value that was just GOT in the previous step
4. SET the usmUserAuthKeyChange to the new Authentication key string
5. SET the usmUserPrivKeyChangeto the new Privacy key string
6. SET the usmUserStatus object for that user to ‘Active’

Note that the key string for steps 4 and 5 are 32 octet hexadecimal values. This string is generated based on the ‘old passphrase’ and ‘new passphrase’ as specified in RFC2274.

The utility ‘encode_keychange.exe’, available from NET-SNMP open source applications, can be used to generate this string.

An example command to generate a new Authentication key string for the default desUserMD5 is:

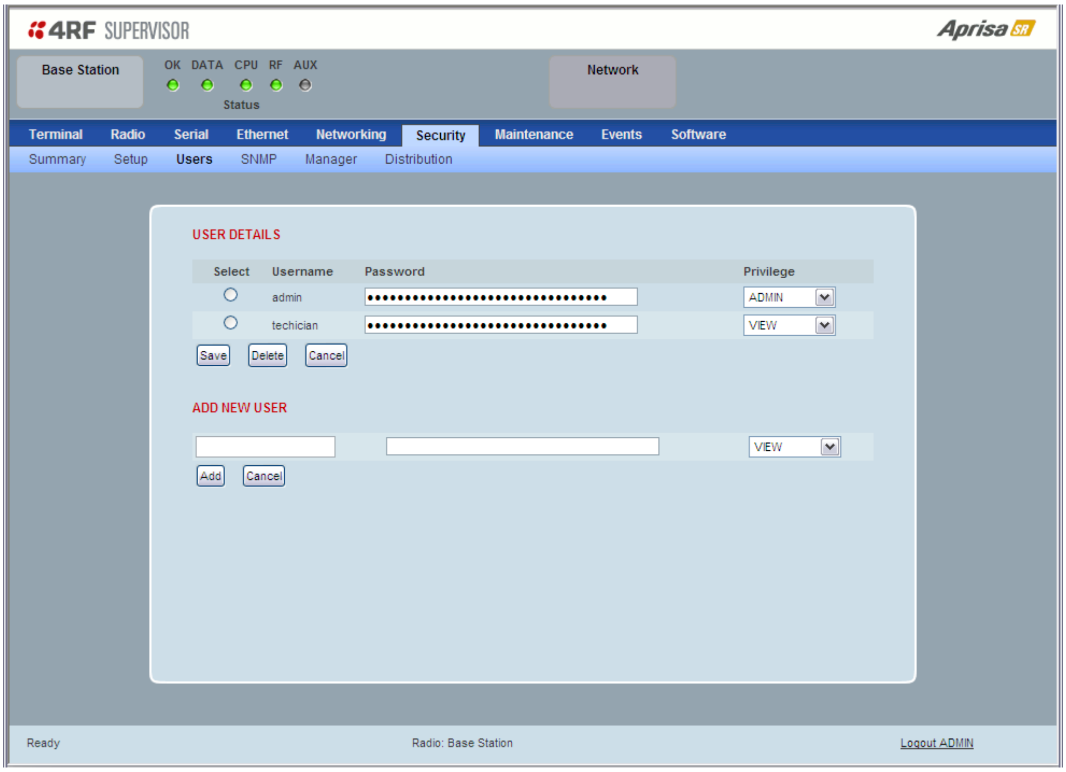
```
encode_keychange -t md5 -O “desUserMD5” -N “desUserMD5Auth” –E 0x0100DC
```

An example command to generate a new Privacy key string for the default desUserMD5 is:

```
encode_keychange -t md5 -O “desUserMD5” -N “desUserMD5Priv” –E 0x0100DC
```

These command executions will return a 32 Octet Hexadecimal string that can be used in steps 4 and 5 above.

Security > Users



USER DETAILS

Select	Username	Password	Privilege
○	admin	••••••••••••••••••••••••••••••••	ADMIN
○	techician	••••••••••••••••••••••••••••••••	VIEW

ADD NEW USER

		VIEW

Note: You must login with ‘admin’ privileges to add, disable, delete a user or change a password.

USER DETAILS

Shows a list of the current users setup in the radio.

ADD NEW USER

To add a new user:

1. Enter the Username.

A username can be up to 32 characters but cannot contain back slashes, forward slashes, spaces, tabs, single or double quotes. Usernames are case sensitive.

2. Enter the Password.

A password can be 8 to 32 characters but cannot contain back slashes, forward slashes, spaces, tabs, single or double quotes. Passwords are case sensitive.

Good password policy:

- contains at least eight characters, and
- contains at least one upper case letter, and
- contains at least one lower case letter, and
- contains at least one digit or another character such as !@#$%^&(){}[]<>... , and
- is not a term in a familiar language or jargon, and
- is not identical to or derived from the accompanying account name, from personal characteristics or from information from one’s family/social circle, and
- is easy to remember, for instance by means of a key sentence

3. Select the User Privileges

There are four pre-defined User Privilege settings to allocate access rights to users. These user privileges have associated default usernames and passwords of the same name.

The default login is ‘admin’.

This login has full access to all radio parameters including the ability to add and change users. There can only be a maximum of two usernames with admin privileges and the last username with admin privileges cannot be deleted.

User Privilege	Default Username	Default Password	User Privileges
View	view	view	Users in this group can only view the summary pages.
Technician	technician	technician	Users in this group can view and edit parameters except Security > Users, Security > Settings and Advanced settings.
Engineer	engineer	engineer	Users in this group can view and edit parameters except Security > Users.
Admin	admin	admin	Users in this group can view and edit all parameters.

See ‘SuperVisor Menu Access’ on page 76 for the list of SuperVisor menu items versus user privileges.

4. Click ‘Add’

To delete a user:

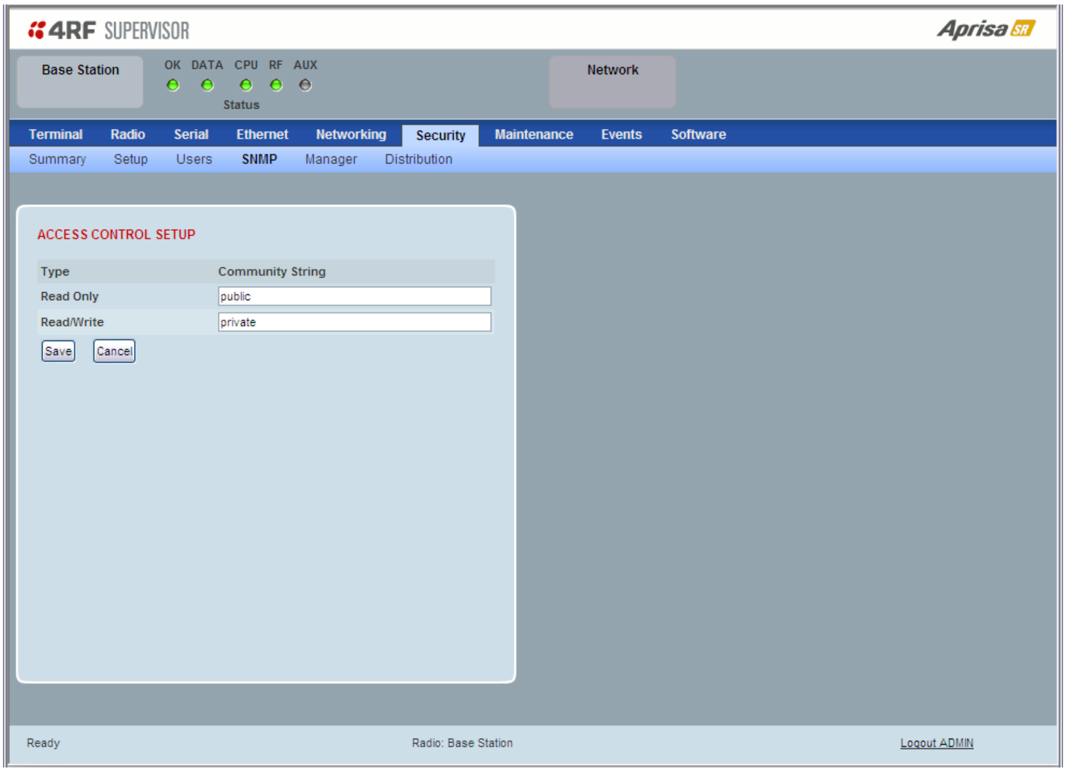
1. Select Terminal Settings > Security > Users
2. Click on the Select button for the user you wish to delete.
3. Click ‘Delete

To change a Password:

1. Select Terminal Settings > Security > Users
2. Click on the Select button for the user you wish to change the Password.
3. Enter the Password.

A password can be 8 to 32 characters but cannot contain back slashes, forward slashes, spaces, tabs, single or double quotes.

Security > SNMP



4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Users SNMP Manager Distribution

ACCESS CONTROL SETUP

Type	Community String
Read Only	public
Read/Write	private

Save Cancel

Ready
Radio: Base Station
Logout ADMIN

In addition to web-based management (SuperVisor), the network can also be managed using the Simple Network Management Protocol (SNMP). MIB files are supplied, and these can be used by a dedicated SNMP Manager, such as Castle Rock's SNMPc, to access most of the radio's configurable parameters.

For communication between the SNMP manager and the radio, Access Controls and Community strings must be set up as described in the following sections.

A SNMP **Community String** is used to protect against unauthorized access (similar to a password). The SNMP agent (radio or SNMP manager) will check the community string before performing the task requested in the SNMP message.

ACCESS CONTROL SETUP

A SNMP **Access Control** is the IP address of the radio used by an SNMP manager or any other SNMP device to access the radio. The Aprisa SR allows access to the radio from any IP address.

Read Only

The default Read Only community string is public.

Read Write

The default ReadWrite community string is private.

SNMP Manager Setup

The SNMP manager community strings must be setup to access the base station and remote / repeater stations.

To access the base station, a community string must be setup on the SNMP manager the same as the community string setup on the radio (see ‘Security > SNMP’ on page 124).

SNMP access to remote / repeater stations can be achieved by using the radio’s IP address and the normal community string or by proxy in the base station.

SNMP Access via Base Station Proxy

To access the remote / repeater stations via the base station proxy, the community strings must be setup on the SNMP manager in the format:

cccccccc:bbbbbb

Where:

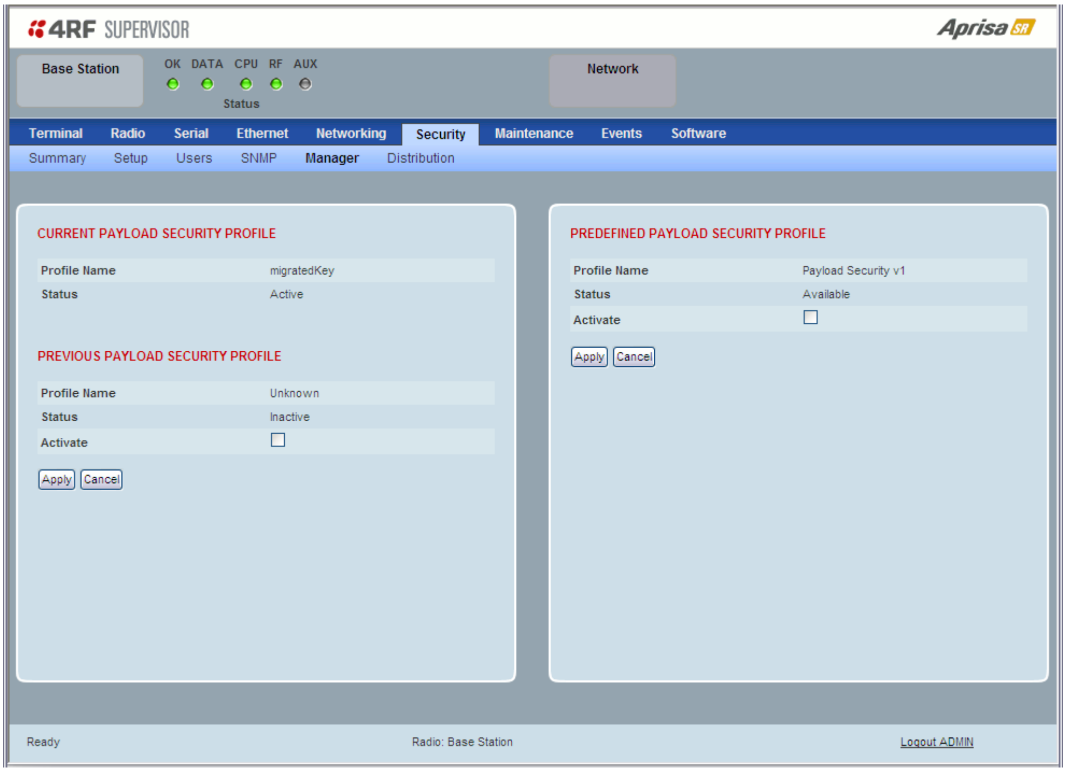
cccccccc is the community string of the base station

and

bbbbbb is the last 3 bytes of the remote station MAC address (see ‘Network Status > Network Table’ on page 167) for the remote station MAC address.

The SNMP Proxy Support must be enabled for this method of SNMP access to operate (see ‘SNMP Proxy Support’ on page 120).

Security > Manager


4RF SUPERVISOR
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CURRENT PAYLOAD SECURITY PROFILE

Profile Name	migratedKey
Status	Active

PREVIOUS PAYLOAD SECURITY PROFILE

Profile Name	Unknown
Status	Inactive
Activate	□

Apply Cancel

PREDEFINED PAYLOAD SECURITY PROFILE

Profile Name	Payload Security v1
Status	Available
Activate	□

Apply Cancel

Ready
Radio: Base Station
Logout ADMIN

CURRENT PAYLOAD SECURITY PROFILE

Profile Name

This parameter shows the predefined security profile active on the radio.

Status

This parameter displays the status of the predefined security profile on the radio (always active).

PREVIOUS PAYLOAD SECURITY PROFILE

Profile Name

This parameter displays the security profile that was active on the radio prior to the current profile being activated.

Status

This parameter displays the status of the security profile that was active on the radio prior to the current profile being activated.

Option	Function
Active	The security profile is active on the radio.
Inactive	The security profile is not active on the radio but could be activated if required.

Activate

This parameter activates the previous security profile (restores to previous version).

PREDEFINED PAYLOAD SECURITY PROFILE

Profile Name

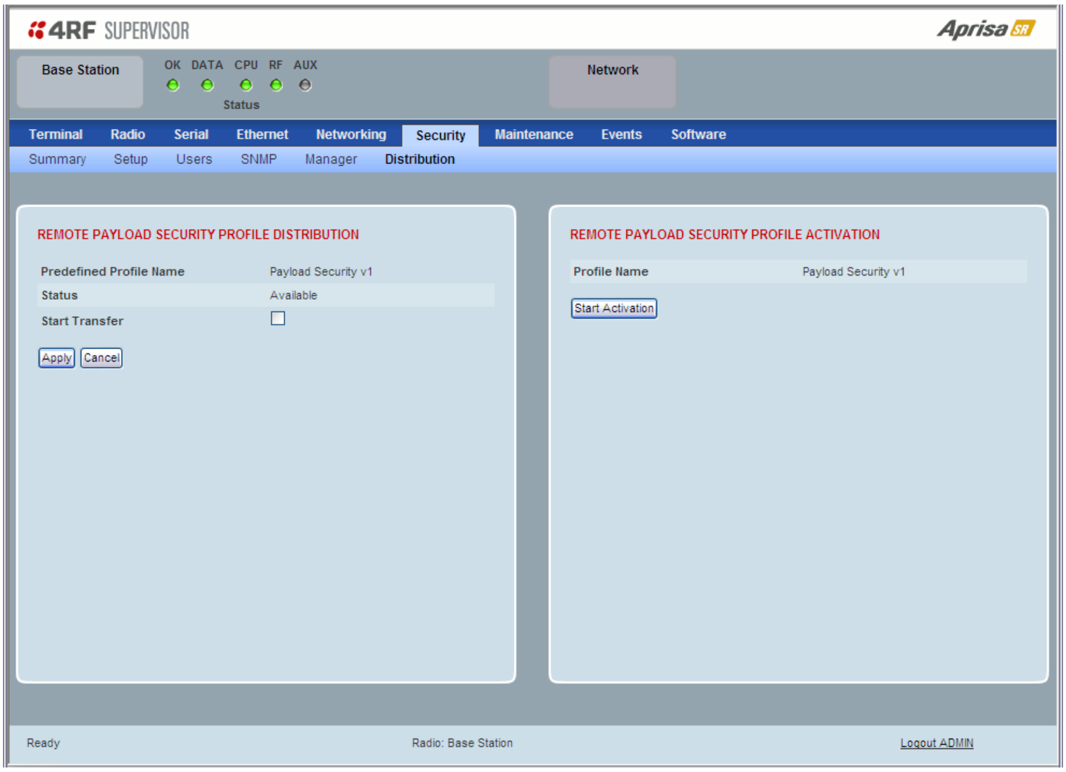
This parameter displays the new security profile that could be activated on the radio or distributed to all remote radios with Security > Distribution.

Status

This parameter displays the status of the new security profile.

Option	Function
Unavailable	A predefined security profile is not available on this radio. To create a predefined security profile, go to 'Security > Setup' on page 117.
Available	A predefined security profile is available on this radio for distribution and activation.

Security > Distribution



REMOTE PAYLOAD SECURITY PROFILE DISTRIBUTION

Predefined Profile Name	Payload Security v1
Status	Available
Start Transfer	□

REMOTE PAYLOAD SECURITY PROFILE ACTIVATION

Profile Name	Payload Security v1

REMOTE PAYLOAD SECURITY PROFILE DISTRIBUTION

Predefined Profile Name

This parameter displays the predefined security profile available for distribution to remote stations.

Status

This parameter shows if a predefined security profile is available for distribution to remote stations.

Option	Function
Unavailable	A predefined payload security profile is not available on this radio.
Available	A predefined payload security profile is available on this radio for distribution and activation.

Start Transfer

This parameter when activated distributes (broadcasts) the new payload security profile to all remote stations in the network.

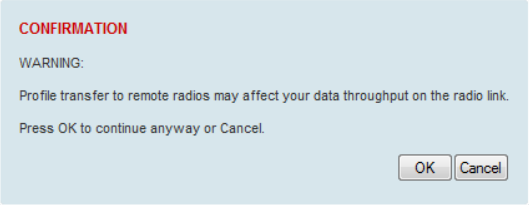
Note: The distribution of the payload security profile to remote stations does not stop customer traffic from being transferred.

Payload security profile distribution traffic is classified as ‘management traffic’ but does not use the Ethernet management priority setting. Security profile distribution traffic priority has a fixed priority setting of ‘very low’.

To distribute the payload security profile to remote stations:

This process assumes that a payload security profile has been setup (see 'Security > Setup' on page 117).

1. Tick Start Transfer and click Apply.



CONFIRMATION

WARNING:

Profile transfer to remote radios may affect your data throughput on the radio link.

Press OK to continue anyway or Cancel.

Note: This process could take up to 1 minute per radio depending on channel size, Ethernet Management Priority setting and the amount of customer traffic on the network.

2. When the distribution is completed, activate the software with the Remote Payload Security Profile Activation.

REMOTE PAYLOAD SECURITY PROFILE ACTIVATION

When the security profile has been distributed to all the remote stations, the security profile is then activated in all the remote stations with this command.

Predefined Profile Name

This parameter displays the predefined security profile available for activation on all remote stations.

To activate the security profile in remote stations:

This process assumes that a security profile has been setup into the base station (see 'Security > Setup' on page 117) and distributed to all remote radios in the network.

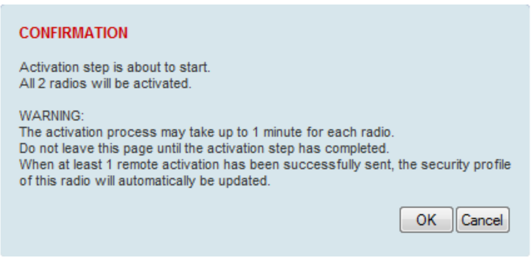
Note: Do not navigate SuperVisor away from this page during the activation process (SuperVisor can lose PC focus).

1. Click Start Activation

The remote stations will be polled to determine which radios require activation:

Result	Function (X of Y)
Remote Radios Polled for New Profile	X is the number of radios polled to determine if the radio contains the new security profile. Y is the number of remote radios registered with the base station.
Remote Radios Activated	X is the number of radios activated. Y is the number of radios with the new security profile requiring activation.
Remote Radios On New Profile	X is the number of radios activated and on the new security profile. Y is the number of radios with the new security profile that have been activated.

When the activation is ready to start:



CONFIRMATION

Activation step is about to start.
All 2 radios will be activated.

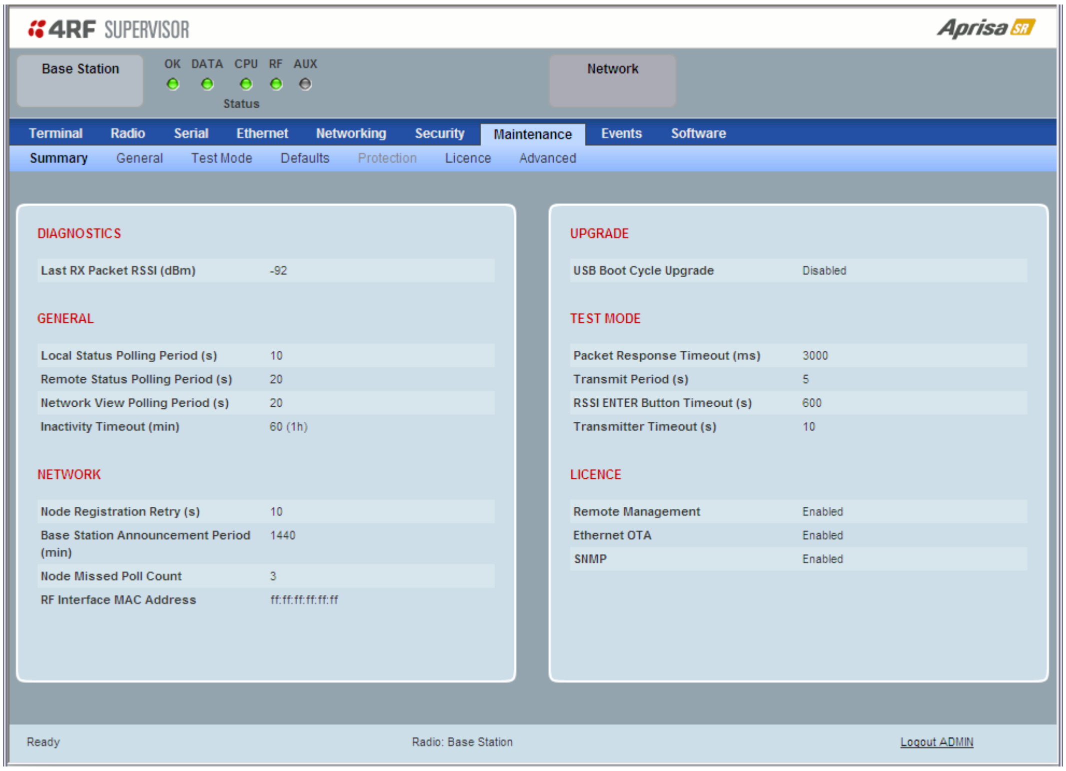
WARNING:
The activation process may take up to 1 minute for each radio.
Do not leave this page until the activation step has completed.
When at least 1 remote activation has been successfully sent, the security profile of this radio will automatically be updated.

3. Click on 'OK' to start the activation process or Cancel to quit.

Maintenance

Maintenance > Summary

This page displays the current settings for the Maintenance parameters.


4RF SUPERVISOR
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Ready
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Logout ADMIN

DIAGNOSTICS

Last RX Packet RSSI (dBm)	-92

GENERAL

Local Status Polling Period (s)	10
Remote Status Polling Period (s)	20
Network View Polling Period (s)	20
Inactivity Timeout (min)	60 (1h)

NETWORK

Node Registration Retry (s)	10
Base Station Announcement Period (min)	1440
Node Missed Poll Count	3
RF Interface MAC Address	ff:ff:ff:ff:ff:ff

UPGRADE

USB Boot Cycle Upgrade	Disabled

TEST MODE

Packet Response Timeout (ms)	3000
Transmit Period (s)	5
RSSI ENTER Button Timeout (s)	600
Transmitter Timeout (s)	10

LICENCE

Remote Management	Enabled
Ethernet OTA	Enabled
SNMP	Enabled

DIAGNOSTICS

Last RX Packet RSSI (dBm)

This parameter displays the receiver RSSI reading taken from the last data packet received.

GENERAL

Local Status Polling Period (sec)

This parameter displays the rate at which SuperVisor refreshes the Local Radio alarm LED states and RSSI value.

Remote Status Polling Period (sec)

This parameter displays the rate at which SuperVisor refreshes the Remote Radio alarm LED states and RSSI value.

Inactivity Timeout (min)

This parameter displays the period of user inactivity before SuperVisor automatically logs out of the radio.

NETWORK

Node Registration Retry (sec)

This parameter displays the base station poll time at startup or the remote / repeater station time between retries until registered.

Base Station Announcement Period (min)

This parameter displays the period between base station polls post startup. The default setting is 1440 minutes (24 hours).

Node Missed Poll Count

This parameter displays the number of times the base station attempts to poll the network at startup or if a duplicate IP is detected when a remote / repeater station is replaced.

RF Interface MAC address

This parameter displays the RF Interface MAC address when the radio is part of a Protected Station.

UPGRADE

USB Boot Cycle Upgrade

This parameter shows the type of USB Boot Cycle upgrade defined in ‘Software Setup > USB Boot Upgrade’ on page 155.

TEST MODE

Packet Response Timeout (ms)

This parameter displays the time Test Mode waits for a response from the base station before it times out and retries.

Transmit Period (sec)

This parameter displays the time between Test Mode requests to the base station.

Response Timeout (ms)

This parameter sets the time Test Mode waits for a response from the base station before it times out and retries. The default setting is 3000 ms.

RSSI Enter Button Timeout (sec)

This parameter displays the Test Mode timeout period. The radio will automatically exit Test Mode after the Timeout period.

Transmitter Timeout (sec)

This parameter displays the transmitter Test Mode timeout period. The radio will automatically exit the transmitter Test Mode after the Timeout period.

LICENCE

Remote Management

This parameter displays if Remote Management is enabled or disabled. The default setting is enabled.

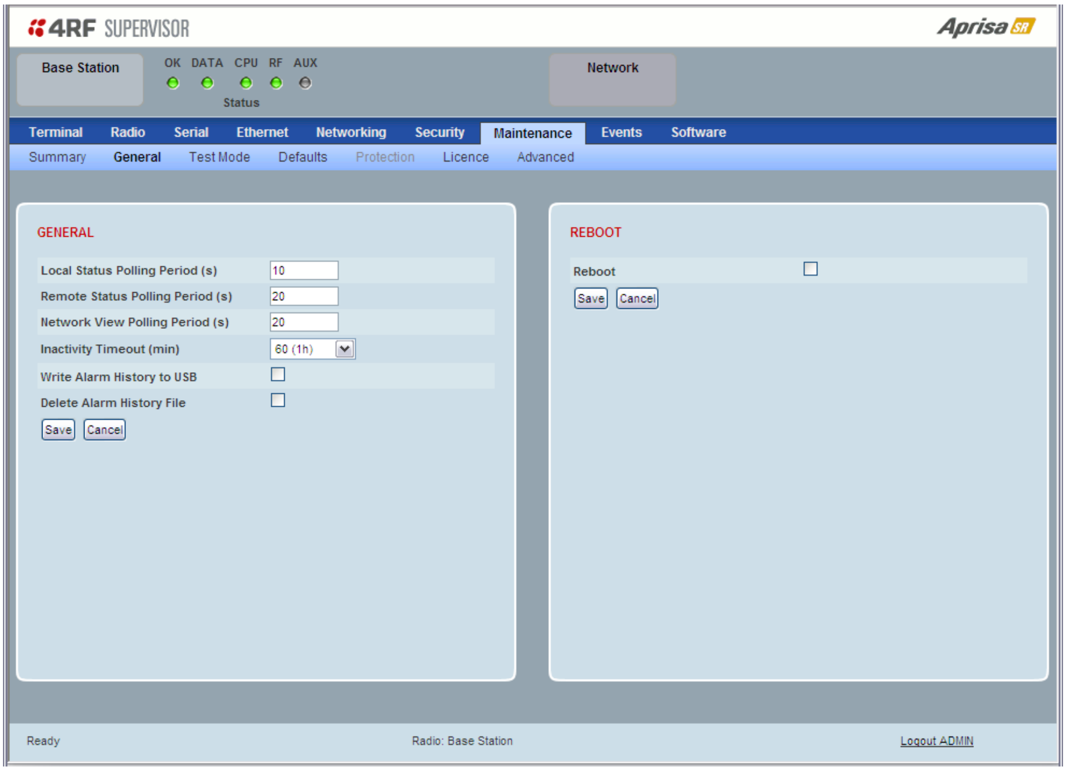
Ethernet OTA (over the air)

This parameter displays if Ethernet traffic is enabled or disabled. The Ethernet OTA will be enabled if the Ethernet feature licence has been purchased (see ‘Maintenance > Licence’ on page 140).

SNMP Management

This parameter displays if SNMP management is enabled or disabled. The default setting is enabled.

Maintenance > General


4RF SUPERVISOR
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GENERAL

Local Status Polling Period (s)	10
Remote Status Polling Period (s)	20
Network View Polling Period (s)	20
Inactivity Timeout (min)	60 (1h)
Write Alarm History to USB	□
Delete Alarm History File	□

Save Cancel

REBOOT

Reboot □

Save Cancel

Ready Radio: Base Station Logout ADMIN

GENERAL

Local Status Polling Period (sec)

This parameter sets the rate at which SuperVisor refreshes the Local Radio alarm LED states and RSSI value. The default setting is 10 seconds.

Network View Polling Period (sec)

This parameter sets the rate at which SuperVisor polls all remote radios for status and alarm reporting. The default setting is 20 seconds.

Remote Status Polling Period (sec)

This parameter sets the rate at which SuperVisor refreshes the Remote Radio alarm LED states and RSSI value. To avoid problems when managing Aprisa SR Networks, ensure that the Remote Polling Period is set to be longer than the Inband Management Timeout (set on page 82). The default setting is 20 seconds.

Inactivity Timeout (min)

This parameter sets the period of user inactivity before SuperVisor automatically logs out of the radio. The default setting is 15 minutes.

Write Alarm History to USB

This parameter when enabled writes the alarm history file to a USB flash drive into the Host Port .

The file is a space delimited text file with a file name in the format 'alarm_ipaddress_date,time' e.g. 'alarm_172.17.10.17_2000-01-13,17.13.45.txt'.

The maximum number of event entries that can be stored is 1500 alarms.

The following table is an example of the alarm history file generated:

Index	Event Name	Severity	State	Time	Additional Information
1	softwareStartUp	information	0	2011-05-08,12:26:31.0	Power on Reset
2	softwareStartUp	information	0	2011-05-08,12:56:33.0	Power on Reset
3	protPeerCommunicationsLost	major	1	2011-05-08,12:56:39.0	Ethernet Comm Lost with Peer
4	protSwitchOccurred	information	0	2011-05-08,12:56:39.0	Keepalive missed from Active
5	protPeerCommunicationsLost	cleared	2	2011-05-08,12:56:40.0	Alarm Cleared
6	rfNoReceiveData	warning	1	2011-05-08,12:56:53.0	RF No Rx Data for 6 seconds
7	eth2NoRxData	warning	1	2011-05-08,12:57:03.0	ETH2 has not received data for 21 seconds
8	rfNoReceiveData	cleared	2	2011-05-08,12:57:05.0	
9	rfNoReceiveData	warning	3	2011-05-08,12:57:12.0	RF No Rx Data for 6 seconds
10	rfNoReceiveData	cleared	4	2011-05-08,12:57:23.0	
11	serialNoRxData	warning	1	2011-05-08,12:57:25.0	Serial has not received data for 44 seconds
12	rfNoReceiveData	warning	5	2011-05-08,12:57:29.0	RF No Rx Data for 6 seconds
13	rfNoReceiveData	cleared	6	2011-05-08,12:57:59.0	

State

The State column is an indication of whether the event is active or not. An even number indicates an inactive state while an odd number indicates an active state.

The AUX LED will flash orange while the file is copying to the USB flash drive.

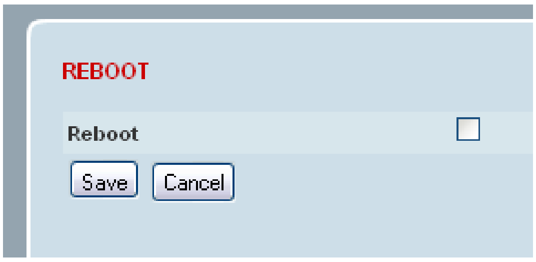
Delete Alarm History file

This parameter when activated deletes the alarm history file stored in the radio.

REBOOT

To reboot the radio:

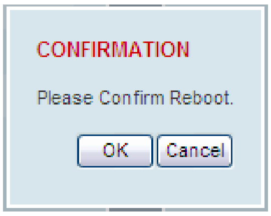
1. Select Maintenance > General.
2. Tick the ‘Reboot’ checkbox.



REBOOT

Reboot □

3. Click ‘Save’ to apply the changes or ‘Cancel’ to restore the current value.



CONFIRMATION

Please Confirm Reboot.

4. Click ‘OK’ to reboot the radio or ‘Cancel’ to abort.

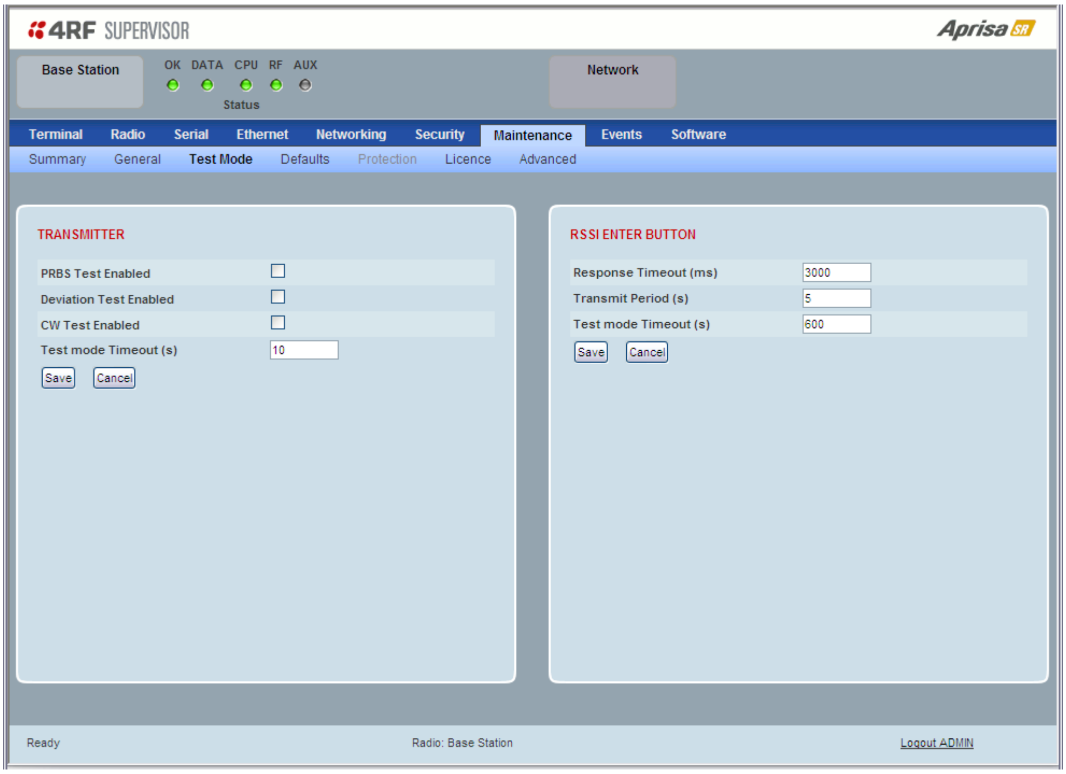
All the radio LEDS will flash repeatedly for 1 second.

The radio will be operational again in about 10 seconds.

The OK, DATA, and CPU LEDS will light green and the RF LED will be green if the network is operating correctly.

5. Login to SuperVisor.

Maintenance > Test Mode


4RF SUPERVISOR
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Summary General Test Mode Defaults Protection Licence Advanced
Save Cancel
Ready
Radio: Base Station
Logout ADMIN

TRANSMITTER

PRBS Test Enabled	☐
Deviation Test Enabled	☐
CW Test Enabled	☐
Test mode Timeout (s)	10

RSSI ENTER BUTTON

Response Timeout (ms)	3000
Transmit Period (s)	5
Test mode Timeout (s)	600

TRANSMITTER

PRBS Test Enabled

When active, the transmitter outputs a continuous PRBS signal. This can be used for evaluating the output spectrum of the transmitter and verifying adjacent channel power and spurious emission products.

Deviation Test Enabled

When active, the transmitter outputs a sideband tone at the deviation frequency used by the CPFSK modulator. This can be used to evaluate the local oscillator leakage and sideband rejection performance of the transmitter.

CW Test Enabled

When active, the transmitter outputs a continuous wave signal. This can be used to verify the frequency stability of the transmitter.

Test Mode Timeout (s)

This parameter sets the Transmitter Test Mode timeout period. The radio will automatically exit Transmitter Test Mode after the Timeout period. The default setting is 10 seconds.

RSSI ENTER BUTTON

Response Timeout (ms)

This parameter sets the time RSSI Test Mode waits for a response from the base station before it times out and retries. The default setting is 3000 ms.

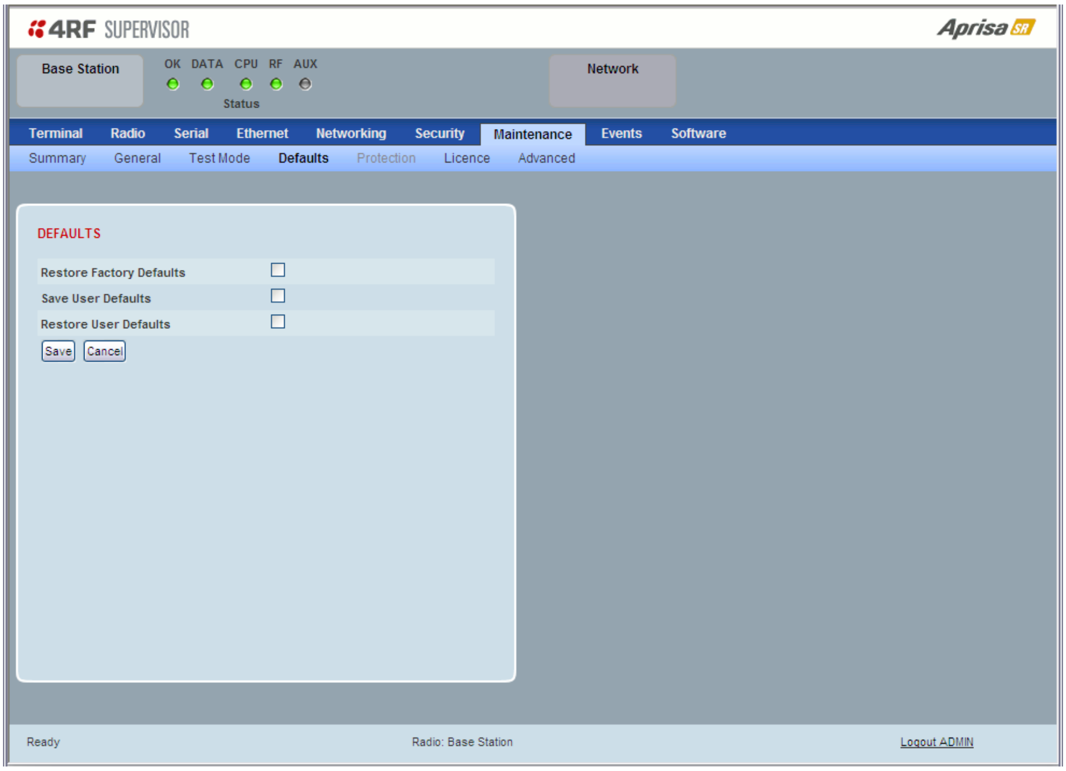
Transmit Period (sec)

This parameter sets the time between RSSI Test Mode requests to the base station. The default setting is 5 seconds.

Test Mode Timeout (s)

This parameter sets the RSSI Test Mode timeout period. The radio will automatically exit RSSI Test Mode after the Timeout period. The default setting is 600 seconds.

Maintenance > Defaults


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary General Test Mode Defaults Protection Licence Advanced

DEFAULTS

Restore Factory Defaults	□
Save User Defaults	□
Restore User Defaults	□

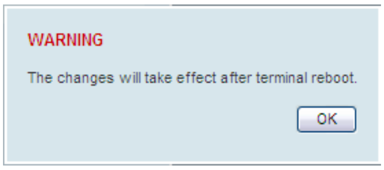
Save Cancel
Ready
Radio: Base Station
Logout ADMIN

DEFAULTS

The Maintenance Defaults page is only available for the local terminal.

Restore Factory Defaults

When activated, all radio parameters will be set to the factory default values. This includes resetting the radio IP address to the default of 169.254.50.10.


WARNING

The changes will take effect after terminal reboot.

Note: Take care using this command.

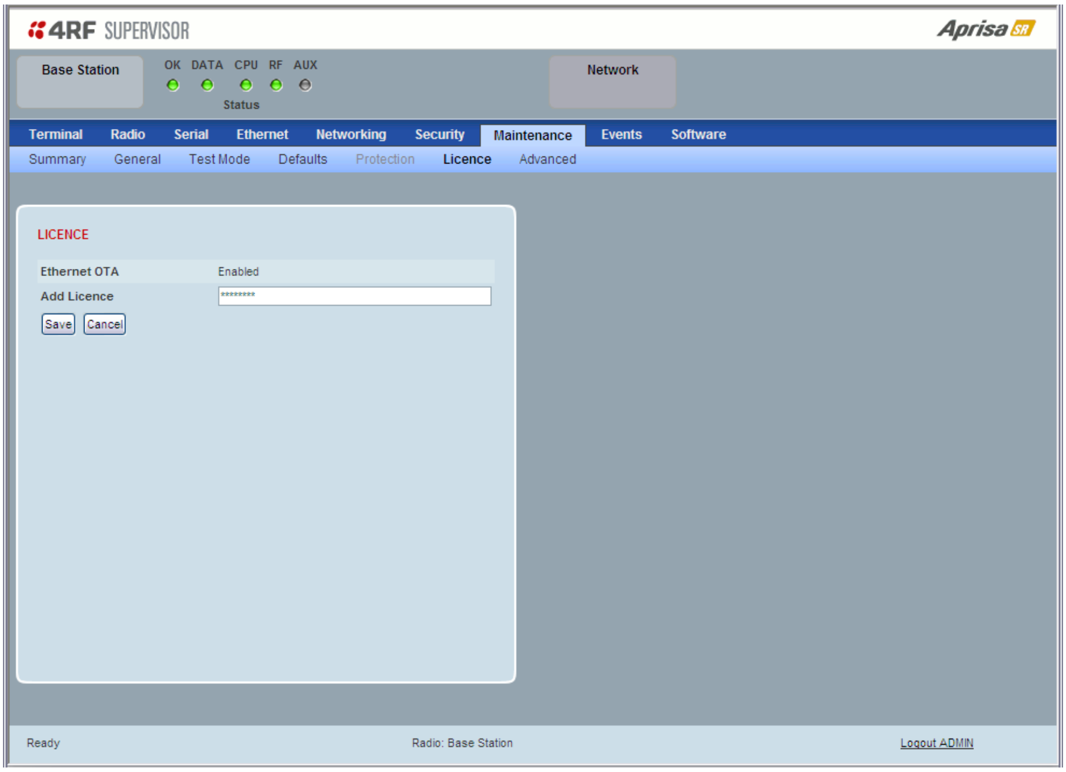
Save User Defaults

When activated, all current radio parameter settings will be saved to non-volatile memory within the radio.

Restore User Defaults

When activated, all radio parameters will be set to the settings previously saved using ‘Save User Defaults’.

Maintenance > Licence



LICENCE

Ethernet OTA	Enabled
Add Licence	********

LICENCE

Fully Featured Radio

When a fully featured Aprisa SR radio is purchased (indicated by the AA), it contains the licences which activate Remote Management, Ethernet Traffic, and SNMP Management e.g.

Part Number	Part Description
APSR-N400-012-SO-12-ETAA	4RF Aprisa SR, BR, 400-470 MHz, 12.5 kHz, SO, 12 VDC, ET, AA

Serial Only Radio

If a Serial Only Aprisa SR radio is purchased (indicated by the A1), Ethernet Traffic is not enabled.

Part Number	Part Description
APSR-N400-012-SO-12-ETA1	4RF Aprisa SR, BR, 400-470 MHz, 12.5 kHz, SO, 12 VDC, ET, A1

Feature Licences

Feature Licences can be purchased to enable features if they were not purchased initially.

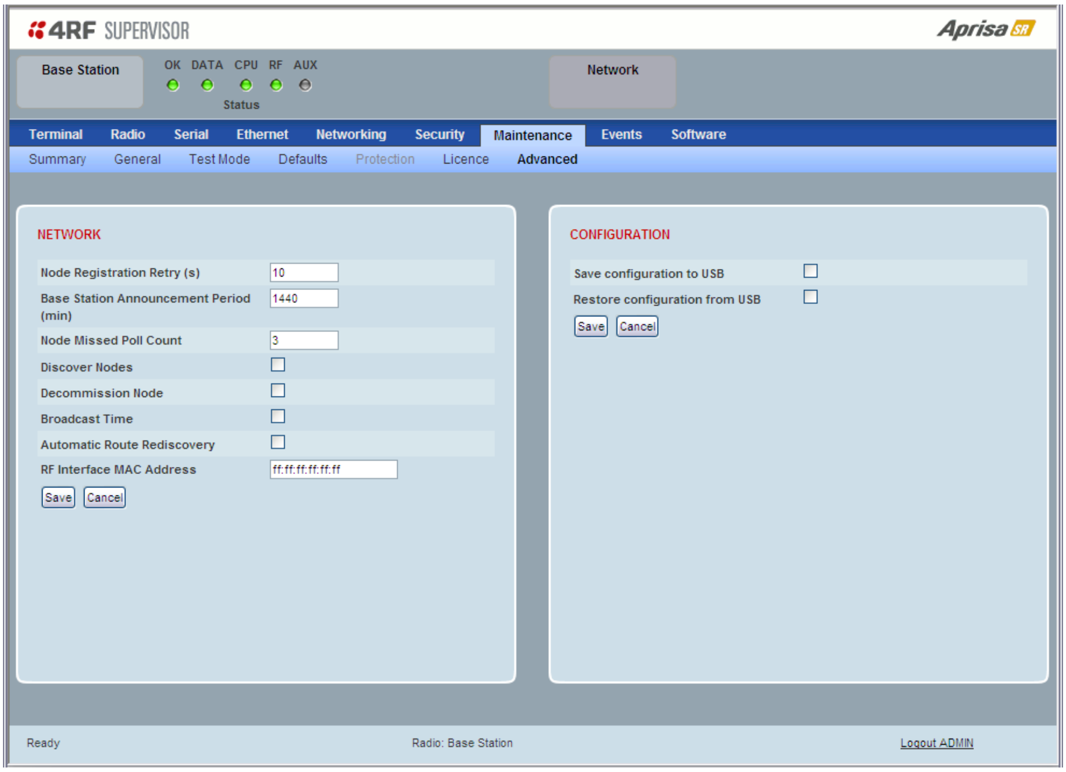
One license key is required per feature and per radio serial number.

Part Number	Part Description
APSA-LSRF-FET	4RF Aprisa SR Acc, Licence, Feature, Ethernet Traffic

When Ethernet traffic is enabled, the Ethernet port status must be set to enabled to allow Ethernet data communication over the radio link (see ‘Ethernet > Port Setup’ on page 108).

In this software version, Remote Management and SNMP management are enabled by default.

Maintenance > Advanced



NETWORK

Node Registration Retry (s)	10
Base Station Announcement Period (min)	1440
Node Missed Poll Count	3
Discover Nodes	□
Decommission Node	□
Broadcast Time	□
Automatic Route Rediscovery	□
RF Interface MAC Address	ff:ff:ff:ff:ff:ff

CONFIGURATION

Save configuration to USB	□
Restore configuration from USB	□

NETWORK

Node Registration Retry (sec)

This parameter sets the base station poll time at startup or the remote / repeater station time between retries until registered. The default setting is 10 seconds.

Base Station Announcement Period (min)

This parameter sets the period between base station polls post startup. The default setting is 1440 minutes (24 hours).

When a new base station powers on, it announces its presence and each remote that receives the announcement message will be advised that a new base station is present and that they should re-register. This allows the new base station to populate its Network Table, with knowledge of the nodes in the network.

If, during this initial period, there is some temporary path disturbance to one or more remotes, they may miss the initial announcement messages and be left unaware of the base station change. For this reason, the base station must periodically send out announcement messages to pick up any stray nodes and the period of these messages is the base station Announcement Period.

Setting this parameter to 0 will stop periodic announcement messages being transmitted.

If a critical parameter is changed in the base station, such as IP address, then the change is distributed to the network using base station announcement message. Note that in this case, an announcement is sent immediately independent of the Announcement Period setting.

Node Missed Poll Count

This parameter sets the number of times the base station attempts to poll the network at startup or if a duplicate IP is detected when a remote / repeater station is replaced. The default setting is 3.

Discover Nodes

This parameter when activated triggers the base station to poll the network with Node Missed Poll Count and Node Registration Retry values.

Decommission Node

This parameter when activated resets the network registrations to remove the entire network from service.

Note: Take care using this option.

Broadcast Time

This parameter when activated sends the base station Date / Time setting to all the remote and repeater stations in the network and sets their Date / Time. This option applies to the base station only.

Automatic Route Rediscovery

This parameter enables the radio to transmit route discovery messages when packets are unacknowledged.

When enabled, unacknowledged unicast packets are converted into uni-broadcast messages and sent through the network. All nodes see the message and populate their routing tables accordingly.

When the destination node is reached, it sends a route response message via the shortest path. The intermediate nodes see this message and populate their routing tables in the reverse direction, thus re-establishing the route.

The default setting is disabled.

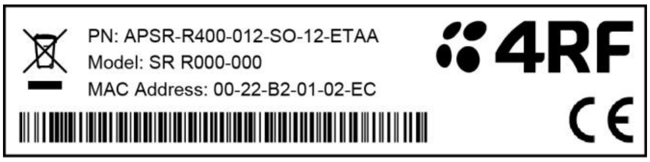
RF Interface MAC address

This parameter is only applicable when the radio is part of a Protected Station.

This RF Interface MAC address is used to define the MAC address of the Protection Switch. This address is entered into both Protected Station radios in the factory.

If a replacement Protection Switch is installed, the replacement unit MAC address must be entered in both radios (see ‘Replacing a Faulty Protection Switch’ on page 37).

The Protection Switch RF Interface MAC address is shown on the Protection Switch label:



PN: APSR-R400-012-SO-12-ETAA
Model: SR R000-000
MAC Address: 00-22-B2-01-02-EC

CONFIGURATION

Save Configuration to USB

This parameter saves all user configuration settings to a binary encrypted file on the USB root directory with filename of asrcfg_1.6.2. Some parameters are not saved e.g. security passwords, licence keys etc.

Restore Configuration from USB

This parameter restores all user configuration settings from a binary encrypted file on the USB root directory with filename of asrcfg_1.6.2.

Note: Activating this function will over-write all existing configuration settings in the radio (except for the non-saved settings e.g. security passwords, licence keys etc).

Events

The Events menu contains the setup and management of the alarms, alarm events and traps.

Events > Alarm Summary

There are two types of events that can be generated on the Aprisa SR radio. These are:

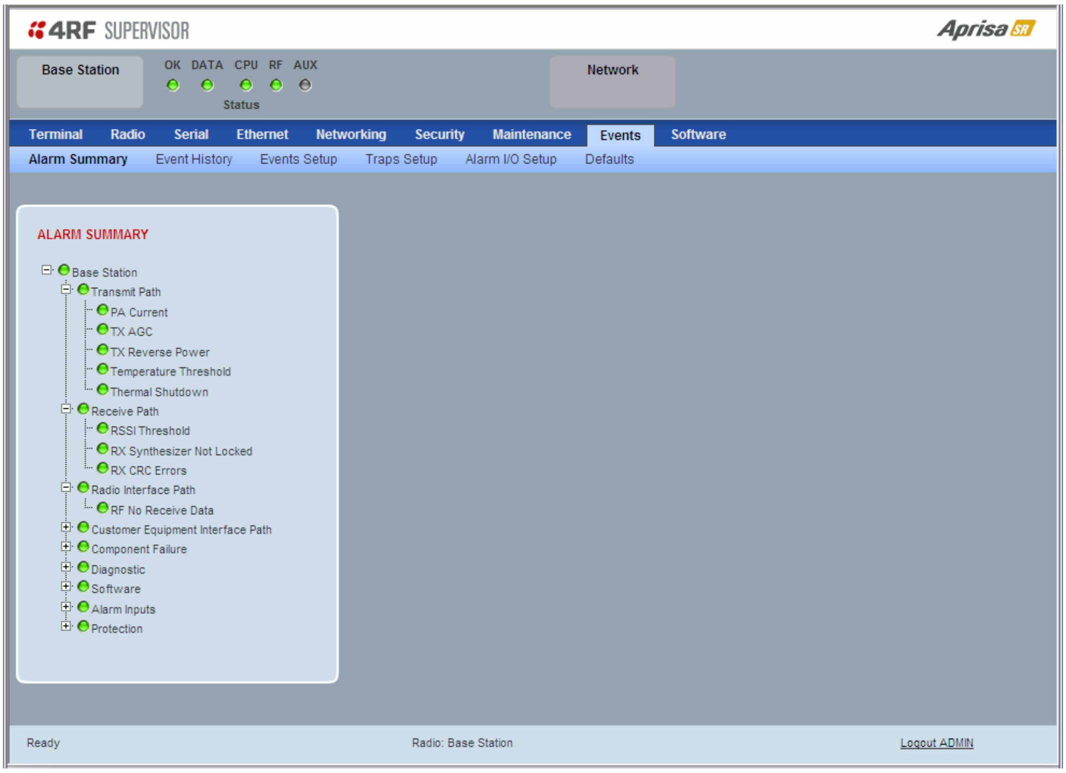
1. Alarm Events

Alarm Events are generated to indicate a problem on the radio.

2. Informational Events

Informational Events are generated to provide information on key activities that are occurring on the radio. These events do not indicate an alarm on the radio and are used to provide information only.

See ‘Alarm Types and Sources’ on page 228 for a complete list of events.

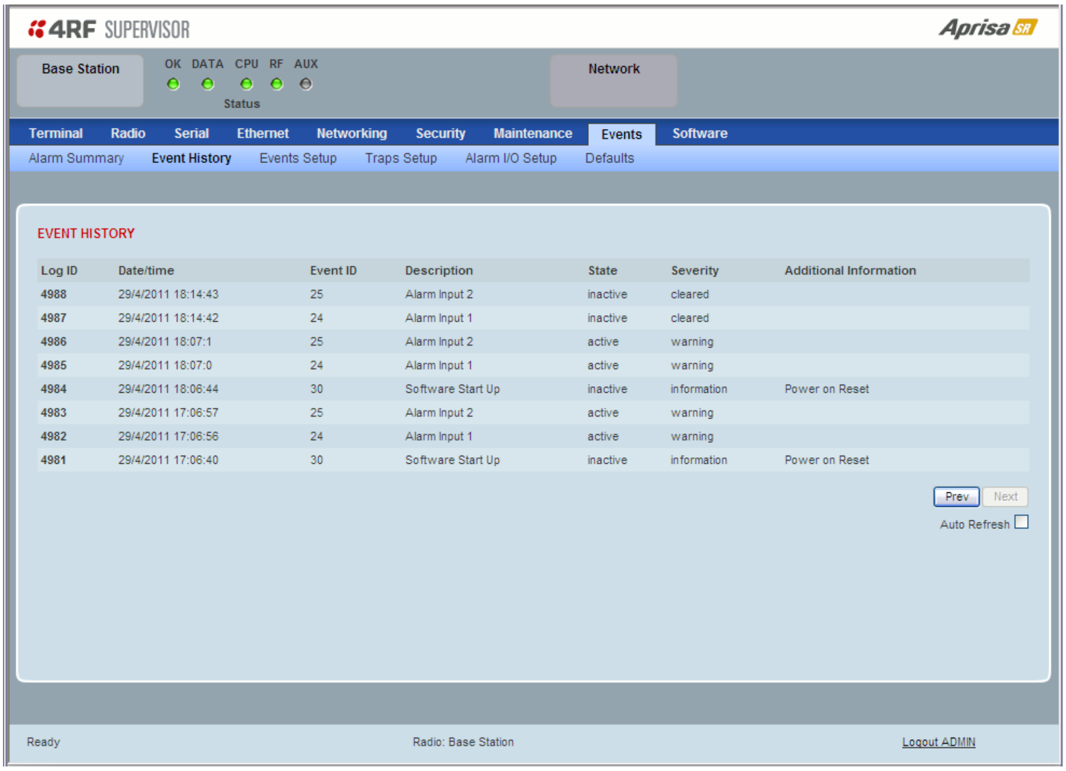


ALARM SUMMARY

The Alarm Summary is a display tree that displays the current states of all radio alarms. The alarm states refresh automatically every 12 seconds.

LED Colour	Severity
Green	No alarm
Orange	Warning alarm
Red	Critical, major or minor alarm

Events > Event History



EVENT HISTORY

Log ID	Date/time	Event ID	Description	State	Severity	Additional Information
4988	29/4/2011 18:14:43	25	Alarm Input 2	inactive	cleared	
4987	29/4/2011 18:14:42	24	Alarm Input 1	inactive	cleared	
4986	29/4/2011 18:07:1	25	Alarm Input 2	active	warning	
4985	29/4/2011 18:07:0	24	Alarm Input 1	active	warning	
4984	29/4/2011 18:06:44	30	Software Start Up	inactive	information	Power on Reset
4983	29/4/2011 17:06:57	25	Alarm Input 2	active	warning	
4982	29/4/2011 17:06:56	24	Alarm Input 1	active	warning	
4981	29/4/2011 17:06:40	30	Software Start Up	inactive	information	Power on Reset

Auto Refresh □

EVENT HISTORY

The last 1500 events are stored in the radio. The complete event list can be downloaded to a USB flash drive (see 'Write Alarm History to USB' on page 135).

The Event History can display the last 50 events stored in the radio in blocks of 8 events.

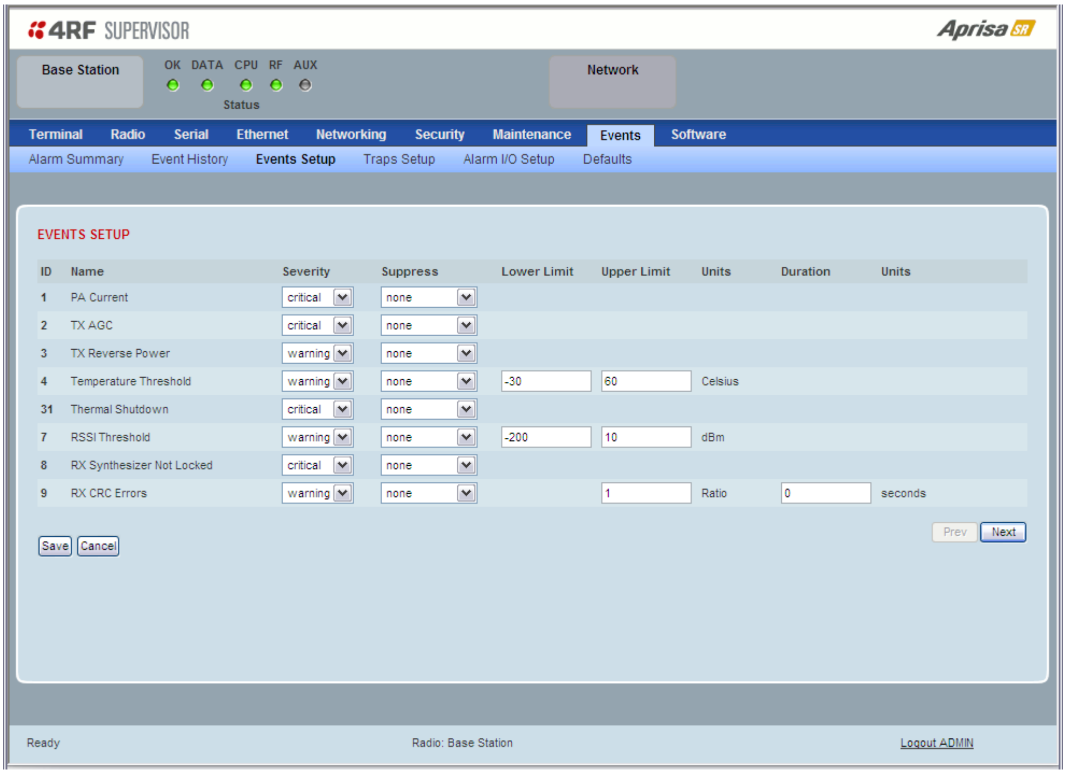
The Next button will display the next page of 8 events and the Prev button will display the previous page of 8 events. Using these buttons will disable Auto Refresh to prevent data refresh and page navigation contention.

The last 50 events stored in the radio are also accessible via an SNMP command.

Auto Refresh

The Event History page selected will refresh automatically every 12 seconds if the Auto Refresh is ticked.

Events > Events Setup



EVENTS SETUP

ID	Name	Severity	Suppress	Lower Limit	Upper Limit	Units	Duration	Units
1	PA Current	critical	none					
2	TX AGC	critical	none					
3	TX Reverse Power	warning	none					
4	Temperature Threshold	warning	none	-30	60	Celsius		
31	Thermal Shutdown	critical	none					
7	RSSI Threshold	warning	none	-200	10	dBm		
8	RX Synthesizer Not Locked	critical	none					
9	RX CRC Errors	warning	none		1	Ratio	0	seconds

EVENTS SETUP

Alarm event parameters can be configured for all alarm events (see ‘Alarm Events’ on page 228).

All active alarms for configured alarm events will be displayed on the Parameters page (see ‘Terminal > Parameters’ on page 87). This Switch and Block parameters are only visible / applicable when the radio is part of a Protected Station.

Severity

The Severity parameter sets the alarm severity.

Severity	Function
Critical	The Critical severity level indicates that a service affecting condition has occurred and an immediate corrective action is required. Such a severity can be reported, for example, when a managed object becomes totally out of service and its capability must be restored.
Major	The Major severity level indicates that a service affecting condition has developed and an urgent corrective action is required. Such a severity can be reported, for example, when there is a severe degradation in the capability of the managed object and its full capability must be restored.
Minor	The Minor severity level indicates the existence of a non-service affecting fault condition and that corrective action should be taken in order to prevent a more serious (for example, service affecting) fault. Such a severity can be reported, for example, when the detected alarm condition is not currently degrading the capacity of the managed object.
Warning	The Warning severity level indicates the detection of a potential or impending service affecting fault, before any significant effects have been felt. Action should be taken to further diagnose (if necessary) and correct the problem in order to prevent it from becoming a more serious service affecting fault.
Information	No problem indicated – purely information

Suppress

This parameter determines if the action taken by an alarm.

Option	Function
None	Alarm triggers an event trap and is logged in the radio
Traps	Alarm is logged in the radio but does not trigger an event trap
Traps and Log	Alarm neither triggers an event trap nor is logged in the radio

Lower Limit / Upper Limit

Threshold alarm events have lower and upper limit settings. The alarm is activated if the current reading is outside the limits.

Example: 9 RX CRC Errors

The Upper Limit is set to 0.7 and the Duration is set to 5 seconds.

If in any 5 second period, the total number of errored packets divided by the total number of received packets exceeds 0.7, the alarm will activate.

Units (1)

The Units parameter shows the unit for the Lower Limit and Upper Limit parameters.

Duration

This parameter determines the period to wait before an alarm is raised if no data is received.

Units (2)

This parameter shows the unit for the Duration parameters.

Switch

This parameter determines if the alarm when active causes a switch over of the Protection Switch.

This parameter is only applicable when the radio is part of a Protected Station.

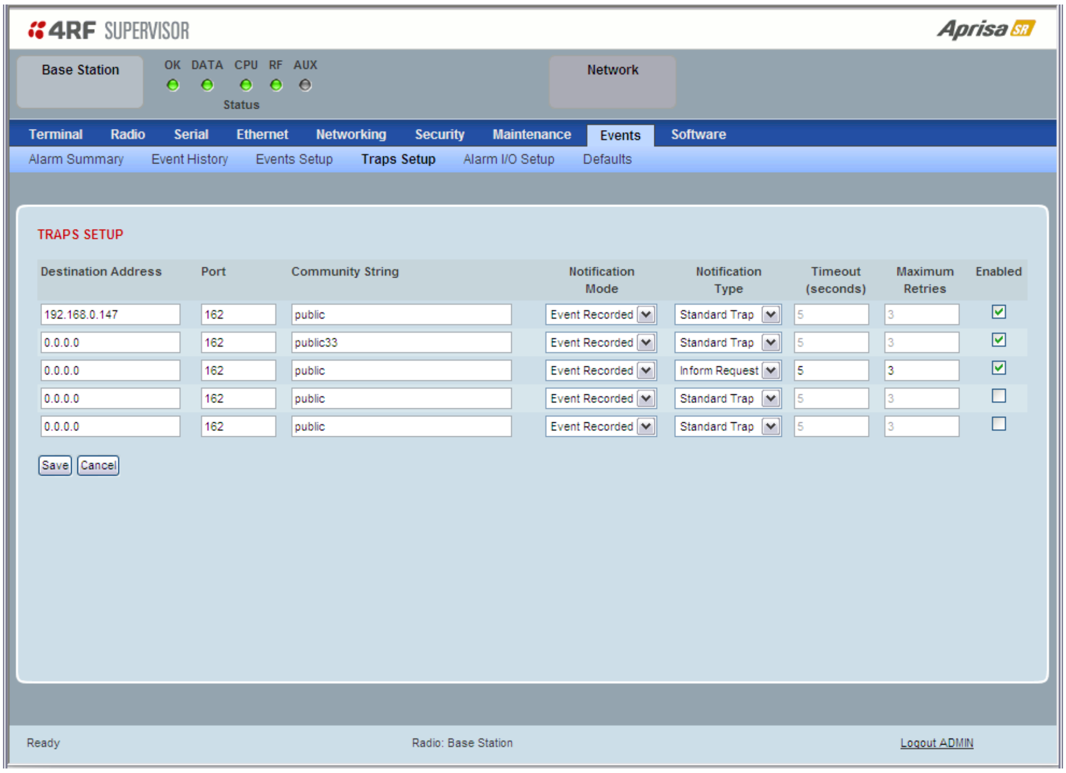
Block

This parameter determines if the alarm is prevented from causing a switch over of the Protection Switch.

This parameter is only applicable when the radio is part of a Protected Station.

The Next button will display the next page of 8 alarm events and the Prev button will display the previous page of 8 alarm events.

Events > Traps Setup


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Alarm Summary Event History Events Setup Traps Setup Alarm I/O Setup Defaults

TRAPS SETUP

Destination Address	Port	Community String	Notification Mode	Notification Type	Timeout (seconds)	Maximum Retries	Enabled
192.168.0.147	162	public	Event Recorded	Standard Trap	5	3	☑
0.0.0.0	162	public33	Event Recorded	Standard Trap	5	3	☑
0.0.0.0	162	public	Event Recorded	Inform Request	5	3	☑
0.0.0.0	162	public	Event Recorded	Standard Trap	5	3	□
0.0.0.0	162	public	Event Recorded	Standard Trap	5	3	□

TRAPS SETUP

All events can generate SNMP traps. The types of traps that are supported are defined in the ‘Notification Mode’.

Destination Address

This parameter sets the IP address of the server running the SNMP manager.

Port

This parameter sets the port number the server running the SNMP manager.

Community String

This parameter sets the community string which is sent with the IP address for security. The default community string is ‘public’.

Notification Mode

This parameter sets when an event related trap is sent:

Option	Function
None	No event related traps are sent.
Event Recorded	When an event is recorded in the event history log, a trap is sent.
Event Updated	When an event is updated in the event history log, a trap is sent.
All Events	When an event is recorded or updated in the event history log, a trap is sent.

Notification Type

This parameter sets the type of event notification:

Option	Function
Standard Trap	Provides a standard SNMP trap event
Inform Request	Provides a SNMP v2 Inform Request trap event including trap retry and acknowledgement

Notification Type set to Inform Request:

Timeout (second)

This parameter sets the time interval to wait for an acknowledgement before sending another retry.

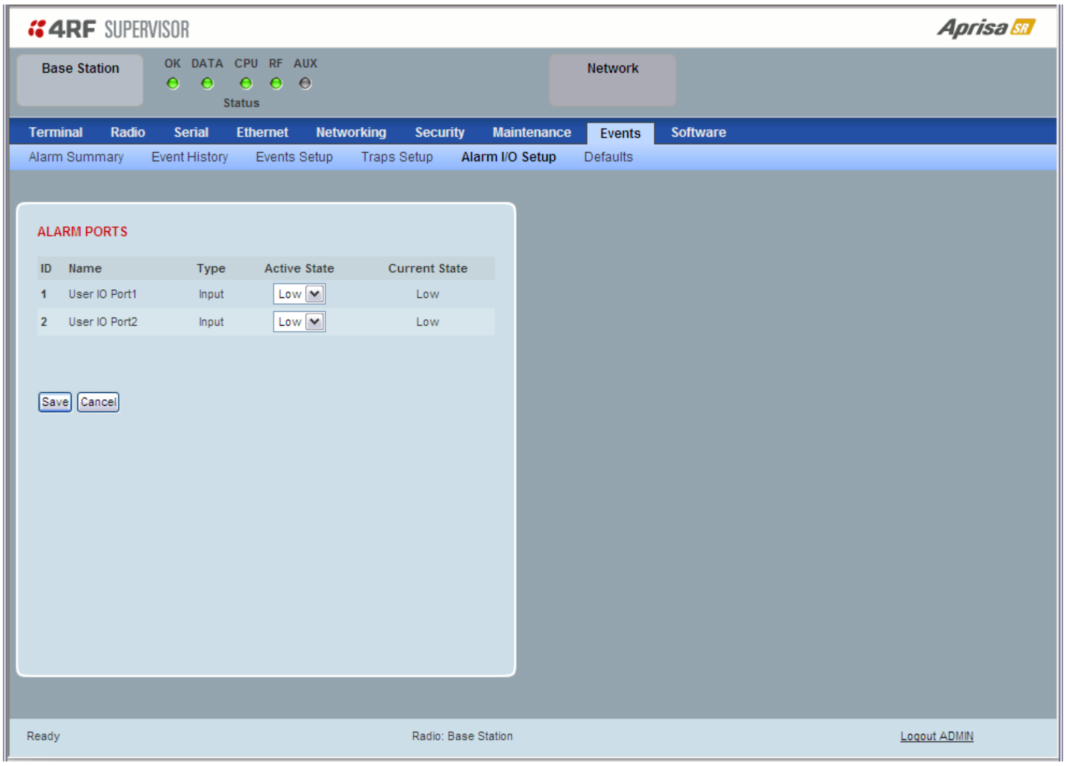
Maximum Retries

This parameter sets the maximum number of retries to send the event without acknowledgement before it gives up.

Enabled

This parameter determines if the entry is used.

Events > Alarm I/O Setup


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Alarm Summary Event History Events Setup Traps Setup Alarm I/O Setup Defaults
Save Cancel
Ready
Radio: Base Station
Logout ADMIN

ALARM PORTS

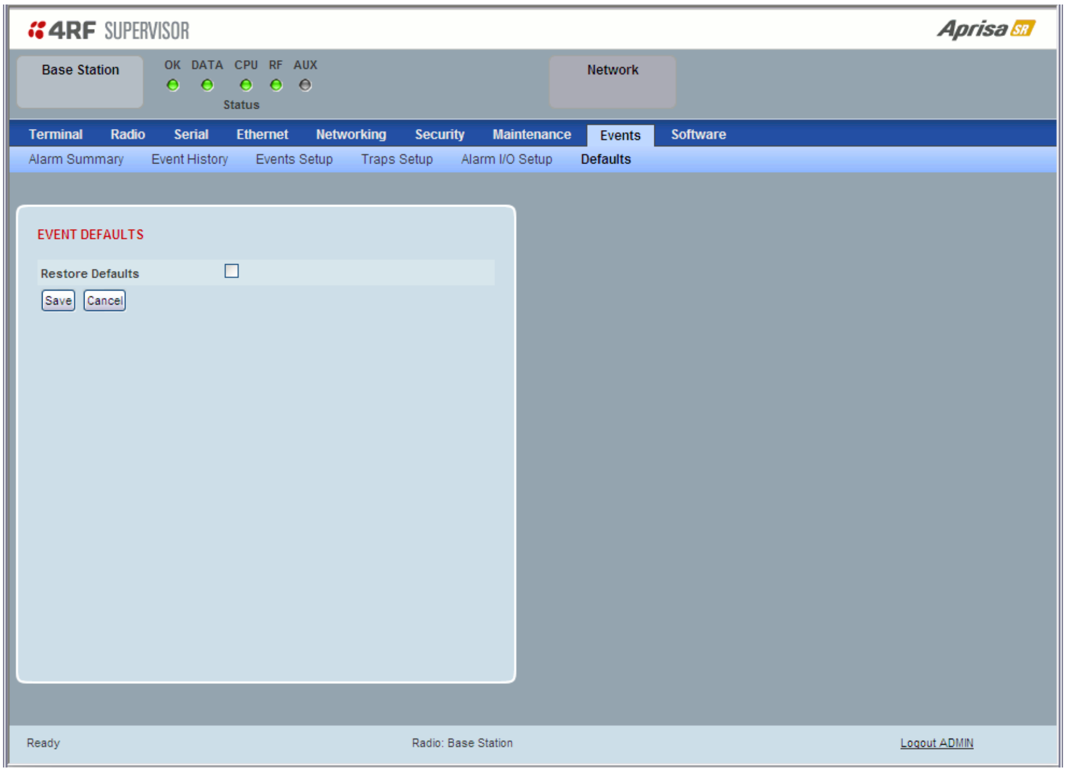
ID	Name	Type	Active State	Current State
1	User IO Port1	Input	Low	Low
2	User IO Port2	Input	Low	Low

ALARM PORTS

This page provides control of the two hardware alarm inputs provided on the power and alarm connector. These alarms are only available when the station is non protected (see ‘Hardware Alarms Connections’ on page 227).

Option	Function
Low	The alarm is active low i.e. a logic 0 on the port will cause an alarm state
High	The alarm is active high i.e. a logic 1 on the port will cause an alarm state

Events > Defaults



EVENT DEFAULTS

Restore Defaults □

EVENT DEFAULTS

Restore Defaults

This parameter when activated restores all previously configured event parameters using ‘Events > Events Setup’ to the factory default settings.

Software

The Software menu contains the setup and management of the system software including network software distribution and activation.

Single Radio Software Upgrade

The radio software can be upgraded on a single radio single Aprisa SR radio (see ‘Single Radio Software Upgrade’ on page 223). This process would only be used if the radio was a replacement or a new station in an existing network.

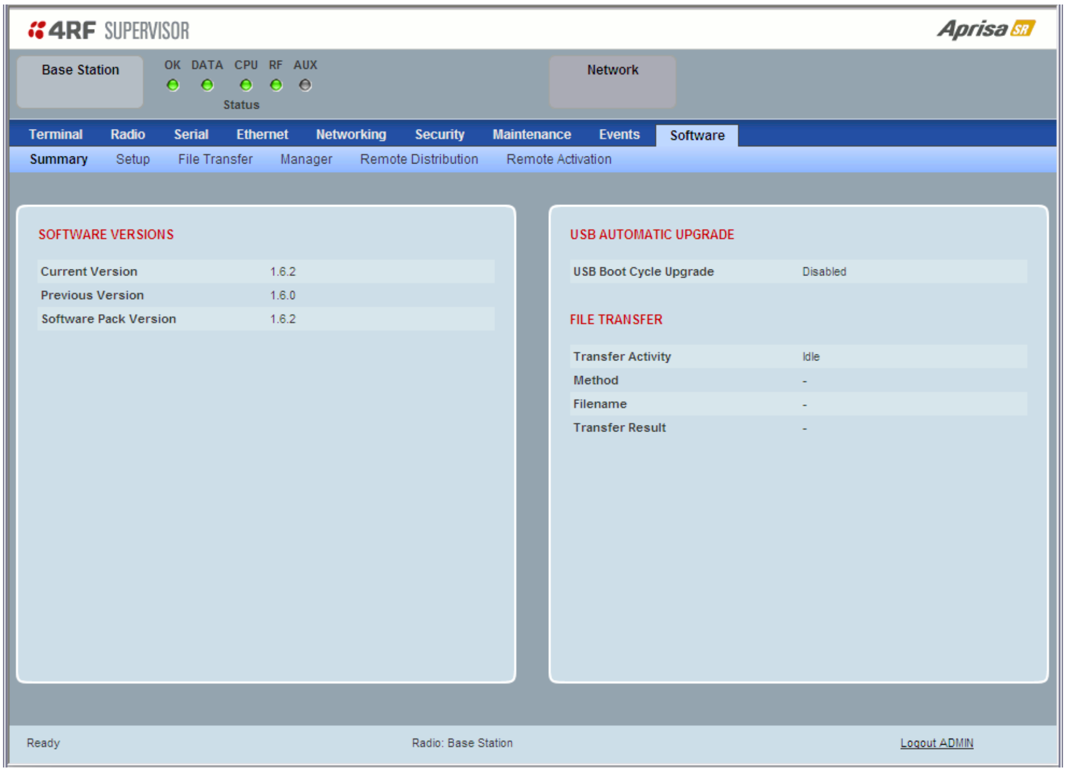
Network Software Upgrade

The radio software can be upgraded on an entire Aprisa SR radio network remotely over the radio link (see ‘Network Software Upgrade’ on page 222). This process involves following steps:

1. Transfer the new software to base station with ‘Software > File Transfer’
2. Distribute the new software to all remote stations with ‘Software > Remote Distribution’
3. Activate of the new software on remote stations with ‘Software > Remote Activation’.
4. Finally, activate the new software on the base station radio with ‘Software > Manager’. Note: activating the software will reboot the radio.

Software > Summary

This page provides a summary of the software versions installed on the radio, the setup options and the status of the File Transfer.


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup File Transfer Manager Remote Distribution Remote Activation

SOFTWARE VERSIONS

Current Version	1.6.2
Previous Version	1.6.0
Software Pack Version	1.6.2

USB AUTOMATIC UPGRADE

USB Boot Cycle Upgrade	Disabled

FILE TRANSFER

Transfer Activity	Idle
Method	-
Filename	-
Transfer Result	-

Ready

Radio: Base Station

Logout ADMIN

SOFTWARE VERSIONS

Current Version

This parameter displays the software version running on the radio.

Previous Version

This parameter displays the software version that was running on the radio prior to the current software being activated.

Software Pack Version

On the base station, this parameter displays the software version available for distribution to all radios in the network.

On the all stations, this parameter displays the software version ready for activation.

USB AUTOMATIC UPGRADE

USB Boot Upgrade

This parameter shows the type of USB Boot upgrade defined in ‘Software Setup > USB Boot Upgrade’ on page 155.

FILE TRANSFER

Transfer Activity

This parameter shows the status of the transfer, ‘Idle’, ‘In Progress’ or ‘Completed’.

Method

This parameter shows the file transfer method.

File

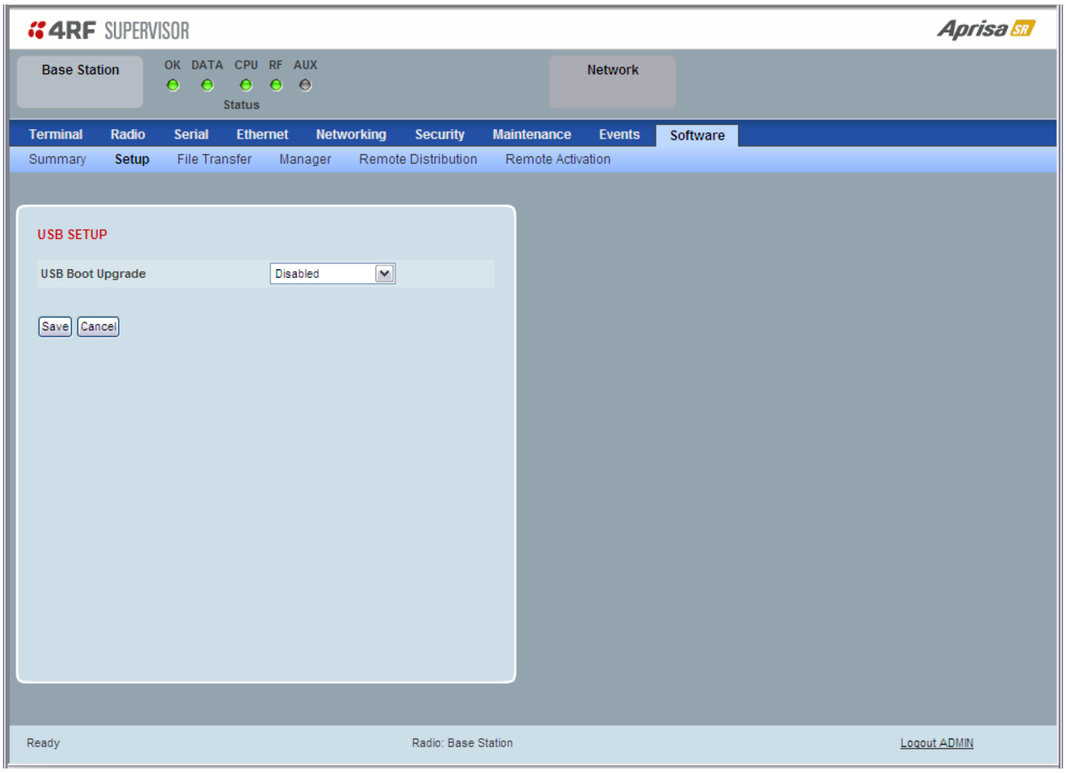
This parameter shows the software file source.

Transfer Result

This parameter shows the progress of the transfer.

Software > Setup

This page provides the setup of the USB flash drive containing a Software Pack.


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup File Transfer Manager Remote Distribution Remote Activation
Save Cancel
Ready
Radio: Base Station
Logout ADMIN

USB SETUP

USB Boot Upgrade: Disabled

USB SETUP

USB Boot Upgrade

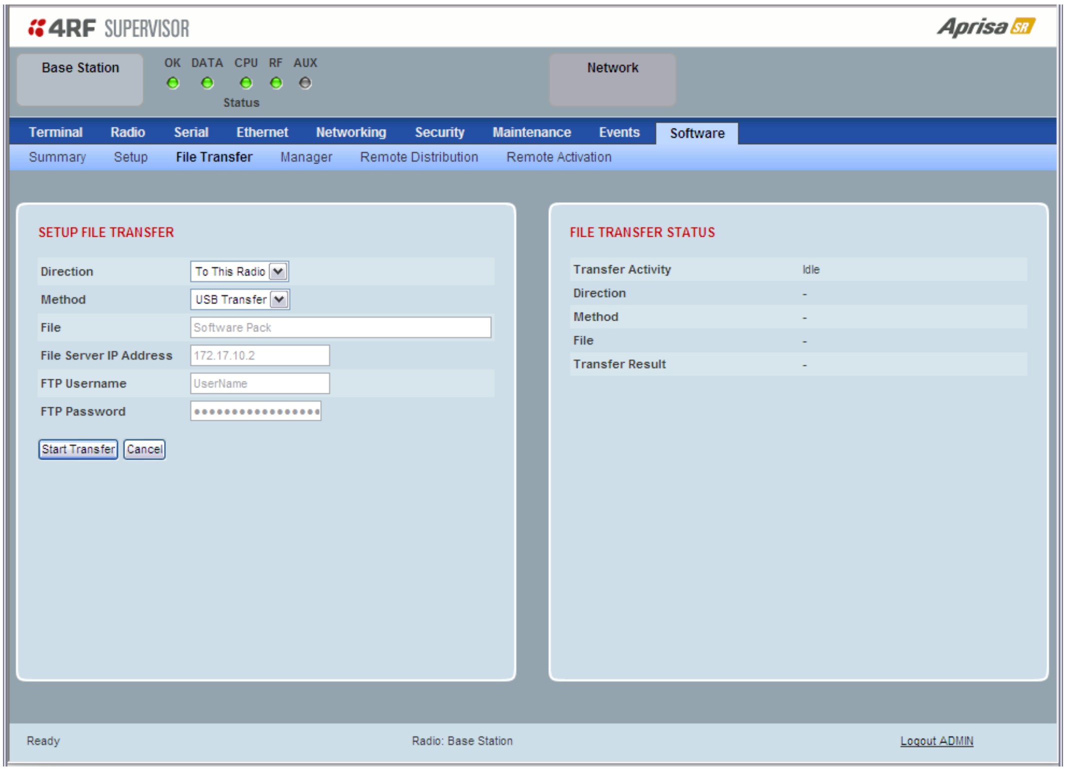
This parameter determines the action taken when the radio power cycles and finds a USB flash drive in the Host port. The default setting is ‘Load and Activate’.

Option	**Function**
Load and Activate	New software will be uploaded from a USB flash drive in to the Aprisa SR when the radio is power cycled and activated automatically.
Load Only	New software will be uploaded from a USB flash drive in to the Aprisa SR when the radio is power cycled. The software will need to be manually activated (see ‘Software > Manager’ on page 159).
Disabled	Software will not be uploaded from a USB flash drive into the Aprisa SR when the radio is power cycled.

Note: This parameter must be set to ‘Disabled’ if the ‘File Transfer and Activate’ method of upgrade is used. This ‘Disabled’ setting prevents the radio from attempting another software upload when the radio boots (which it does automatically after activation).

Software > File Transfer

This page provides the mechanism to transfer new software from a file source into the radio.



SETUP FILE TRANSFER

Direction	To This Radio
Method	USB Transfer
File	Software Pack
File Server IP Address	172.17.10.2
FTP Username	UserName
FTP Password	••••••••••••••••

FILE TRANSFER STATUS

Transfer Activity	Idle
Direction	-
Method	-
File	-
Transfer Result	-

Ready Radio: Base Station

SETUP FILE TRANSFER

Direction

This parameter sets the direction of file transfer. In this software version, the only choice is ‘To the Radio’.

Method

This parameter sets the method of file transfer.

Option	Function
USB Transfer	Transfers the software from the USB flash drive to the radio.
FTP	Transfers the software from an FTP server to the radio.

File

This parameter shows the software file source.

FTP Username

This parameter sets the Username to access the FTP server.

FTP Password

This parameter sets the Password to access the FTP server.

FILE TRANSFER STATUS

Transfer Activity

This parameter shows the status of the transfer, ‘Idle’, ‘In Progress’ or ‘Completed’.

Direction

This parameter shows the direction of file transfer. In this software version, the only choice is ‘To The Radio’.

Method

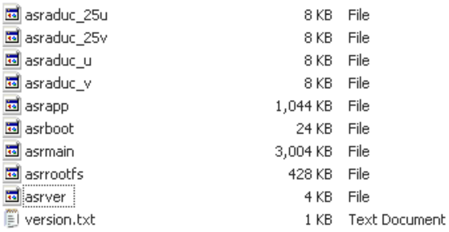
This parameter shows the file transfer method.

File

This parameter shows the software file source.

Transfer Result

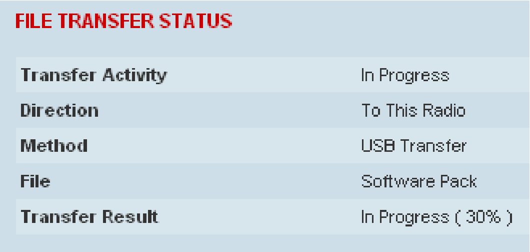
This parameter shows the progress of the transfer:

Transfer Result	**Function**
Starting Transfer	The transfer has started but no data has transferred.
In Progress (x %)	The transfer has started and has transferred x % of the data.
Successful	The transfer has finished successfully.
File Error	The transfer has failed. Possible causes of failure are: • Is the source file available e.g. USB flash drive plugged in • Does the file source contain the Aprisa SR software release files;  asraduc_25u 8 KB File asraduc_25v 8 KB File asraduc_u 8 KB File asraduc_v 8 KB File asrapp 1,044 KB File asrboot 24 KB File asrmain 3,004 KB File asrrootfs 428 KB File asrver 4 KB File version.txt 1 KB Text Document

To transfer software into the Aprisa SR radio:

USB Transfer Method

1. Unzip the software release files in to the root directory of a USB flash drive.
2. Insert the USB flash drive into the Host Port .
3. Click on ‘Start Transfer’.



FILE TRANSFER STATUS

Transfer Activity	In Progress
Direction	To This Radio
Method	USB Transfer
File	Software Pack
Transfer Result	In Progress (30%)

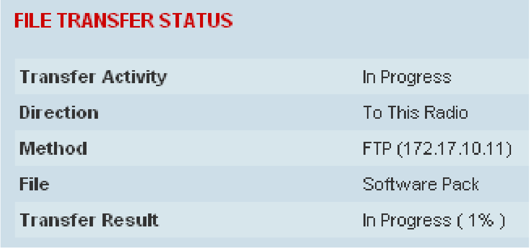
4. When the transfer is completed, remove the USB flash drive from the Host Port. If the SuperVisor ‘USB Boot Upgrade’ setting is set to ‘Disabled’ (see ‘USB Boot Upgrade’ on page 155), the USB flash drive doesn’t need to be removed as the radio won’t try to load from it.

Go to Supervisor > Software > Manager and activate the Software Pack (see ‘Software > Manager’ on page 159). The radio will reboot automatically.

If the file transfer fails, check the Event History page (see ‘Events > Event History’ on page 145) for more details of the transfer.

FTP Method

1. Unzip the software release files in to a temporary directory.
2. Open the FTP server and point it to the temporary directory.
3. Enter the FTP server IP address, Username and password into SuperVisor.
4. Click on ‘Start Transfer’.



FILE TRANSFER STATUS

Transfer Activity	In Progress
Direction	To This Radio
Method	FTP (172.17.10.11)
File	Software Pack
Transfer Result	In Progress (1%)

Go to Supervisor > Software > Manager and activate the Software Pack (see ‘Software > Manager’ on page 159). The radio will reboot automatically.

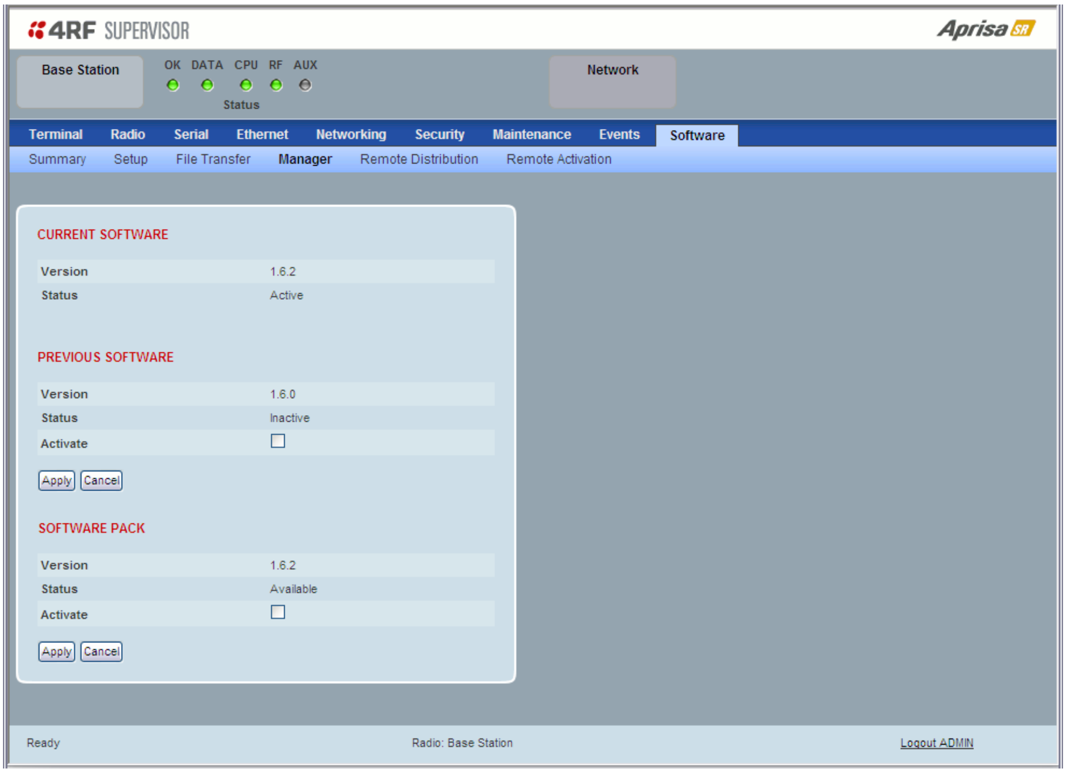
If the file transfer fails, check the Event History page (see ‘Events > Event History’ on page 145) for more details of the transfer.

Software > Manager

This page summarises and manages the software versions available in the radio.

The manager is predominantly used to activate new software on single radios. Network activation is performed with ‘Software > Remote Activation’.

Both the previous software (if available) and Software Pack versions can be activated on the radio from this page.


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup File Transfer Manager Remote Distribution Remote Activation

CURRENT SOFTWARE

Version	1.6.2
Status	Active

PREVIOUS SOFTWARE

Version	1.6.0
Status	Inactive
Activate	□

Apply Cancel

SOFTWARE PACK

Version	1.6.2
Status	Available
Activate	□

Apply Cancel

Ready Radio: Base Station Logout ADMIN

CURRENT SOFTWARE

Version

This parameter displays the software version running on the radio.

Status

This parameter displays the status of the software version running on the radio (always active).

PREVIOUS SOFTWARE

Version

This parameter displays the software version that was running on the radio prior to the current software being activated.

Status

This parameter displays the status of the software version that was running on the radio prior to the current software being activated.

Option	**Function**
Active	The software is operating the radio.
Inactive	The software is not operating the radio but could be re-activated if required.

Activate

This parameter activates the previous software version (restores to previous version).

The Aprisa SR will automatically reboot after activation.

SOFTWARE PACK

Version

This parameter displays the software pack version available for distribution on base station and activate on all stations.

Status

This parameter displays the status of the software pack version.

Option	**Function**
Available	On the base station, the software pack is available for distribution. On all stations, the software pack is available for activation.
Activating	The software pack is activating in the radio.
Unavailable	There is no software pack loaded into the radio.

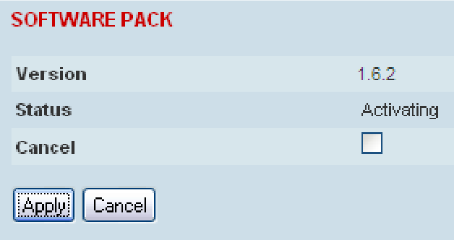
Activate

This parameter activates the software pack.

The Aprisa SR will automatically reboot after activation.

To activate a software version:

1. Tick the software version required to be activated (previous software or software pack).
2. Click ‘Apply’.



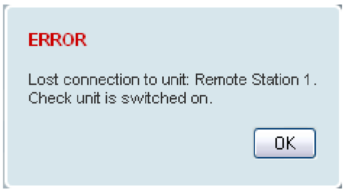
SOFTWARE PACK

Version	1.6.2
Status	Activating
Cancel	□

The page will display a Status of ‘Activating’.

Once started, activation cannot be cancelled.

When the activation is completed, the radio will reboot. This will cause the current SuperVisor session to expire.



ERROR

Lost connection to unit: Remote Station 1 . Check unit is switched on.

3. Login to SuperVisor to check the result.

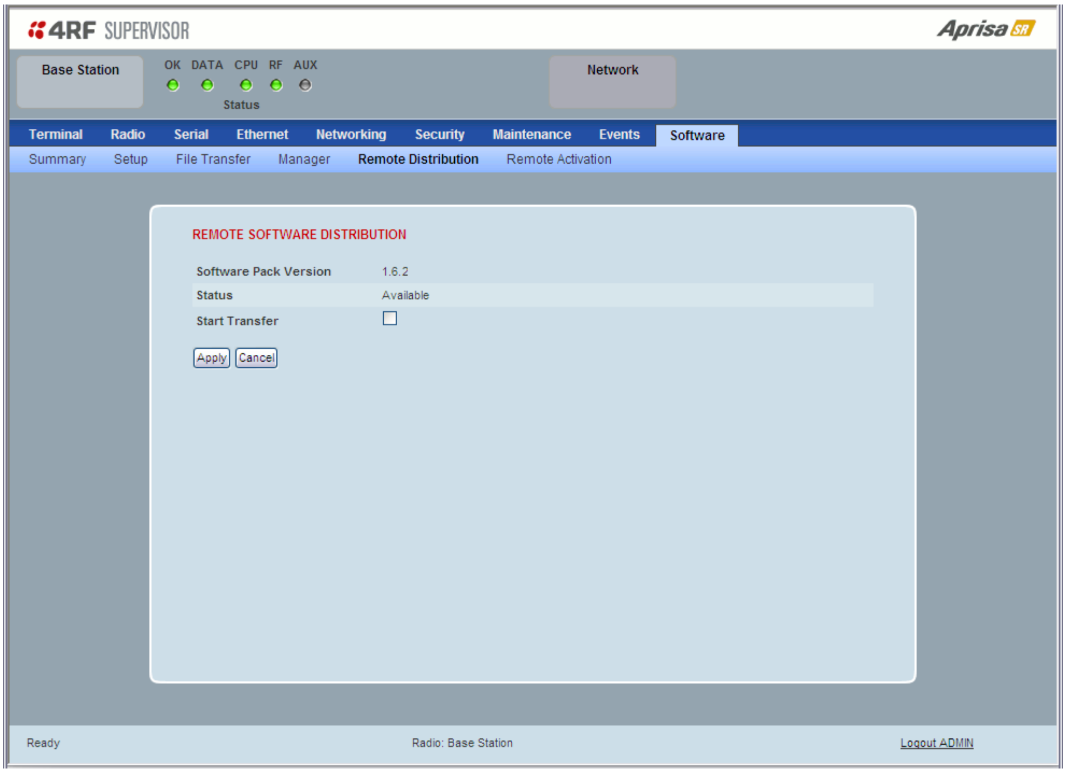
Software > Remote Distribution

This page provides the mechanism to distribute software to all remote stations into the Aprisa SR network (network) and then activate it.

The Software Pack that was loaded into the base station with the file transfer process (see ‘Software > File Transfer’ on page 156) can be distributed via the radio link to all remote stations.

This page is used to manage the distribution of that software pack to all remote radios on the network.

This page is only available when the radio is configured as a Base Station.


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Status
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup File Transfer Manager Remote Distribution Remote Activation
Ready
Radio: Base Station
Logout ADMIN

REMOTE SOFTWARE DISTRIBUTION

Software Pack Version	1.6.2
Status	Available
Start Transfer	□

Apply Cancel

REMOTE SOFTWARE DISTRIBUTION

Software Pack Version

This parameter displays the software pack version available for distribution on base station and activate on all stations.

Status

This parameter displays the status of the software pack version.

If a Software Pack is not available, the status will display ‘Unavailable’ and the software distribution mechanism will not work.

Start Transfer

This parameter when activated distributes (broadcasts) the new Software Pack to all remote stations in the network.

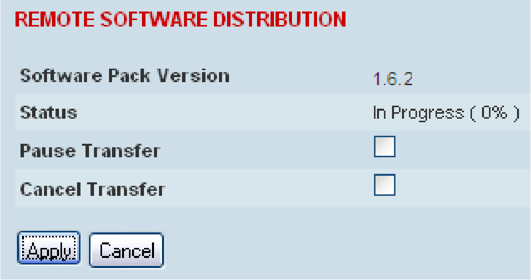
Note: The distribution of software to remote stations does not stop customer traffic from being transferred. However, due to the volume of traffic, the software distribution process may affect customer traffic.

Software distribution traffic is classified as 'management traffic' but does not use the Ethernet management priority setting. Software distribution traffic priority has a fixed priority setting of 'very low'.

To distribute software to remote stations:

This process assumes that a Software Pack has been loaded into the base station with the file transfer process (see 'Software > File Transfer' on page 156).

1. To ensure that the Network Table is up to date, it is recommended running the node discover function (see 'Discover Nodes' on page 142).
2. Click on 'Start Transfer'.



REMOTE SOFTWARE DISTRIBUTION

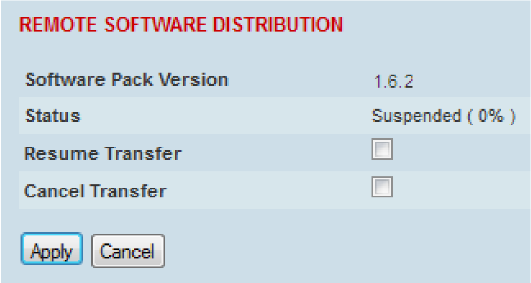
Software Pack Version	1.6.2
Status	In Progress (0%)
Pause Transfer	□
Cancel Transfer	□

Note: This process could take anywhere between 40 minutes and several hours depending on channel size, Ethernet Management Priority setting and the amount of customer traffic on the network.

3. When the distribution is completed, activate the software with the Remote Software Activation.

Pause Transfer

This parameter when activated, pauses the distribution process and shows the distribution status. The distribution process will continue from where it was paused with Resume Transfer.



REMOTE SOFTWARE DISTRIBUTION

Software Pack Version	1.6.2
Status	Suspended (0%)
Resume Transfer	□
Cancel Transfer	□

Cancel Transfer

This parameter when activated, cancels the distribution process immediately.

During the distribution process, it is possible to navigate away from this page and come back to it to check progress. The SuperVisor session will not timeout.

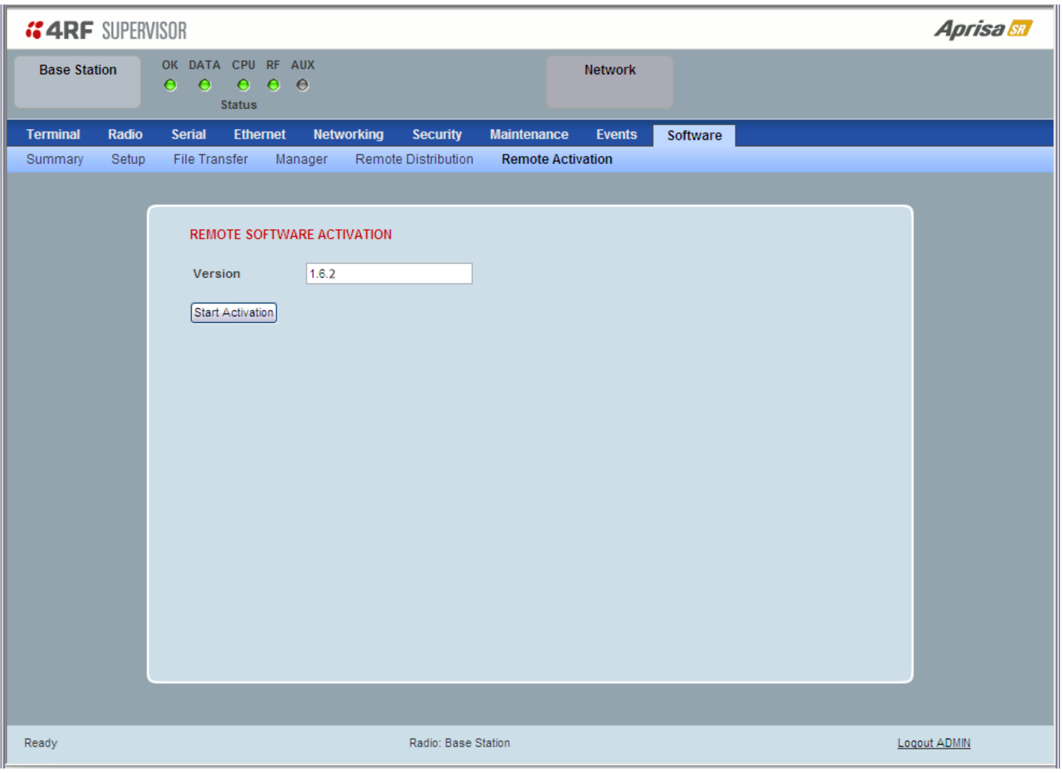
Software > Remote Activation

This page provides the mechanism to activate software on all remote stations.

The Software Pack was loaded into the base station with the file transfer process (see ‘Software > File Transfer’ on page 156) and was distributed via the radio link to all remote stations.

This page is used to manage the activation of that software pack on all remote radios on the network.

This page is only available when the radio is configured as a Base Station.



REMOTE SOFTWARE ACTIVATION

Version 1.6.2

REMOTE SOFTWARE ACTIVATION

When the software pack version has been distributed to all the remote stations, the software is then activated in all the remote stations with this command. If successful, then activate the software pack in the base station to complete the network upgrade.

Version

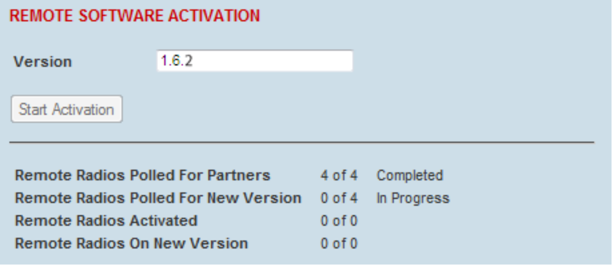
This parameter displays the software version for activation. The default version is the software pack version but any valid software version can be entered in the format ‘n.n.n’.

To activate software in remote stations:

This process assumes that a Software Pack has been loaded into the base station with the file transfer process (see ‘Software > File Transfer’ on page 156) and distributed to all remote radios in the network.

Note: Do not navigate SuperVisor away from this page during the activation process (SuperVisor can lose PC focus).

1. Enter the Software Pack version (if different from displayed version).
2. Click on ‘Start Activation’.



REMOTE SOFTWARE ACTIVATION

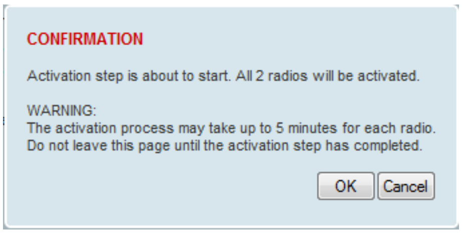
Version 1.6.2

Remote Radios Polled For Partners	4 of 4	Completed
Remote Radios Polled For New Version	0 of 4	In Progress
Remote Radios Activated	0 of 0	
Remote Radios On New Version	0 of 0	

The remote stations will be polled to determine which radios require activation:

Result	Function (X of Y)
Remote Radios Polled for Partners	X is the number of radios polled to determine the number of protected stations in the network. Y is the number of remote radios registered with the base station.
Remote Radios Polled for New Version	X is the number of radios polled to determine the number of radios that contain the new software version. Y is the number of remote radios registered with the base station.
Remote Radios Activated	X is the number of radios that contain the new software version and have been activated. Y is the number of radios that contain the new software version and can be activated.
Remote Radios On New Version	X is the number of radios that has been successfully activated and now running the new version of software. Y is the number of radios that the activation command was executed on.

When the activation is ready to start:



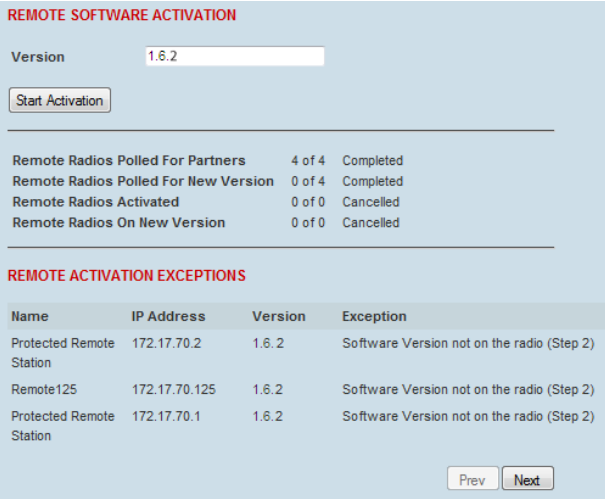
CONFIRMATION

Activation step is about to start. All 2 radios will be activated.

WARNING:
The activation process may take up to 5 minutes for each radio.
Do not leave this page until the activation step has completed.

3. Click on ‘OK’ to start the activation process or Cancel to quit.

The page will display the progress of the activation.



REMOTE SOFTWARE ACTIVATION

Version 1.6.2

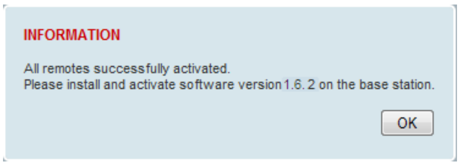
Remote Radios Polled For Partners	4 of 4	Completed
Remote Radios Polled For New Version	0 of 4	Completed
Remote Radios Activated	0 of 0	Cancelled
Remote Radios On New Version	0 of 0	Cancelled

REMOTE ACTIVATION EXCEPTIONS

Name	IP Address	Version	Exception
Protected Remote Station	172.17.70.2	1.6.2	Software Version not on the radio (Step 2)
Remote125	172.17.70.125	1.6.2	Software Version not on the radio (Step 2)
Protected Remote Station	172.17.70.1	1.6.2	Software Version not on the radio (Step 2)

The example shows that during the activation process there were exceptions that may need to be investigated.

When all the remote radios have been activated, the base station radio must now be activated with (see ‘Software > Manager’ on page 159).



INFORMATION

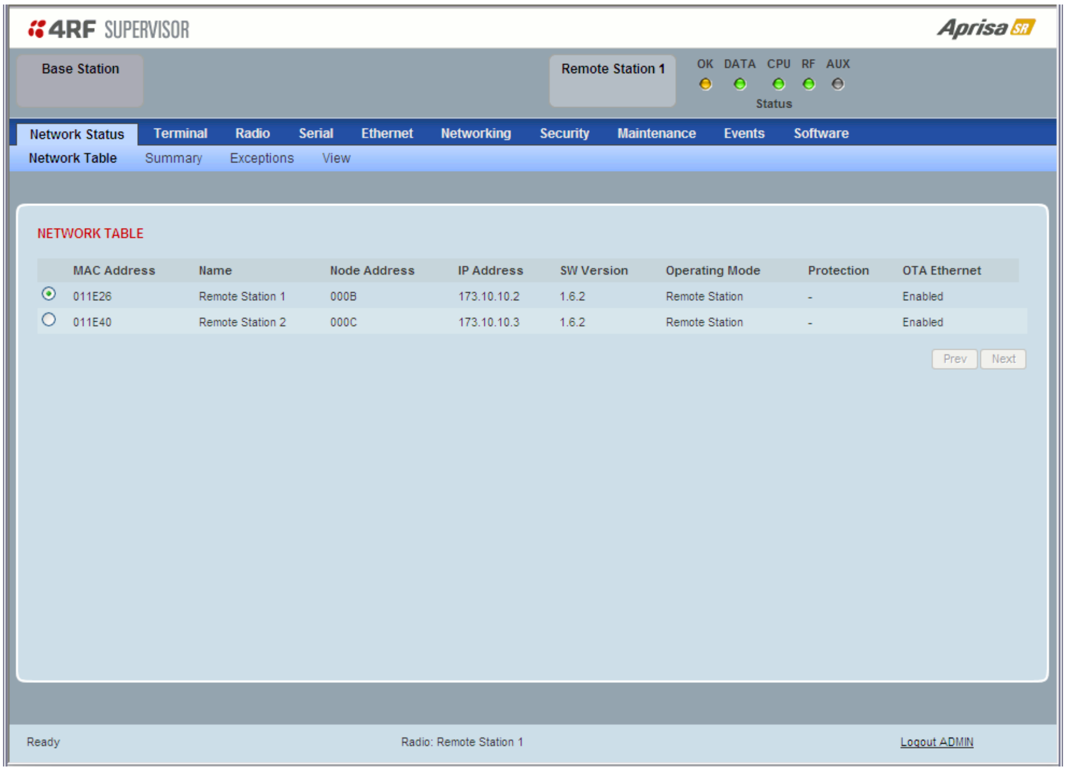
All remotes successfully activated.
Please install and activate software version 1.6.2 on the base station.

4. Click on ‘OK’ to start the activation on the base station.

Network Status

Network Status > Network Table

This page displays a list of all the registered remote stations for the base station and provides management access to each of the remote stations.



NETWORK TABLE

	MAC Address	Name	Node Address	IP Address	SW Version	Operating Mode	Protection	OTA Ethernet
●	011E26	Remote Station 1	000B	173.10.10.2	1.6.2	Remote Station	-	Enabled
○	011E40	Remote Station 2	000C	173.10.10.3	1.6.2	Remote Station	-	Enabled

NETWORK TABLE

This Network Table is only available when the local radio is the base station i.e. SuperVisor is logged into the base station.

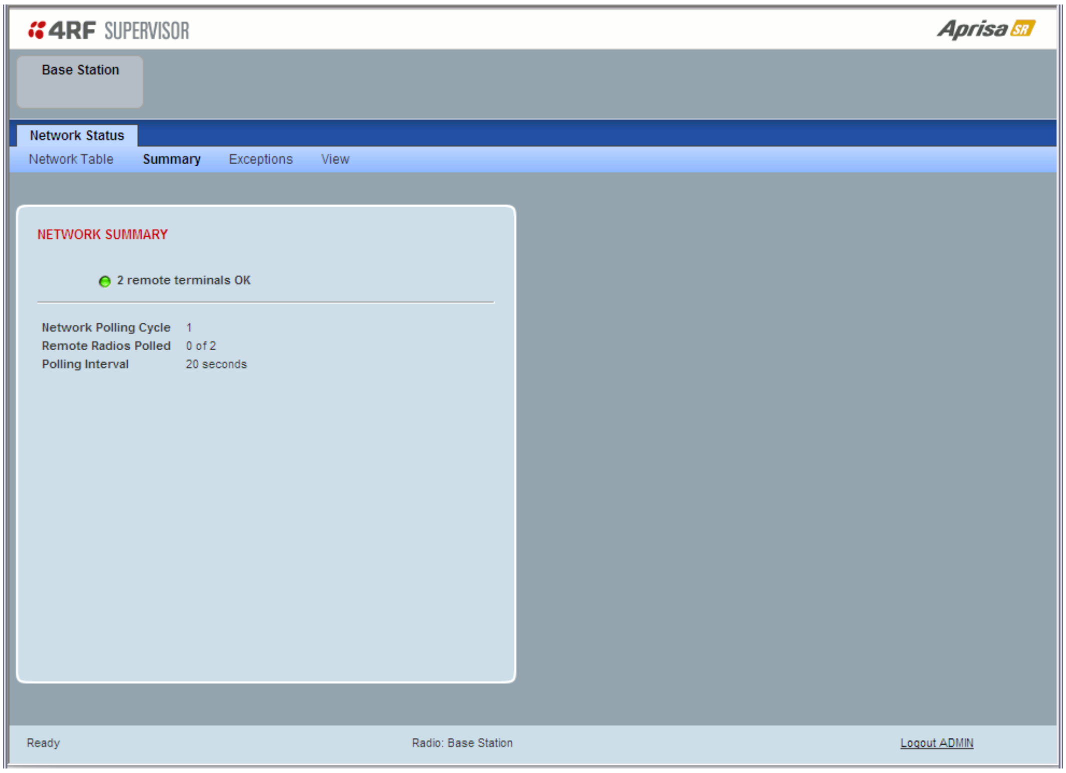
To manage a remote / repeater station with SuperVisor:

Click on the radio button of the required station. The remaining menu items then apply to the selected remote station.

Network Status > Summary

Network View is an overview of the health of the network providing the ability to investigate issues directly within SuperVisor.

This page provides an overall summary view of the alarm status of all registered remote stations for the base station. When open, it provides a continuous monitor of the network.



NETWORK SUMMARY

● 2 remote terminals OK

Network Polling Cycle	1
Remote Radios Polled	0 of 2
Polling Interval	20 seconds

NETWORK SUMMARY

A network poll will start when any of the Network Status pages are opened (Summary, Exceptions or View). The network poll will only continue to poll the remote stations if one of the Network Status pages is open (SuperVisor can lose PC focus). The network poll continues from where it was stopped last time it was polling.

The initial result assumes that all remote stations are operating correctly.

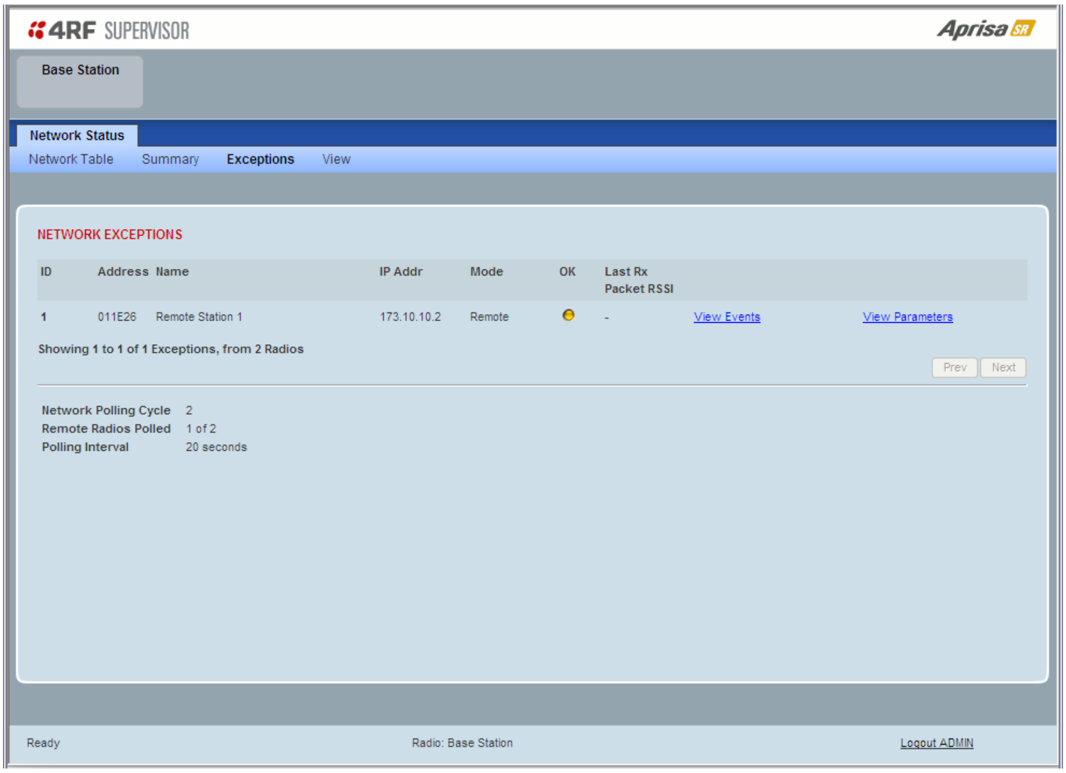
Network Summary Example:

Result	Function
Network Polling Cycle	The number of poll cycles since first opening a Network Status > Summary, Exceptions or View page. The page example shows 6 polling cycles.
Remote Radios Polled	This shows the number of radios polled for the current polling cycle out of the number remote radios registered with the base station. The page example shows 1 radio polled for the current polling cycle out of 3 remote radios registered.
Polling Interval	The time interval between the completion of one radio poll and the start of the next radio poll. To set the polling interval, see ‘Maintenance > General’ on page 134.

If a remote radio does not respond to a poll request within 10 seconds, the previous readings from that radio will be presented. Connectivity to a remote radio will be show as ‘lost’ if the remote radio has not responded to 3 consecutive poll requests.

Network Status > Exceptions

This page provides a list of all registered remote radios that are in an alarmed state or have stopped responding to the SuperVisor polling. When open, it provides a continuous monitor of the network.



NETWORK EXCEPTIONS

ID	Address	Name	IP Addr	Mode	OK	Last Rx Packet RSSI		
1	011E26	Remote Station 1	173.10.10.2	Remote	●	-	View Events	View Parameters

Showing 1 to 1 of 1 Exceptions, from 2 Radios

Network Polling Cycle	2
Remote Radios Polled	1 of 2
Polling Interval	20 seconds

NETWORK EXCEPTIONS

A network poll will start when any of the Network Status pages are opened (Summary, Exceptions or View). The network poll will only continue to poll the remote stations if one of the Network Status pages is open (SuperVisor can lose PC focus). The network poll continues from where it was stopped last time it was polling.

Network Exceptions Example:

Result	Function
Network Polling Cycle	The number of poll cycles since first opening a Network Status > Summary, Exceptions or View page. The page example shows 4 polling cycles.
Remote Radios Polled	This shows the number of radios polled for the current polling cycle out of the number remote radios registered with the base station. The page example shows 3 radios polled for the current polling cycle out of 4 remote radios registered.
Polling Interval	The time interval between the completion of one radio poll and the start of the next radio poll. To set the polling interval, see 'Maintenance > General' on page 134.

If a remote radio does not respond to a poll request within 10 seconds, the previous readings from that radio will be presented. Connectivity to a remote radio will be show as ‘lost’ if the remote radio has not responded to 3 consecutive poll requests.

If a remote radio on the list is detected to be responding to a poll request and no longer be in an alarmed state, the entry for this remote radio will be removed from the list.

View Events

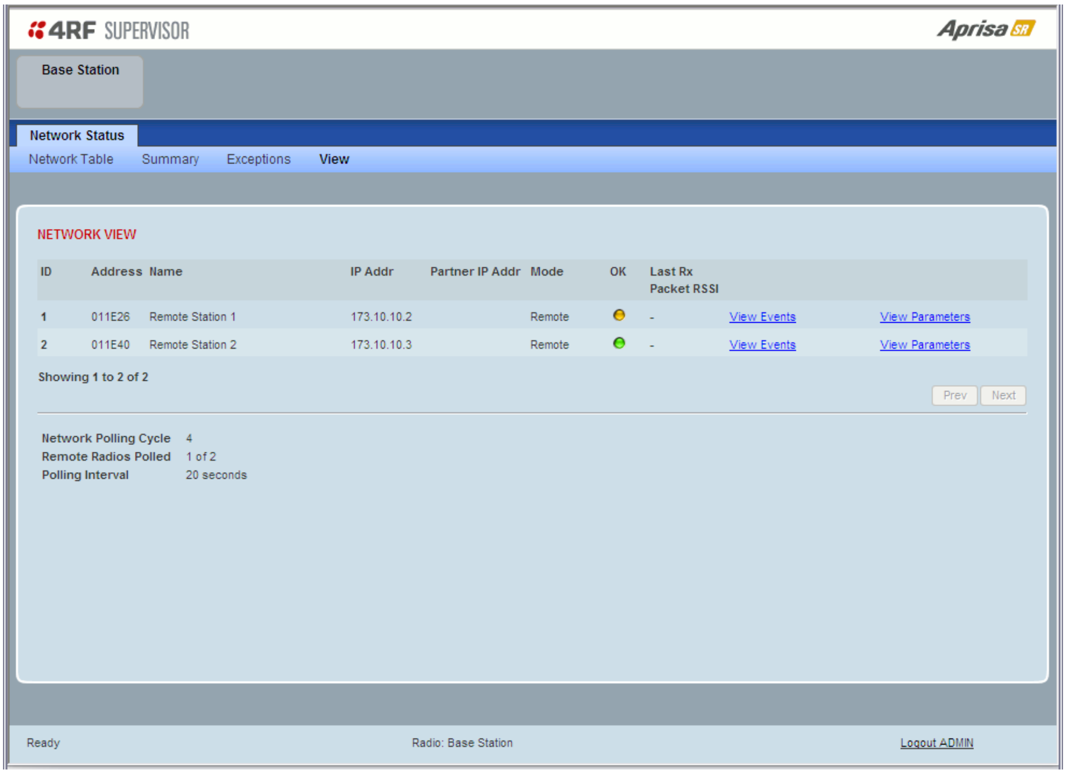
Clicking on View Events navigates to the Events page (see ‘Events’ on page 144) for the specific remote radio where the radio events will be displayed.

View Parameters

Clicking on View Parameters navigates to Terminal > Parameters page (see ‘Terminal > Parameters’ on page 87) for the specific remote radio where the radio parameters will be displayed.

Network Status > View

This page provides a complete list of all registered remote radios. It is similar to the Exceptions page but it shows all radios, not limited to the radios with alarms. When open, it provides a continuous monitor of the network.



NETWORK VIEW

ID	Address	Name	IP Addr	Partner IP Addr	Mode	OK	Last Rx Packet RSSI		
1	011E26	Remote Station 1	173.10.10.2		Remote	●	-	View Events	View Parameters
2	011E40	Remote Station 2	173.10.10.3		Remote	●	-	View Events	View Parameters

Showing 1 to 2 of 2

Network Polling Cycle 4
Remote Radios Polled 1 of 2
Polling Interval 20 seconds

NETWORK VIEW

A network poll will start when any of the Network Status pages are opened (Summary, Exceptions or View). The network poll will only continue to poll the remote stations if one of the Network Status pages is open (SuperVisor can lose PC focus). The network poll continues from where it was stopped last time it was polling.

Network View Example:

Result	Function
Network Polling Cycle	The number of poll cycles since first opening a Network Status > Summary, Exceptions or View page. The page example shows 2 polling cycles.
Remote Radios Polled	This shows the number of radios polled for the current polling cycle out of the number remote radios registered with the base station. The page example shows 1 radio polled for the current polling cycle out of 3 remote radios registered.
Polling Interval	The time interval between the completion of one radio poll and the start of the next radio poll. To set the polling interval, see 'Maintenance > General' on page 134. Note: as this polling feature utilizes air time, the polling interval should be selected to suit the network traffic.

If a remote radio does not respond to a poll request within 10 seconds, the previous readings from that radio will be presented. Connectivity to a remote radio will be show as ‘lost’ if the remote radio has not responded to 3 consecutive poll requests.

View Events

Clicking on View Events navigates to the Events page (see ‘Events’ on page 144) for the specific remote radio where the radio events will be displayed.

View Parameters

Clicking on View Parameters navigates to Terminal > Parameters page (see ‘Terminal > Parameters’ on page 87) for the specific remote radio where the radio parameters will be displayed.

Protected Station

The majority of SuperVisor screens are the same for the standard radio and the protected station. The following screens are specific to the protected station.

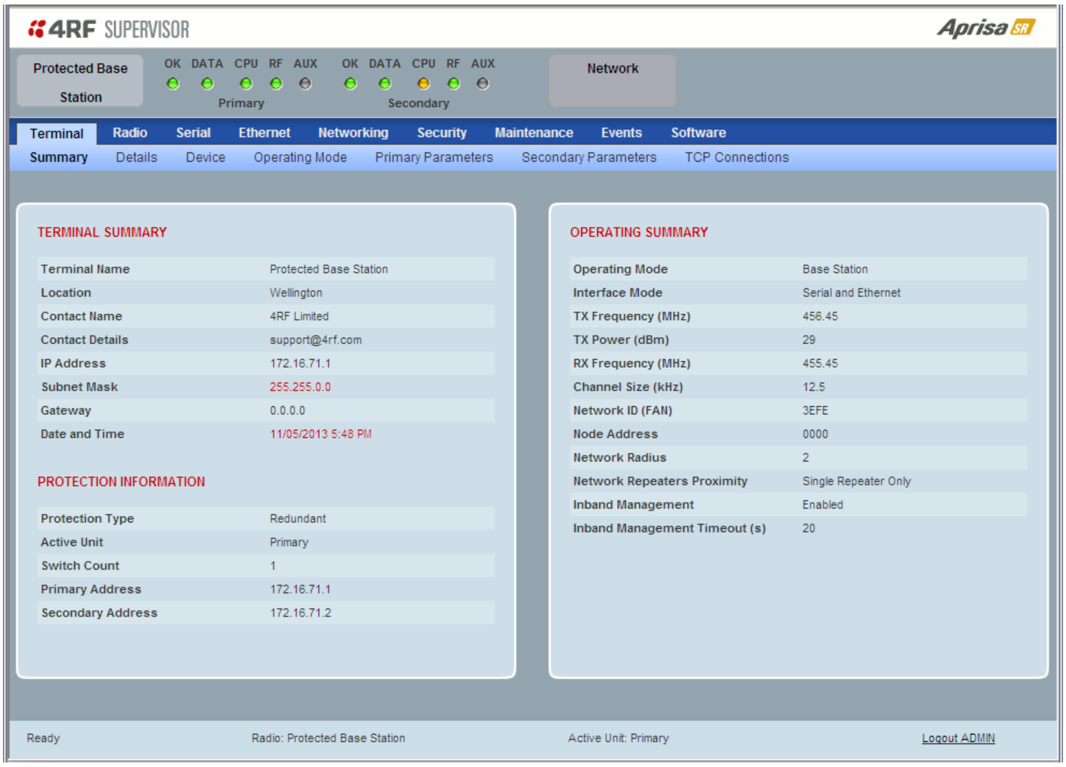
Parameter Errors

On protected station screens, parameter values displayed in red indicate discrepancies in common parameter values between the primary and secondary radios (see ‘Protected Station: Terminal > Summary’ on page 175 for an example of the red display). The value displayed is from the ‘addressed radio’.

These value discrepancies can occur if the two protected station radios have been separately configured. The discrepancies can be corrected by re-entering the values in one of the radios. The value will be copied to the partner radio.

Terminal

Protected Station: Terminal > Summary


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Details Device Operating Mode Primary Parameters Secondary Parameters TCP Connections

TERMINAL SUMMARY

Terminal Name	Protected Base Station
Location	Wellington
Contact Name	4RF Limited
Contact Details	support@4rf.com
IP Address	172.16.71.1
Subnet Mask	255.255.0.0
Gateway	0.0.0.0
Date and Time	11/05/2013 5:48 PM

PROTECTION INFORMATION

Protection Type	Redundant
Active Unit	Primary
Switch Count	1
Primary Address	172.16.71.1
Secondary Address	172.16.71.2

OPERATING SUMMARY

Operating Mode	Base Station
Interface Mode	Serial and Ethernet
TX Frequency (MHz)	456.45
TX Power (dBm)	29
RX Frequency (MHz)	455.45
Channel Size (kHz)	12.5
Network ID (FAN)	3EFE
Node Address	0000
Network Radius	2
Network Repeaters Proximity	Single Repeater Only
Inband Management	Enabled
Inband Management Timeout (s)	20

Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

TERMINAL SUMMARY

This page displays the current settings for the Terminal parameters.

PROTECTION INFORMATION

Protection Type

This parameter shows the type of protection:

Option	Function
Serial Data Driven Switching	Provides radio and RS-232 serial port user interface protection for Aprisa SR radios.
Redundant (Protected Station)	The RF ports and interface ports from two standard Aprisa SR Radios are switched to the standby radio if there is a failure in the active radio

Active Unit

This parameter shows the radio which is currently active (Primary or Secondary).

Switch Count

This parameter shows the number of protection switch-overs since the last radio reboot (volatile).

Primary Address

This parameter shows the IP address of the primary radio (usually the left side radio A).

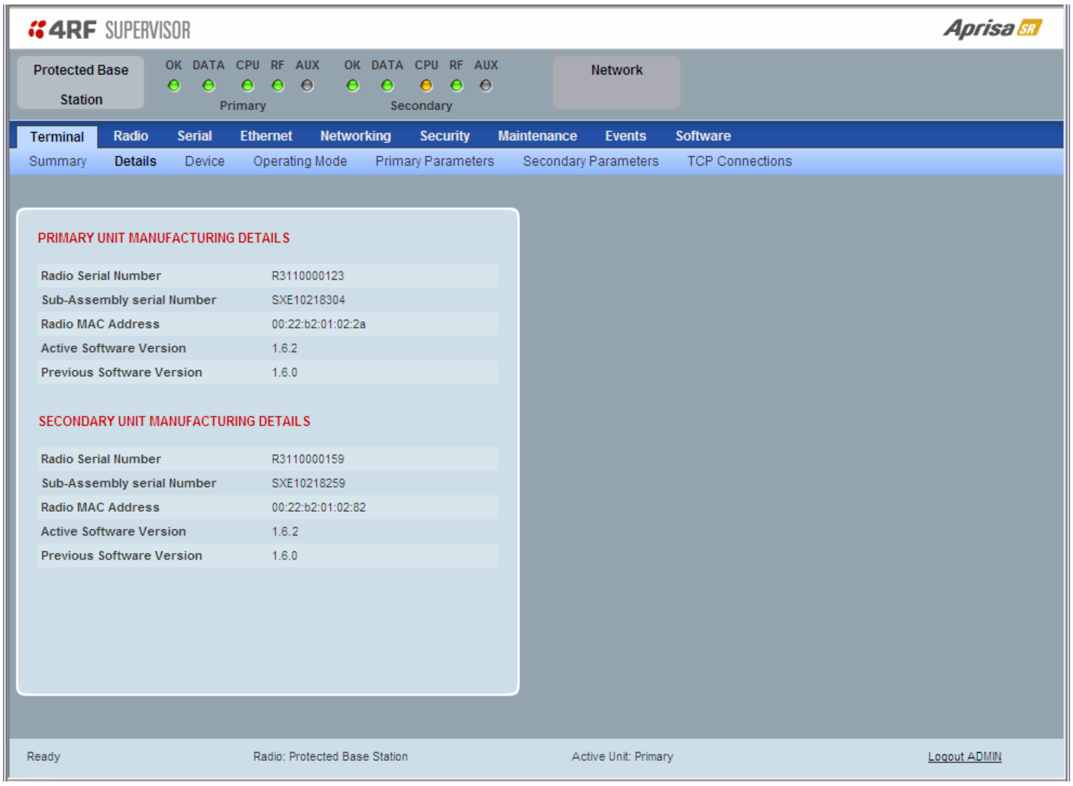
Secondary Address

This parameter shows the IP address of the secondary radio (usually the right side radio B).

OPERATING SUMMARY

See ‘Terminal > Summary’ on page 78 for parameter details.

Protected Station: Terminal > Details



PRIMARY UNIT MANUFACTURING DETAILS

Radio Serial Number	R3110000123
Sub-Assembly serial Number	SXE10218304
Radio MAC Address	00:22:b2:01:02:2a
Active Software Version	1.6.2
Previous Software Version	1.6.0

SECONDARY UNIT MANUFACTURING DETAILS

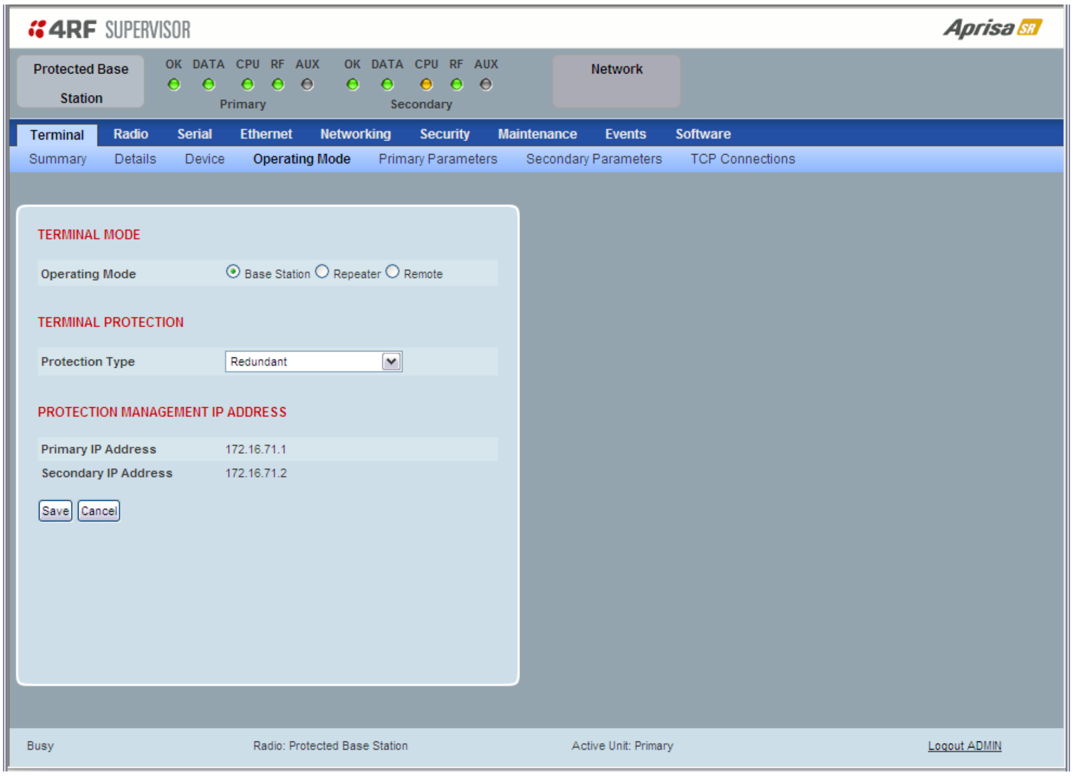
Radio Serial Number	R3110000159
Sub-Assembly serial Number	SXE10218259
Radio MAC Address	00:22:b2:01:02:82
Active Software Version	1.6.2
Previous Software Version	1.6.0

Ready   Radio: Protected Base Station   Active Unit: Primary   Logout ADMIN

PRIMARY UNIT / SECONDARY UNIT MANUFACTURING DETAILS

See ‘Terminal > Details’ on page 80 for parameter settings.

Protected Station: Terminal > Operating Mode



TERMINAL MODE

Operating Mode ● Base Station ○ Repeater ○ Remote

TERMINAL PROTECTION

Protection Type Redundant

PROTECTION MANAGEMENT IP ADDRESS

Primary IP Address 172.16.71.1

Secondary IP Address 172.16.71.2

Busy | Radio: Protected Base Station | Active Unit: Primary

TERMINAL MODE

Operating Mode

The Operating Mode can be set to base station, repeater station or remote station. The default setting is remote station.

TERMINAL PROTECTION

Protection Type

The Protection Type defines if a radio is a stand-alone radio or part of an Aprisa SR Protected Station. The default setting is None.

Option	**Function**
None	The SR radio is stand alone radio (not part of an Aprisa SR Protected Station).
Redundant (Protected Station)	The SR radio is part of an Aprisa SR Protected Station. The RF ports and interface ports from two standard Aprisa SR Radios are switched to the standby radio if there is a failure in the active radio
Serial Data Driven Switching	The SR radio is part of an Aprisa SR Data Driven Protected Station. Provides radio and RS-232 serial port user interface protection for Aprisa SR radios.

PROTECTION MANAGEMENT IP ADDRESS

Primary Address

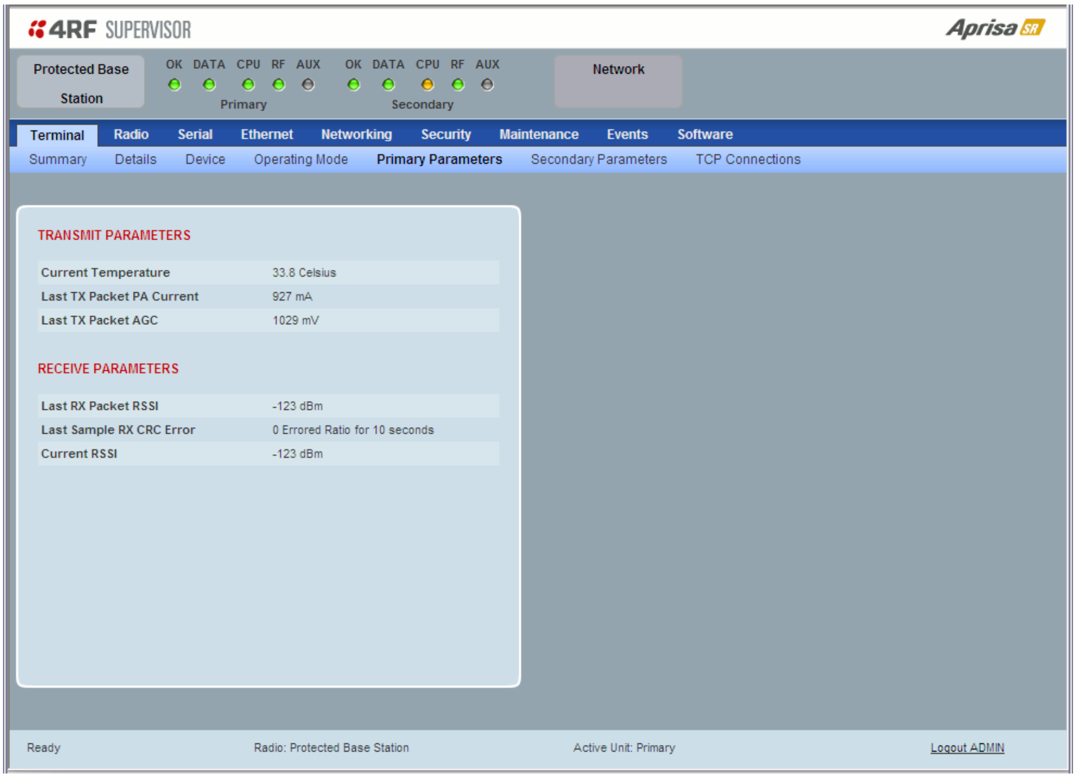
This parameter shows the IP address of the primary radio (usually the left side radio A).

Secondary Address

This parameter shows the IP address of the secondary radio (usually the right side radio B).

Protected Station: Terminal > Primary Parameters

The Parameters page is a dynamic page that will display the parameters associated with the active alarms, set on ‘Events > Events Setup’ on page 146. The screenshot below shows a small amount of monitored alarms as an example.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Details Device Operating Mode Primary Parameters Secondary Parameters TCP Connections
Ready
Radio: Protected Base Station
Active Unit: Primary
Logout ADMIN

TRANSMIT PARAMETERS

Current Temperature	33.8 Celsius
Last TX Packet PA Current	927 mA
Last TX Packet AGC	1029 mV

RECEIVE PARAMETERS

Last RX Packet RSSI	-123 dBm
Last Sample RX CRC Error	0 Errored Ratio for 10 seconds
Current RSSI	-123 dBm

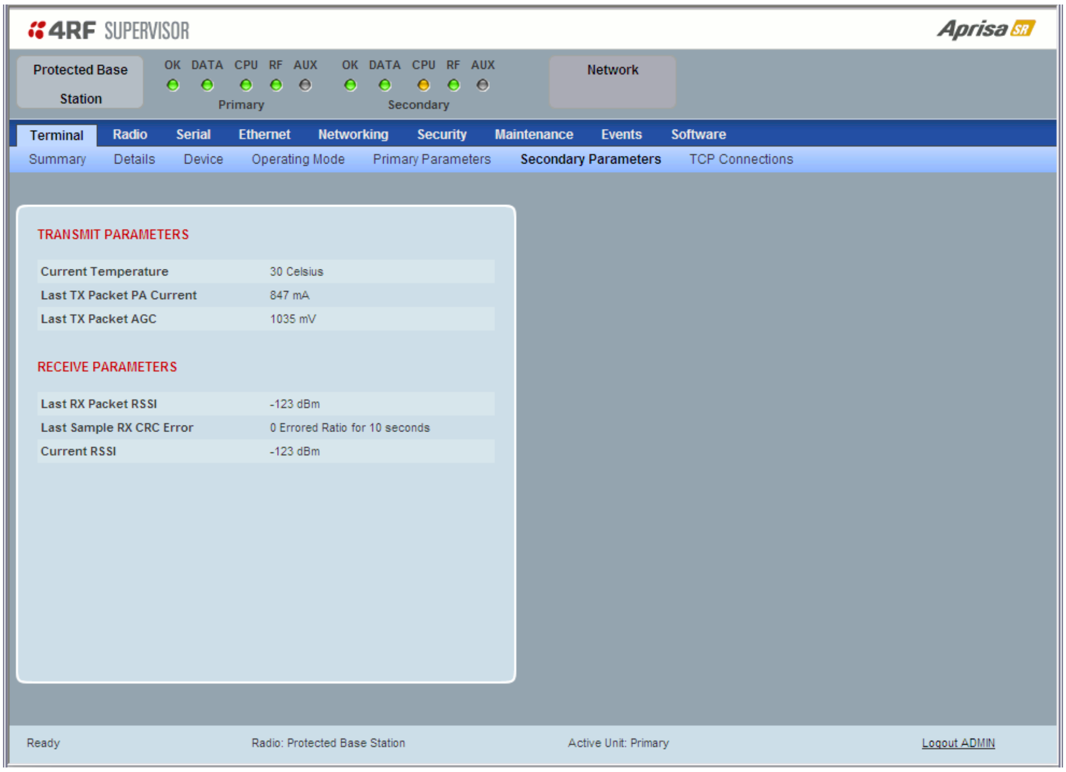
TRANSMIT / RECEIVE PARAMETERS

This parameter displays the parameters of the Primary radio.

See ‘Terminal > Parameters’ on page 87 for parameter details.

Protected Station: Terminal > Secondary Parameters

The Parameters page is a dynamic page that will display the parameters associated with the active alarms, set on ‘Events > Events Setup’ on page 146. The screenshot below shows a small amount of monitored alarms as an example.



TRANSMIT PARAMETERS

Current Temperature	30 Celsius
Last TX Packet PA Current	847 mA
Last TX Packet AGC	1035 mV

RECEIVE PARAMETERS

Last RX Packet RSSI	-123 dBm
Last Sample RX CRC Error	0 Errored Ratio for 10 seconds
Current RSSI	-123 dBm

Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

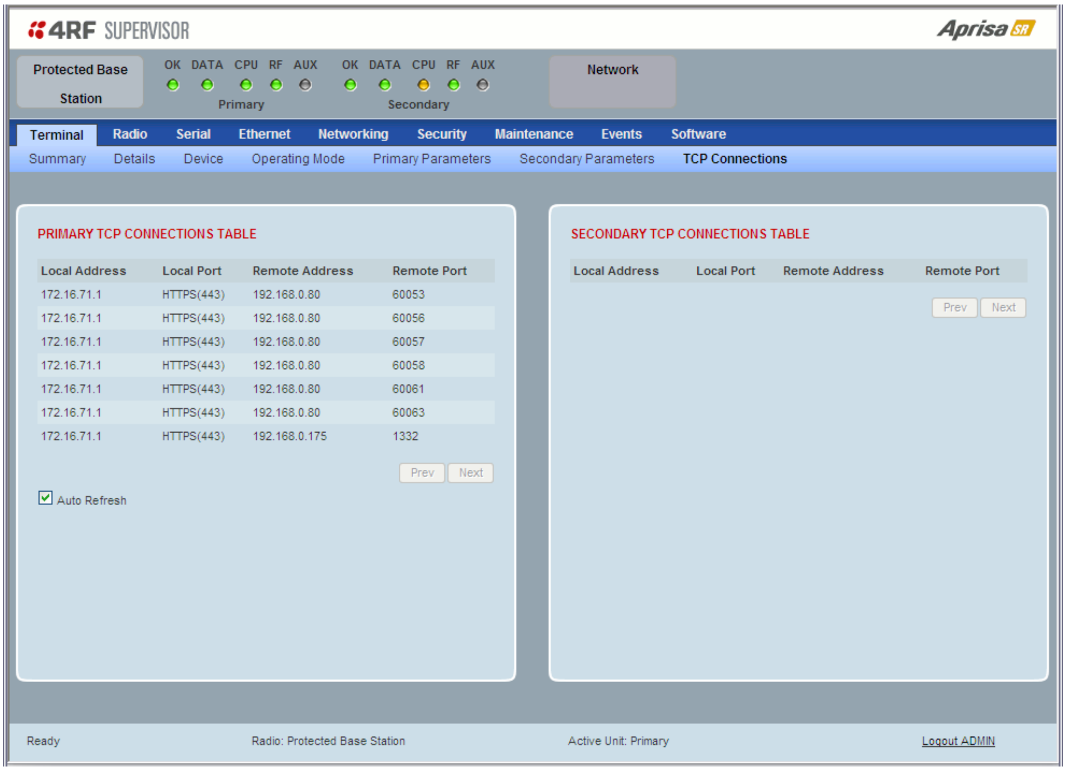
TRANSMIT / RECEIVE PARAMETERS

This parameter displays the parameters of the Secondary radio.

See ‘Terminal > Parameters’ on page 87 for parameter details.

Protected Station: Terminal > TCP Connections

The TCP Connections page displays the list of active TCP connections on the radio.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Details Device Operating Mode Primary Parameters Secondary Parameters TCP Connections

PRIMARY TCP CONNECTIONS TABLE

Local Address	Local Port	Remote Address	Remote Port
172.16.71.1	HTTPS(443)	192.168.0.80	60053
172.16.71.1	HTTPS(443)	192.168.0.80	60056
172.16.71.1	HTTPS(443)	192.168.0.80	60057
172.16.71.1	HTTPS(443)	192.168.0.80	60058
172.16.71.1	HTTPS(443)	192.168.0.80	60061
172.16.71.1	HTTPS(443)	192.168.0.80	60063
172.16.71.1	HTTPS(443)	192.168.0.175	1332

Prev Next

☑ Auto Refresh

SECONDARY TCP CONNECTIONS TABLE

Local Address	Local Port	Remote Address	Remote Port

Prev Next

Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

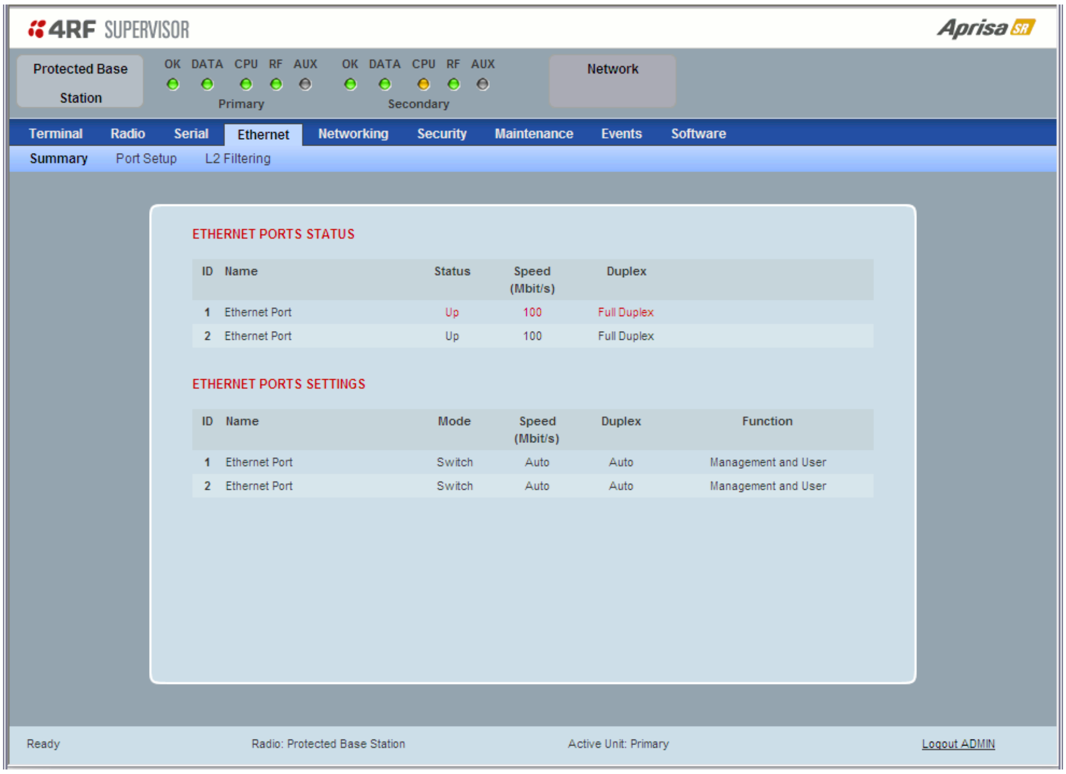
PRIMARY / SECONDARY TCP CONNECTIONS TABLE

The Next button will display the next page of 8 connections and the Prev button will display the previous page of 8 connections.

If the Auto Refresh option is ticked, the TCP Connections table will refresh every 12 seconds.

Protected Station: Ethernet > Summary

This page displays the current settings for the Protected Station Ethernet port parameters.



ETHERNET PORTS STATUS

ID	Name	Status	Speed (Mbit/s)	Duplex
1	Ethernet Port	Up	100	Full Duplex
2	Ethernet Port	Up	100	Full Duplex

ETHERNET PORTS SETTINGS

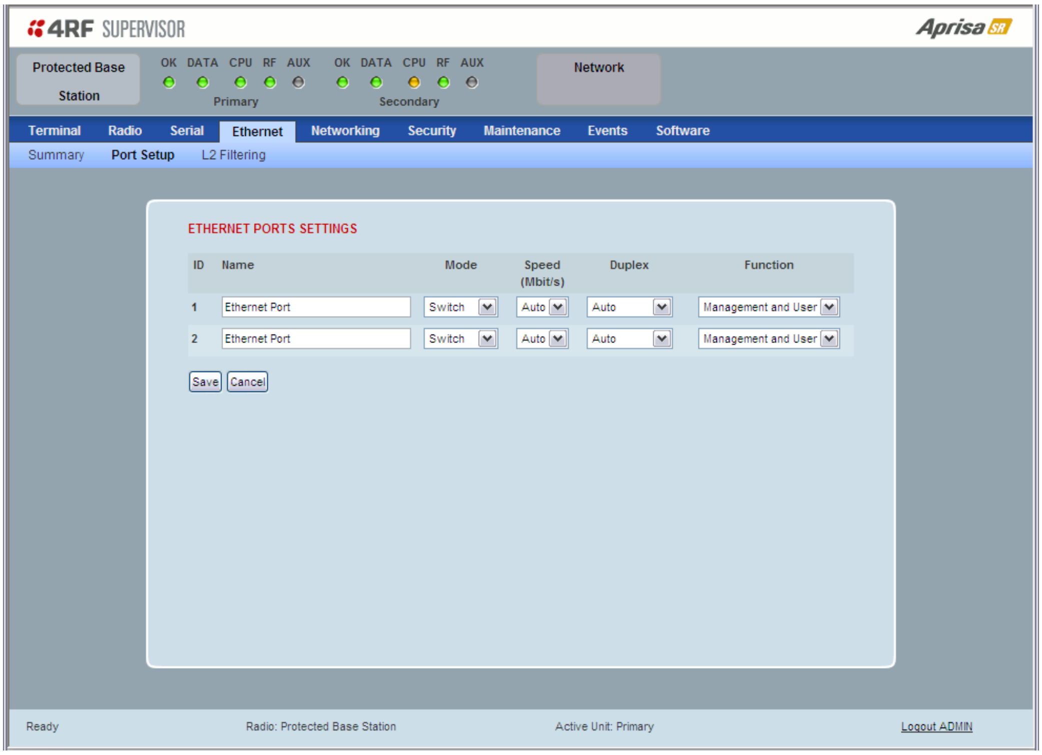
ID	Name	Mode	Speed (Mbit/s)	Duplex	Function
1	Ethernet Port	Switch	Auto	Auto	Management and User
2	Ethernet Port	Switch	Auto	Auto	Management and User

Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

See ‘Protected Station: Ethernet > Port Setup’ for configuration options.

Protected Station: Ethernet > Port Setup

This page provides the setup for the Protected Station Ethernet ports settings.



ETHERNET PORTS SETTINGS

ID	Name	Mode	Speed (Mbit/s)	Duplex	Function
1	Ethernet Port	Switch	Auto	Auto	Management and User
2	Ethernet Port	Switch	Auto	Auto	Management and User

Ready   Radio: Protected Base Station   Active Unit: Primary

ETHERNET PORT SETTINGS

Mode

This parameter controls the Ethernet traffic flow. The default setting is Standard.

Option	Function
Standard	Enables Ethernet data communication over the radio link.
Switch	Ethernet traffic is switched locally between the two Ethernet ports and communicated over the radio link
Disabled	Disables Ethernet data communication over the radio link.

Speed (Mbit/s)

This parameter controls the traffic rate of the Ethernet port. The default setting is Auto.

Option	Function
Auto	Provides auto selection of Ethernet Port Speed
10	The Ethernet Port Speed is manualy set to 10 Mbit/s
100	The Ethernet Port Speed is manualy set to 100 Mbit/s

Duplex

This parameter controls the transmission mode of the Ethernet port. The default setting is Auto.

Option	Function
Auto	Provides auto selection of Ethernet Port duplex setting.
Half Duplex	The Ethernet Port is manualy set to Half Duplex.
Full Duplex	The Ethernet Port is manualy set to Full Duplex.

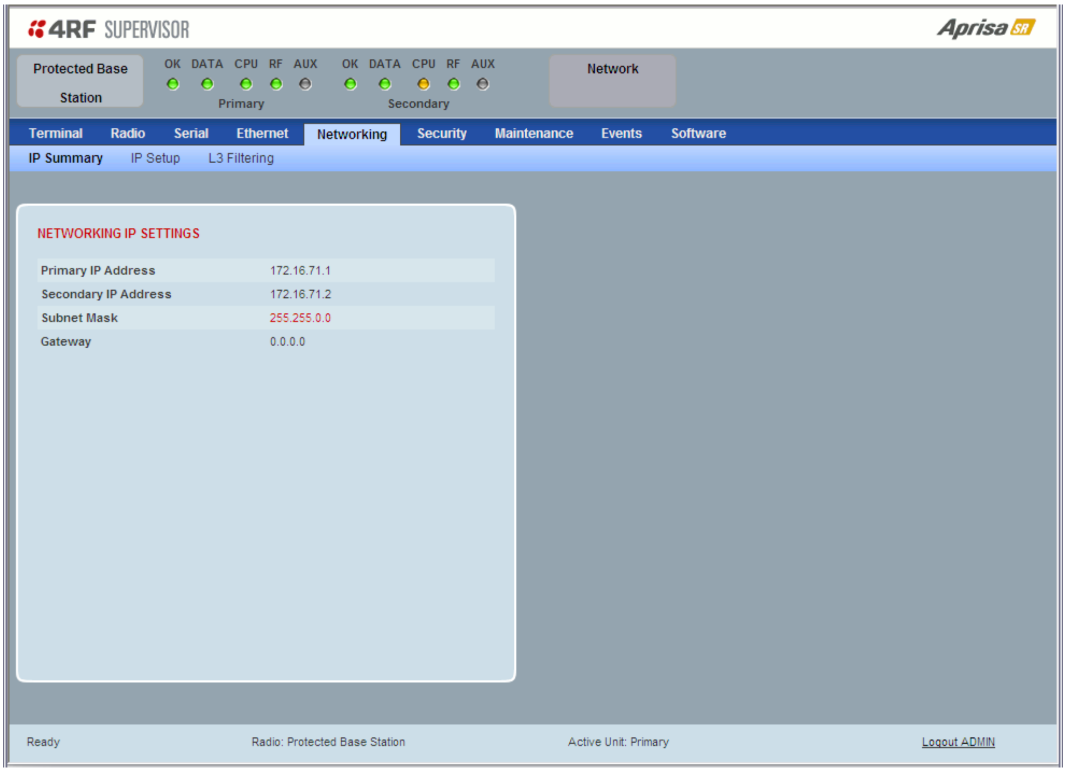
Function

This parameter controls the use for the Ethernet port. The default setting is Management and User.

Option	Function
Management Only	The Ethernet port is only used for management of the network.
Management and User	The Ethernet port is used for management of the network and User traffic over the radio link.
User Only	The Ethernet port is only used for User traffic over the radio link.

Protected Station: Networking > IP Summary

This page displays the current settings for the Protected Station Networking IP settings.

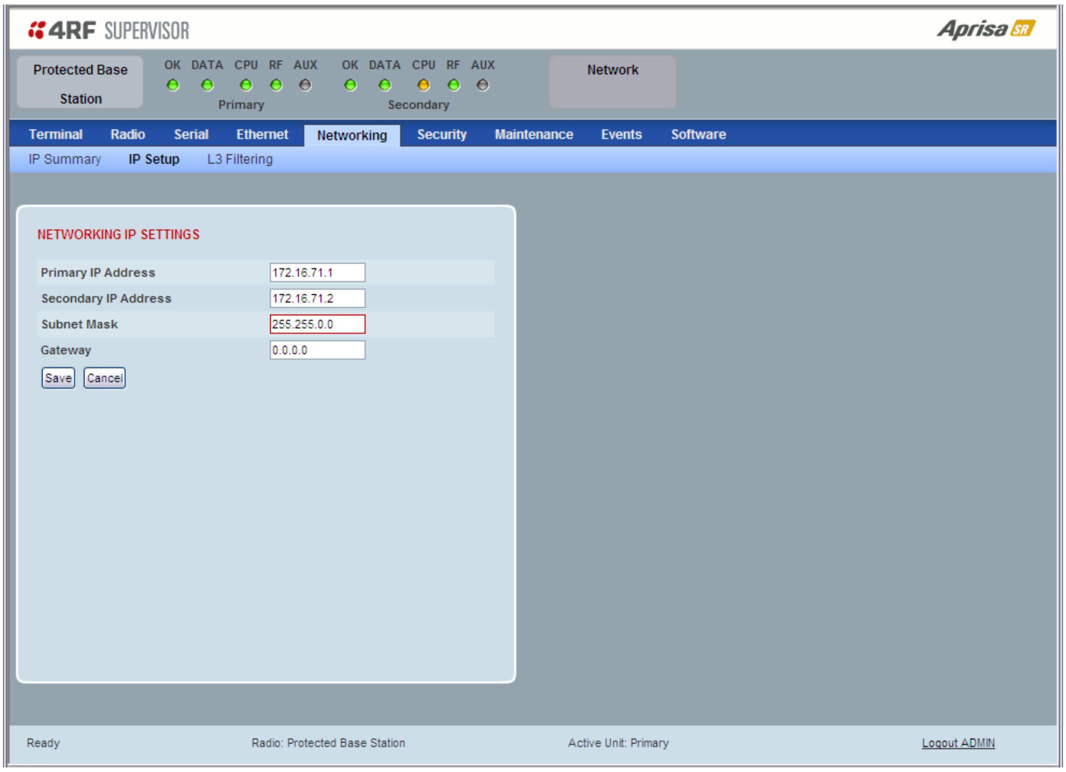

4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
IP Summary IP Setup L3 Filtering

NETWORKING IP SETTINGS

Primary IP Address	172.16.71.1
Secondary IP Address	172.16.71.2
Subnet Mask	255.255.0.0
Gateway	0.0.0.0

Protected Station: Networking > IP Setup

This page provides the setup for the Protected Station Networking IP setup.



NETWORKING IP SETTINGS

Primary IP Address	172.16.71.1
Secondary IP Address	172.16.71.2
Subnet Mask	255.255.0.0
Gateway	0.0.0.0

NETWORKING IP SETTINGS

Changes in these parameters are automatically changed in the partner radio.

Primary IP Address

Set the static IP Address of the primary radio assigned by your site network administrator using the standard format xxx.xxx.xxx.xxx. The default IP address is in the range 169.254.50.10.

Secondary IP Address

Set the static IP Address of the secondary radio assigned by your site network administrator using the standard format xxx.xxx.xxx.xxx. The default IP address is in the range 169.254.50.10.

Subnet Mask

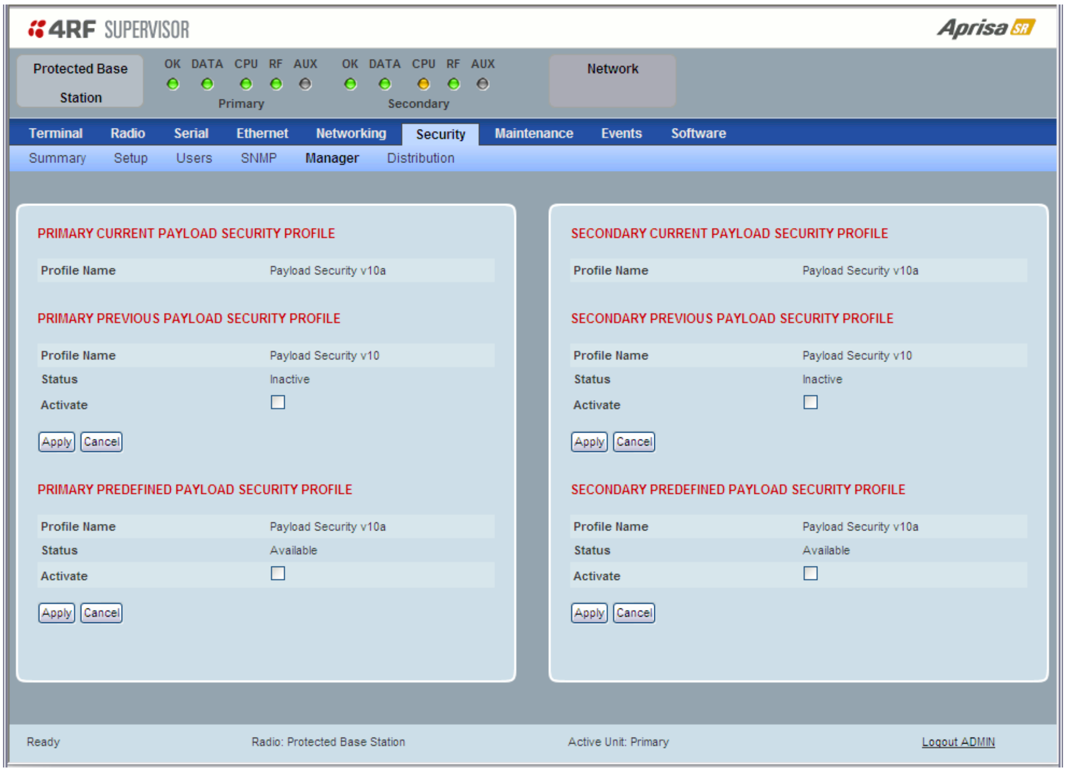
Set the Subnet Mask of the radio using the standard format xxx.xxx.xxx.xxx. The default subnet mask is 255.255.0.0.

Gateway

Set the Gateway address of the radio, if required, using the standard format xxx.xxx.xxx. The default Gateway is 0.0.0.0.

Protected Station: Security > Manager

This page provides the management and control of the Protected Station Networking Security settings.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Users SNMP Manager Distribution

PRIMARY CURRENT PAYLOAD SECURITY PROFILE

Profile Name	Payload Security v10a

PRIMARY PREVIOUS PAYLOAD SECURITY PROFILE

Profile Name	Payload Security v10
Status	Inactive
Activate	□

Apply Cancel

PRIMARY PREDEFINED PAYLOAD SECURITY PROFILE

Profile Name	Payload Security v10a
Status	Available
Activate	□

Apply Cancel

SECONDARY CURRENT PAYLOAD SECURITY PROFILE

Profile Name	Payload Security v10a

SECONDARY PREVIOUS PAYLOAD SECURITY PROFILE

Profile Name	Payload Security v10
Status	Inactive
Activate	□

Apply Cancel

SECONDARY PREDEFINED PAYLOAD SECURITY PROFILE

Profile Name	Payload Security v10a
Status	Available
Activate	□

Apply Cancel

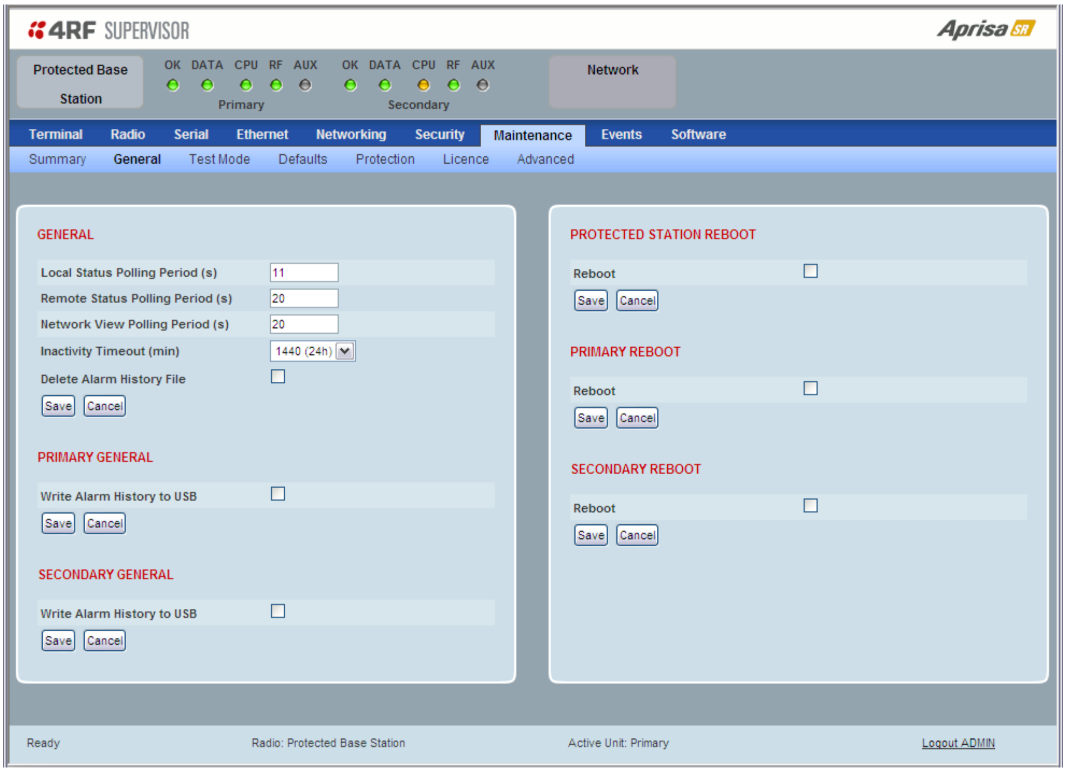
Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

PRIMARY / SECONDARY SECURITY PROFILE

See ‘Security > Manager’ on page 126 for parameter details.

Protected Station: Maintenance > General

This page provides the management and control of the Protected Station Maintenance General settings.



4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary General Test Mode Defaults Protection Licence Advanced

GENERAL

Local Status Polling Period (s)	11
Remote Status Polling Period (s)	20
Network View Polling Period (s)	20
Inactivity Timeout (min)	1440 (24h)
Delete Alarm History File	□

Save Cancel

PRIMARY GENERAL

Write Alarm History to USB □

Save Cancel

SECONDARY GENERAL

Write Alarm History to USB □

Save Cancel

PROTECTED STATION REBOOT

Reboot □

Save Cancel

PRIMARY REBOOT

Reboot □

Save Cancel

SECONDARY REBOOT

Reboot □

Save Cancel

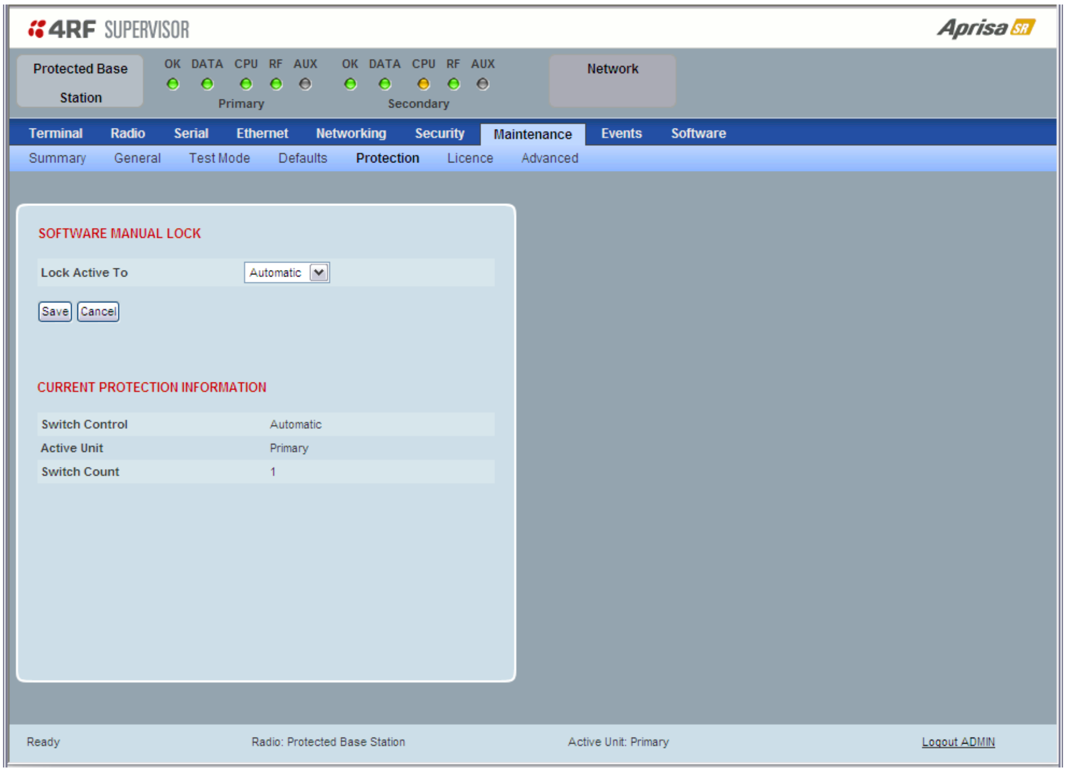
Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

See ‘Maintenance > General’ on page 134 for parameter details.

Maintenance

Protected Station: Maintenance > Protection

This page provides the management and control of the Protected Station Maintenance Protection settings.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary General Test Mode Defaults Protection Licence Advanced
Save Cancel
Ready
Radio: Protected Base Station
Active Unit: Primary
Logout ADMIN

SOFTWARE MANUAL LOCK

Lock Active To: Automatic

CURRENT PROTECTION INFORMATION

Switch Control	Automatic
Active Unit	Primary
Switch Count	1

SOFTWARE MANUAL LOCK

The software Manual Lock is a software implementation of the Hardware Manual Lock switch on the Protection Switch.

Lock Active To

This parameter sets the Protection Switch Software Manual Lock. The Software Manual Lock only operates if the Hardware Manual Lock is deactivated (set to the Auto position).

Option	Function
Automatic	The protection is automatic and switching will be governed by normal switching and blocking criteria.
Primary	The primary radio will become active i.e. traffic will be switched to the primary radio.
Secondary	The secondary radio will become active i.e. traffic will be switched to the secondary radio.

CURRENT PROTECTION INFORMATION

Switch Control

This parameter shows the status of the switch control i.e. which mechanism is in control of the protection switch.

Option	Function
Automatic	The protection is automatic and switching will be governed by normal switching and blocking criteria.
Software Manual Lock	The Software Manual Lock has control of the protection switch.
Hardware Manual Lock	The Hardware Manual Lock has control of the protection switch.

Active Unit

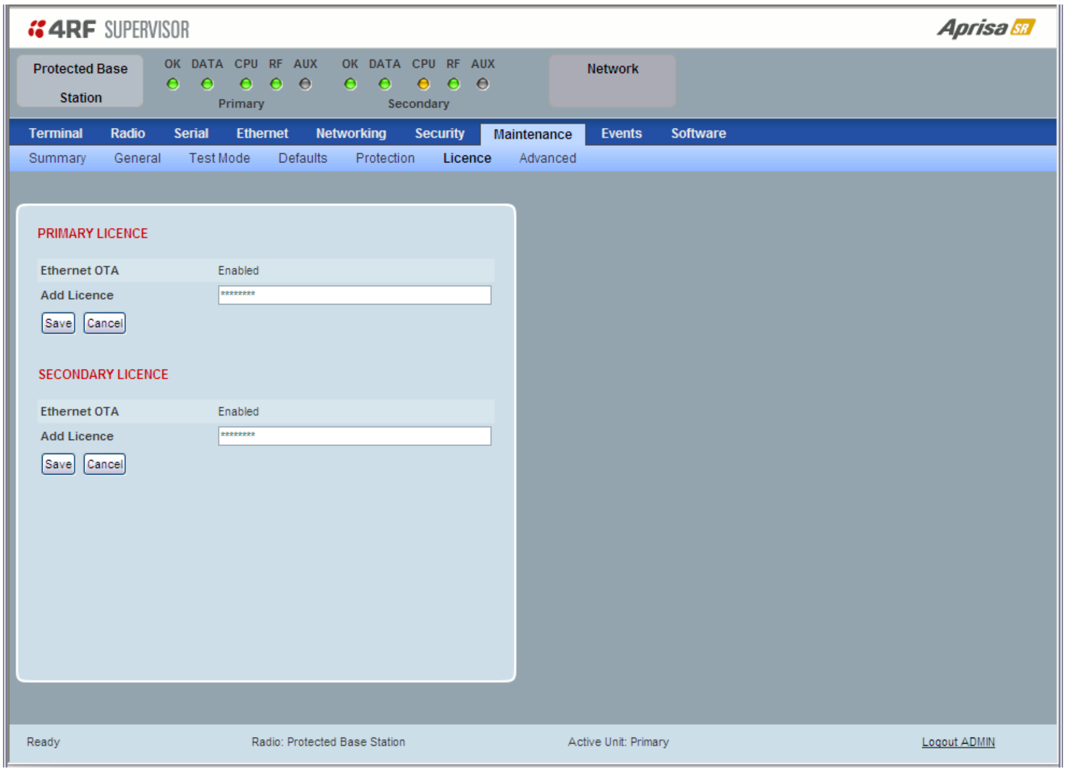
This parameter shows the radio which is currently active (Primary or Secondary).

Switch Count

This parameter shows the number of protection switch-overs since the last radio reboot (volatile).

Protected Station: Maintenance > Licence

This page provides the management and control of the Protected Station Maintenance Licence settings.



PRIMARY LICENCE

Ethernet OTA	Enabled
Add Licence	********

SECONDARY LICENCE

Ethernet OTA	Enabled
Add Licence	********

Radio: Protected Base Station

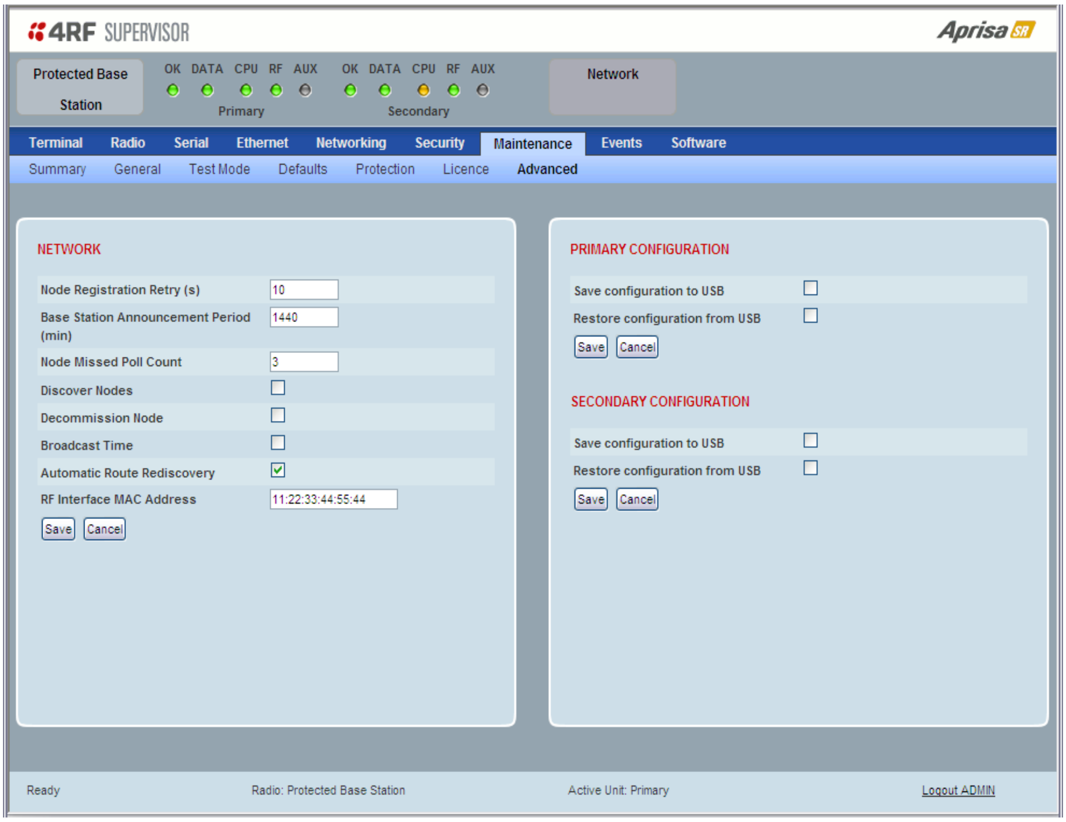
Active Unit: Primary

PRIMARY / SECONDARY LICENCE

See ‘Maintenance > Licence’ on page 140 for parameter details.

Protected Station: Maintenance > Advanced

This page provides the management and control of the Protected Station Maintenance Advanced settings.



NETWORK

Node Registration Retry (s)	10
Base Station Announcement Period (min)	1440
Node Missed Poll Count	3
Discover Nodes	□
Decommission Node	□
Broadcast Time	□
Automatic Route Rediscovery	☑
RF Interface MAC Address	11:22:33:44:55:44

Save Cancel

PRIMARY CONFIGURATION

Save configuration to USB	□
Restore configuration from USB	□

Save Cancel

SECONDARY CONFIGURATION

Save configuration to USB	□
Restore configuration from USB	□

Save Cancel

Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

NETWORK

See ‘Maintenance > Advanced’ on page 141 for parameter details.

PRIMARY / SECONDARY CONFIGURATION

See ‘Maintenance > Advanced’ on page 141 for parameter details.

Events

The Events menu contains the setup and management of the alarms, alarm events and traps.

Protected Station: Events > Alarm Summary

There are two types of events that can be generated on the Aprisa SR radio. These are:

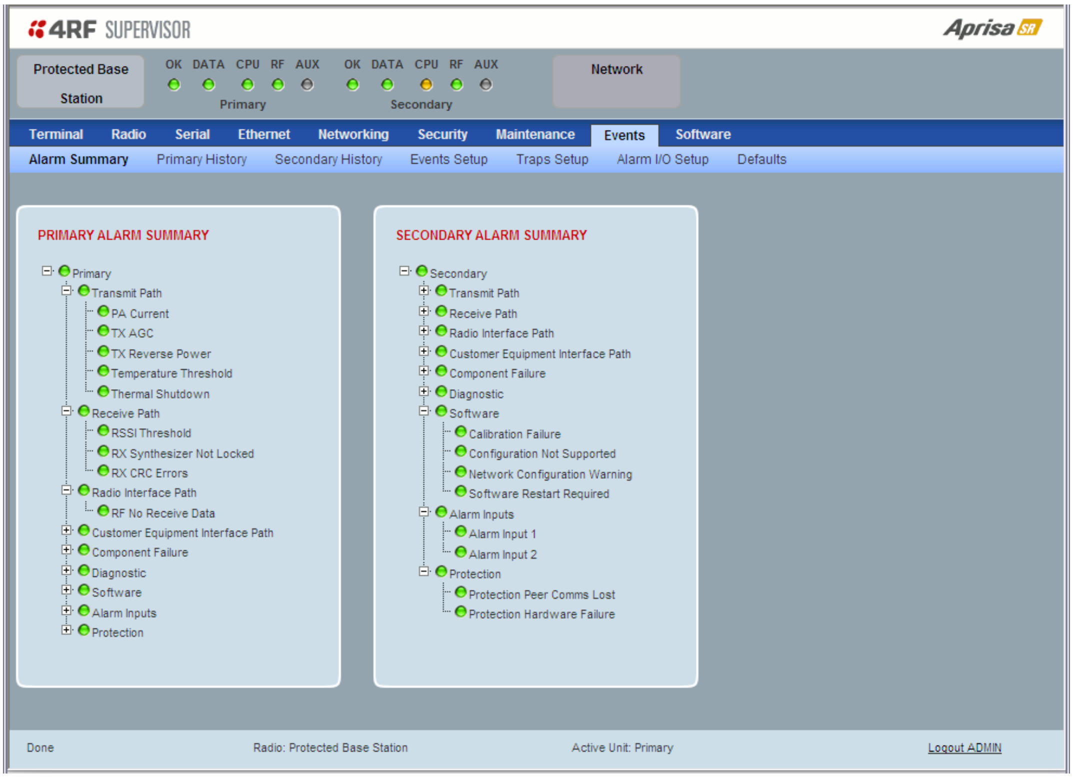
1. Alarm Events

Alarm Events are generated to indicate a problem on the radio.

2. Informational Events

Informational Events are generated to provide information on key activities that are occurring on the radio. These events do not indicate an alarm on the radio and are used to provide information only.

See ‘Alarm Types and Sources’ on page 228 for a complete list of events.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Alarm Summary Primary History Secondary History Events Setup Traps Setup Alarm I/O Setup Defaults

PRIMARY ALARM SUMMARY

- Primary
  - Transmit Path
    - PA Current
    - TX AGC
    - TX Reverse Power
    - Temperature Threshold
    - Thermal Shutdown
  - Receive Path
    - RSSI Threshold
    - RX Synthesizer Not Locked
    - RX CRC Errors
  - Radio Interface Path
    - RF No Receive Data
  - Customer Equipment Interface Path
  - Component Failure
  - Diagnostic
  - Software
  - Alarm Inputs
  - Protection

SECONDARY ALARM SUMMARY

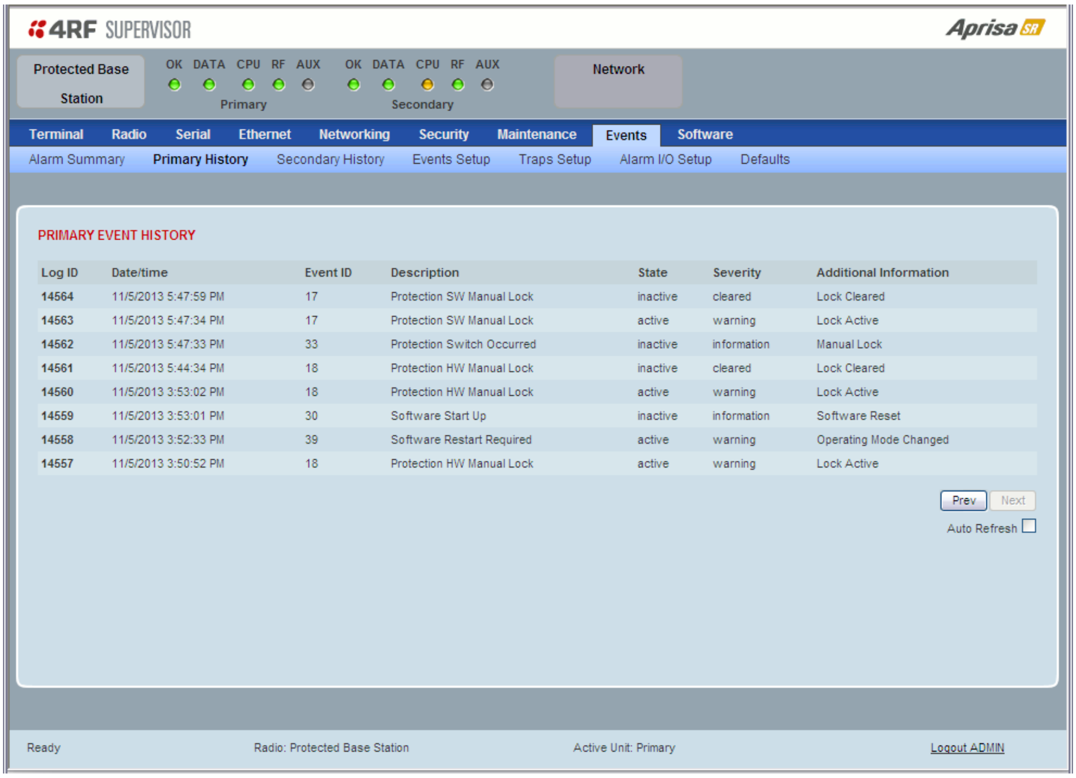
- Secondary
  - Transmit Path
  - Receive Path
  - Radio Interface Path
  - Customer Equipment Interface Path
  - Component Failure
  - Diagnostic
  - Software
    - Calibration Failure
    - Configuration Not Supported
    - Network Configuration Warning
    - Software Restart Required
  - Alarm Inputs
    - Alarm Input 1
    - Alarm Input 2
  - Protection
    - Protection Peer Comms Lost
    - Protection Hardware Failure

Done Radio: Protected Base Station Active Unit: Primary Logout ADMIN

PRIMARY / SECONDARY ALARM SUMMARY

See ‘Events > Alarm Summary’ on page 144 for parameter details.

Protected Station: Events > Primary History


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Alarm Summary Primary History Secondary History Events Setup Traps Setup Alarm I/O Setup Defaults
Prev Next
Auto Refresh □
Ready
Radio: Protected Base Station
Active Unit: Primary
Logout ADMIN

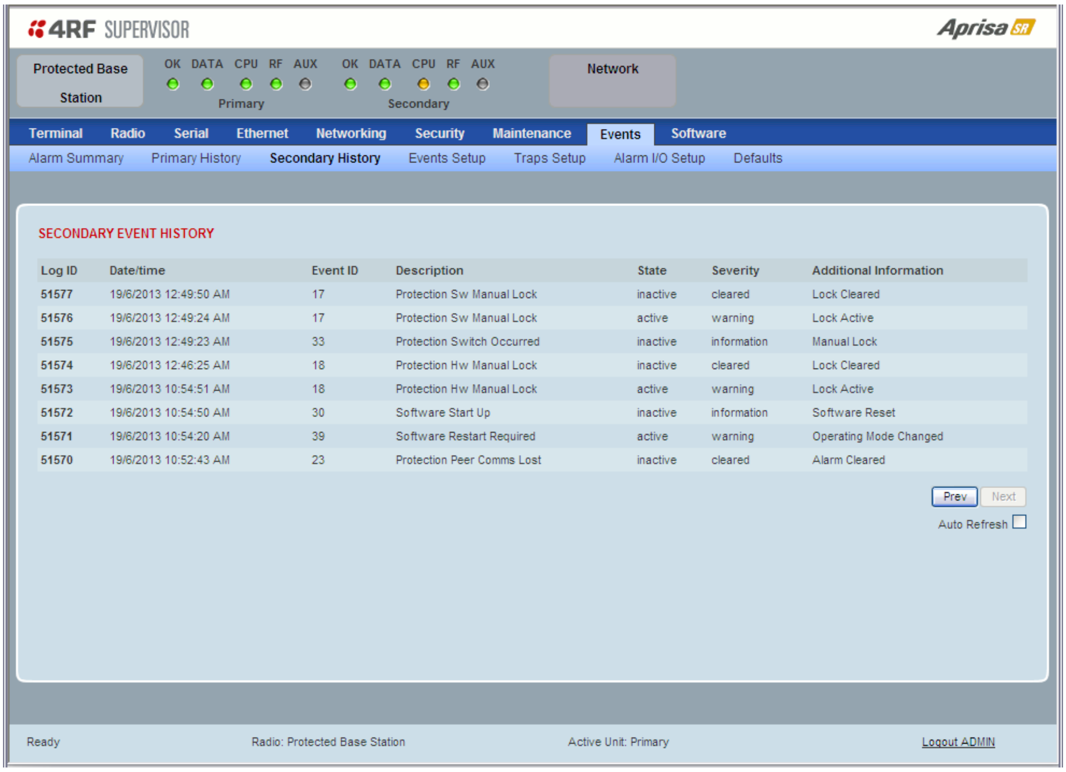
PRIMARY EVENT HISTORY

Log ID	Date/time	Event ID	Description	State	Severity	Additional Information
14564	11/5/2013 5:47:59 PM	17	Protection SW Manual Lock	inactive	cleared	Lock Cleared
14563	11/5/2013 5:47:34 PM	17	Protection SW Manual Lock	active	warning	Lock Active
14562	11/5/2013 5:47:33 PM	33	Protection Switch Occurred	inactive	information	Manual Lock
14561	11/5/2013 5:44:34 PM	18	Protection HW Manual Lock	inactive	cleared	Lock Cleared
14560	11/5/2013 3:53:02 PM	18	Protection HW Manual Lock	active	warning	Lock Active
14559	11/5/2013 3:53:01 PM	30	Software Start Up	inactive	information	Software Reset
14558	11/5/2013 3:52:33 PM	39	Software Restart Required	active	warning	Operating Mode Changed
14557	11/5/2013 3:50:52 PM	18	Protection HW Manual Lock	active	warning	Lock Active

PRIMARY EVENT HISTORY

See ‘Events > Event History’ on page 145 for parameter details.

Protected Station: Events > Secondary History



SECONDARY EVENT HISTORY

Log ID	Date/time	Event ID	Description	State	Severity	Additional Information
51577	19/6/2013 12:49:50 AM	17	Protection Sw Manual Lock	inactive	cleared	Lock Cleared
51576	19/6/2013 12:49:24 AM	17	Protection Sw Manual Lock	active	warning	Lock Active
51575	19/6/2013 12:49:23 AM	33	Protection Switch Occurred	inactive	information	Manual Lock
51574	19/6/2013 12:46:25 AM	18	Protection Hw Manual Lock	inactive	cleared	Lock Cleared
51573	19/6/2013 10:54:51 AM	18	Protection Hw Manual Lock	active	warning	Lock Active
51572	19/6/2013 10:54:50 AM	30	Software Start Up	inactive	information	Software Reset
51571	19/6/2013 10:54:20 AM	39	Software Restart Required	active	warning	Operating Mode Changed
51570	19/6/2013 10:52:43 AM	23	Protection Peer Comms Lost	inactive	cleared	Alarm Cleared

Auto Refresh □

Ready   Radio: Protected Base Station   Active Unit: Primary   Logout ADMIN

SECONDARY EVENT HISTORY

See ‘Events > Event History’ on page 145 for parameter details.

Software

The Software menu contains the setup and management of the system software including network software distribution and activation on a protected station.

Single Radio Software Upgrade

The radio software can be upgraded on a single radio single Aprisa SR radio (see ‘Single Radio Software Upgrade’ on page 223). This process would only be used if the radio was a replacement or a new station in an existing network.

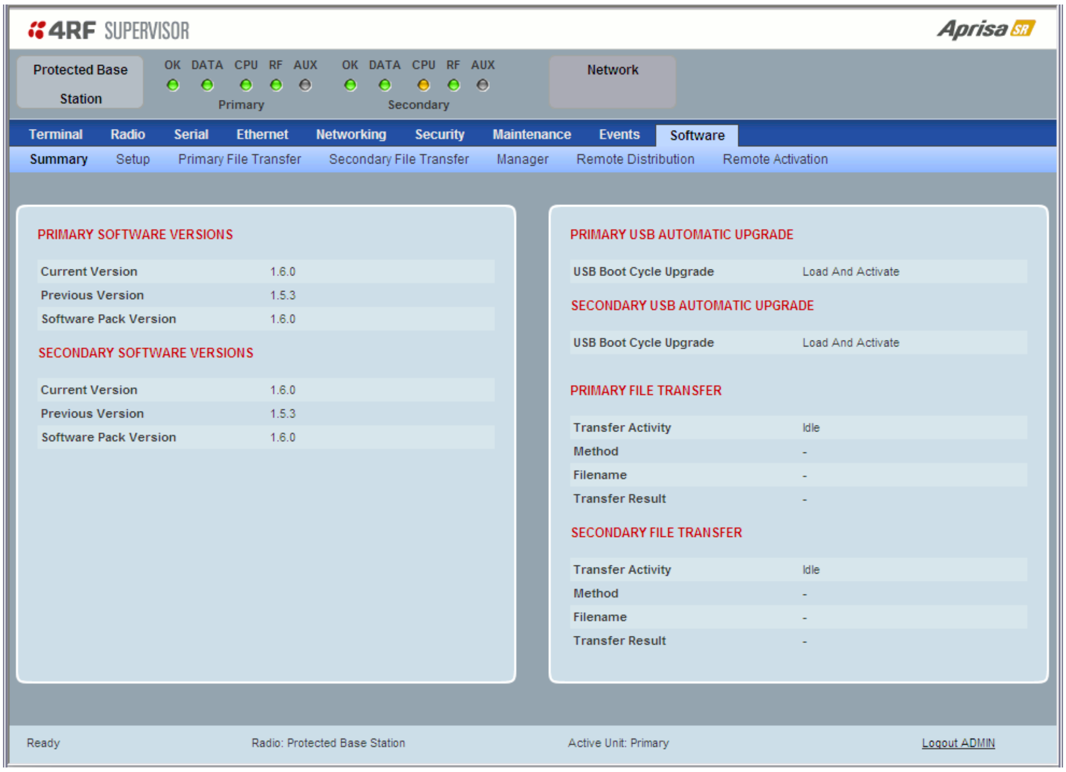
Network Software Upgrade

The radio software can be upgraded on an entire Aprisa SR radio network remotely over the radio link (see ‘Network Software Upgrade’ on page 222). This process involves the following steps:

1. Transfer the new software to base station primary radio with ‘Protected Station: Software > Primary File Transfer’.
2. File Transfer the new software to base station secondary radio with ‘Protected Station: Software > Secondary File Transfer’.
3. Using the Software Manual Lock, manually lock all protected remotes to the currently active radio (this is necessary to prevent automatic switching during the distribution and activation process).
4. Distribute the new software to all remote stations with ‘Protected Station: Software > Remote Distribution’. Note: The software pack in the base station active radio is used for distribution.
5. Activate of the new software on remote stations with ‘Protected Station: Software > Remote Activation’.
6. Finally, activate the new software on the base station primary and secondary radios. Note: activating the software will reboot the radio which will reset the Software Manual Lock to Automatic.

Protected Station: Software > Summary

This page provides a summary of the software versions installed on the radio, the setup options and the status of the File Transfers.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Primary File Transfer Secondary File Transfer Manager Remote Distribution Remote Activation

PRIMARY SOFTWARE VERSIONS

Current Version	1.6.0
Previous Version	1.5.3
Software Pack Version	1.6.0

SECONDARY SOFTWARE VERSIONS

Current Version	1.6.0
Previous Version	1.5.3
Software Pack Version	1.6.0

PRIMARY USB AUTOMATIC UPGRADE

USB Boot Cycle Upgrade	Load And Activate

SECONDARY USB AUTOMATIC UPGRADE

USB Boot Cycle Upgrade	Load And Activate

PRIMARY FILE TRANSFER

Transfer Activity	Idle
Method	-
Filename	-
Transfer Result	-

SECONDARY FILE TRANSFER

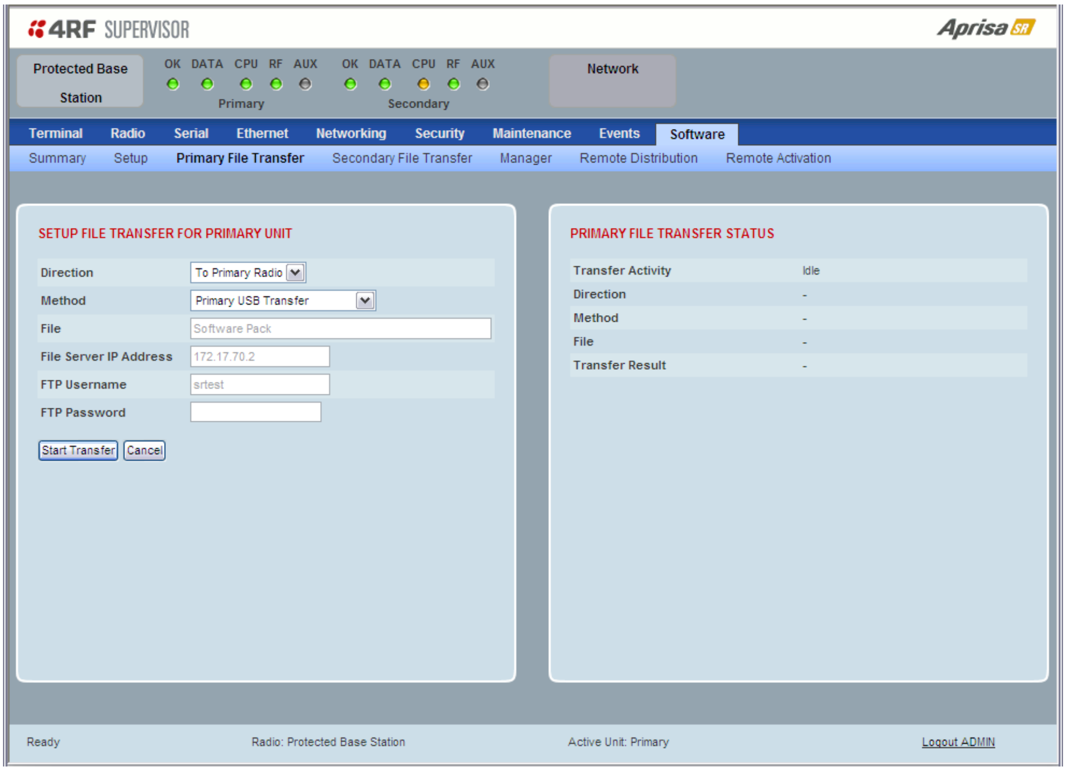
Transfer Activity	Idle
Method	-
Filename	-
Transfer Result	-

PRIMARY / SECONDARY SOFTWARE VERSIONS

See ‘Protected Station: Software > Primary File Transfer’ and ‘Protected Station: Software > Secondary File Transfer’ for parameter details.

Protected Station: Software > Primary File Transfer

This page provides the mechanism to transfer new software from a file source into the primary radio.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Primary File Transfer Secondary File Transfer Manager Remote Distribution Remote Activation
Start Transfer
Cancel

SETUP FILE TRANSFER FOR PRIMARY UNIT

Direction	To Primary Radio
Method	Primary USB Transfer
File	Software Pack
File Server IP Address	172.17.70.2
FTP Username	srtest
FTP Password	

PRIMARY FILE TRANSFER STATUS

Transfer Activity	Idle
Direction	-
Method	-
File	-
Transfer Result	-

Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

SETUP FILE TRANSFER FOR PRIMARY UNIT

Direction

This parameter sets the direction of file transfer. In this software version, the only choice is ‘To Primary Radio’.

Method

This parameter sets the method of file transfer.

Option	Function
Primary USB Transfer	Transfers the software from the USB flash drive to the primary radio.
FTP	Transfers the software from an FTP server to the primary radio.
Transfer from Secondary Unit	Transfers the software from the secondary radio to the primary radio.

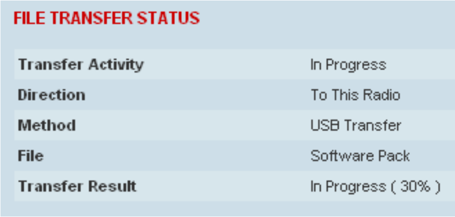
PRIMARY FILE TRANSFER STATUS

See ‘Software > File Transfer’ on page 156 for parameter details.

To transfer software into the Aprisa SR primary radio:

Primary USB Transfer Method

1. Unzip the software release files in to the root directory of a USB flash drive.
2. Insert the USB flash drive into the primary radio Host Port .
3. Click on 'Start Transfer'.



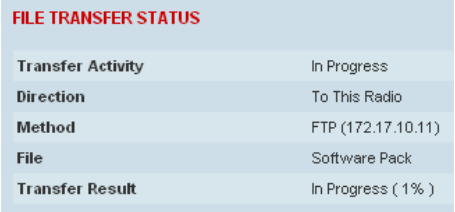
FILE TRANSFER STATUS

Transfer Activity	In Progress
Direction	To This Radio
Method	USB Transfer
File	Software Pack
Transfer Result	In Progress (30%)

4. When the transfer is completed, remove the USB flash drive from the primary radio Host Port. If the SuperVisor 'USB Boot Upgrade' setting is set to 'Disabled' (see 'USB Boot Upgrade' on page 155), the USB flash drive doesn't need to be removed as the radio won't try to load from it.
5. Go to 'Protected Station: Software > Manager' on page 205 to activate the Software Pack. The radio will reboot automatically.

FTP Method

1. Unzip the software release files in to a temporary directory.
2. Open the FTP server and point it to the temporary directory.
3. Enter the FTP server IP address, Username and password into SuperVisor.
4. Click on 'Start Transfer'.



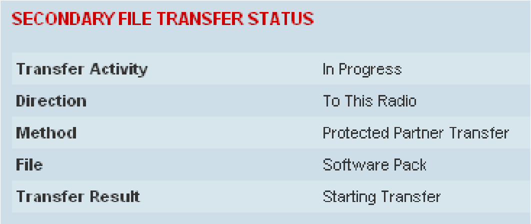
FILE TRANSFER STATUS

Transfer Activity	In Progress
Direction	To This Radio
Method	FTP (172.17.10.11)
File	Software Pack
Transfer Result	In Progress (1%)

5. Go to 'Protected Station: Software > Manager' on page 205 to activate the Software Pack. The radio will reboot automatically.

Transfer from Secondary Unit

1. Select Transfer from Secondary Unit.
2. Click on ‘Start Transfer’.



SECONDARY FILE TRANSFER STATUS

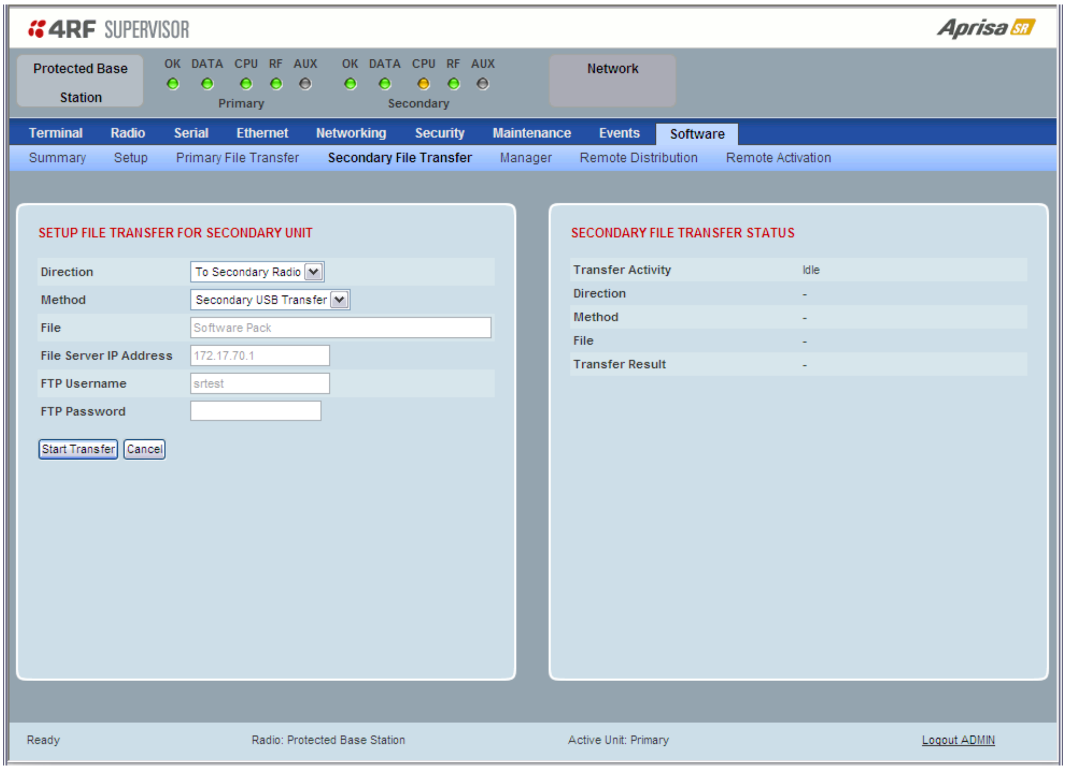
Transfer Activity	In Progress
Direction	To This Radio
Method	Protected Partner Transfer
File	Software Pack
Transfer Result	Starting Transfer

3. Go to ‘Protected Station: Software > Manager’ on page 205 to activate the Software Pack. The radio will reboot automatically.

If the file transfer fails, check the Event History page (see ‘Protected Station: Events > Secondary History’ on page 196) for more details of the transfer.

Protected Station: Software > Secondary File Transfer

This page provides the mechanism to transfer new software from a file source into the secondary radio.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Primary File Transfer Secondary File Transfer Manager Remote Distribution Remote Activation
Start Transfer
Cancel

SETUP FILE TRANSFER FOR SECONDARY UNIT

Direction	To Secondary Radio
Method	Secondary USB Transfer
File	Software Pack
File Server IP Address	172.17.70.1
FTP Username	srtest
FTP Password	

SECONDARY FILE TRANSFER STATUS

Transfer Activity	Idle
Direction	-
Method	-
File	-
Transfer Result	-

Ready   Radio: Protected Base Station   Active Unit: Primary   Logout ADMIN

SETUP FILE TRANSFER FOR SECONDARY UNIT

Direction

This parameter sets the direction of file transfer. In this software version, the only choice is ‘To Secondary Radio’.

Method

This parameter sets the method of file transfer.

Option	Function
Secondary USB Transfer	Transfers the software from the USB flash drive to the secondary radio.
FTP	Transfers the software from an FTP server to the secondary radio.
Transfer from Primary Unit	Transfers the software from the primary radio to the secondary radio.

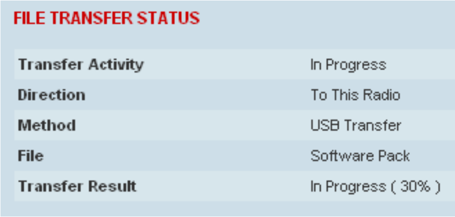
SECONDARY FILE TRANSFER STATUS

See ‘Software > File Transfer’ on page 156 for parameter details.

To transfer software into the Aprisa SR secondary radio:

Secondary USB Transfer Method

1. Unzip the software release files in to the root directory of a USB flash drive.
2. Insert the USB flash drive into the secondary radio Host Port .
3. Click on 'Start Transfer'.



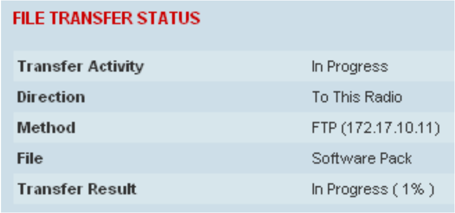
FILE TRANSFER STATUS

Transfer Activity	In Progress
Direction	To This Radio
Method	USB Transfer
File	Software Pack
Transfer Result	In Progress (30%)

4. When the transfer is completed, remove the USB flash drive from the secondary radio Host Port. If the SuperVisor 'USB Boot Upgrade' setting is set to 'Disabled' (see 'USB Boot Upgrade' on page 155), the USB flash drive doesn't need to be removed as the radio won't try to load from it.
5. Go to 'Protected Station: Software > Manager' on page 205 to activate the Software Pack. The radio will reboot automatically.

FTP Method

1. Unzip the software release files in to a temporary directory.
2. Open the FTP server and point it to the temporary directory.
3. Enter the FTP server IP address, Username and password into SuperVisor.
3. Click on 'Start Transfer'.



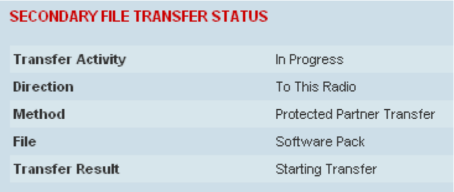
FILE TRANSFER STATUS

Transfer Activity	In Progress
Direction	To This Radio
Method	FTP (172.17.10.11)
File	Software Pack
Transfer Result	In Progress (1%)

4. Go to 'Protected Station: Software > Manager' on page 205 to activate the Software Pack. The radio will reboot automatically.

Transfer from Primary Unit

1. Select Transfer from Primary Unit.
2. Click on ‘Start Transfer’.



SECONDARY FILE TRANSFER STATUS

Transfer Activity	In Progress
Direction	To This Radio
Method	Protected Partner Transfer
File	Software Pack
Transfer Result	Starting Transfer

3. Go to ‘Protected Station: Software > Manager’ on page 205 to activate the Software Pack. The radio will reboot automatically.

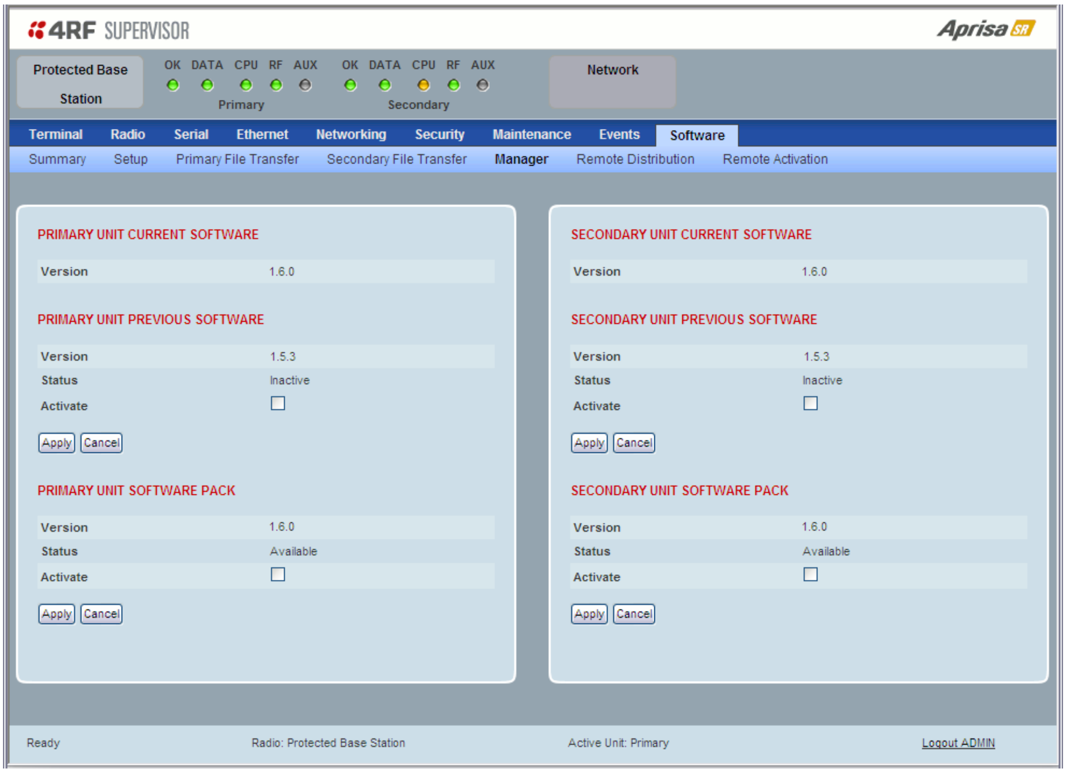
If the file transfer fails, check the Event History page (see ‘Protected Station: Events > Primary History’ on page 195) for more details of the transfer.

Protected Station: Software > Manager

This page summaries and manages the software versions available in the primary and secondary radios.

The manager is predominantly used to activate new software on single radios. Network activation is performed with ‘Protected Station: Software > Remote Activation’.

Both the previous software (if available) and Software Pack versions can be activated on each radio from this page.


4RF SUPERVISOR
Aprisa SR
Protected Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Primary File Transfer Secondary File Transfer Manager Remote Distribution Remote Activation
Apply Cancel

PRIMARY UNIT CURRENT SOFTWARE

Version 1.6.0

PRIMARY UNIT PREVIOUS SOFTWARE

Version 1.5.3
Status Inactive
Activate □

PRIMARY UNIT SOFTWARE PACK

Version 1.6.0
Status Available
Activate □

SECONDARY UNIT CURRENT SOFTWARE

Version 1.6.0

SECONDARY UNIT PREVIOUS SOFTWARE

Version 1.5.3
Status Inactive
Activate □

SECONDARY UNIT SOFTWARE PACK

Version 1.6.0
Status Available
Activate □

Ready Radio: Protected Base Station Active Unit: Primary Logout ADMIN

PRIMARY / SECONDARY CURRENT SOFTWARE

Version

This parameter displays the software version running on the radio.

PRIMARY / SECONDARY PREVIOUS SOFTWARE

Version

This parameter displays the software version that was running on the radio prior to the current software being activated.

Status

This parameter displays the status of the software version running on the radio.

Option	Function
Active	The software is operating the radio.
Inactive	The software is not operating the radio but could be re-activated if required.

PRIMARY / SECONDARY SOFTWARE PACK

Version

This parameter displays the software pack version available for distribution on base station and activate on all stations.

Status

This parameter displays the status of the software pack version.

Option	**Function**
Available	On the base station, the software pack is available for distribution. On all stations, the software pack is available for activation.
Activating	The software pack is activating in the radio.
Unavailable	There is no software pack loaded into the radio.

Activate

This parameter activates the software pack.

The Aprisa SR will automatically reboot after activation.

Protected Station: Software > Remote Distribution

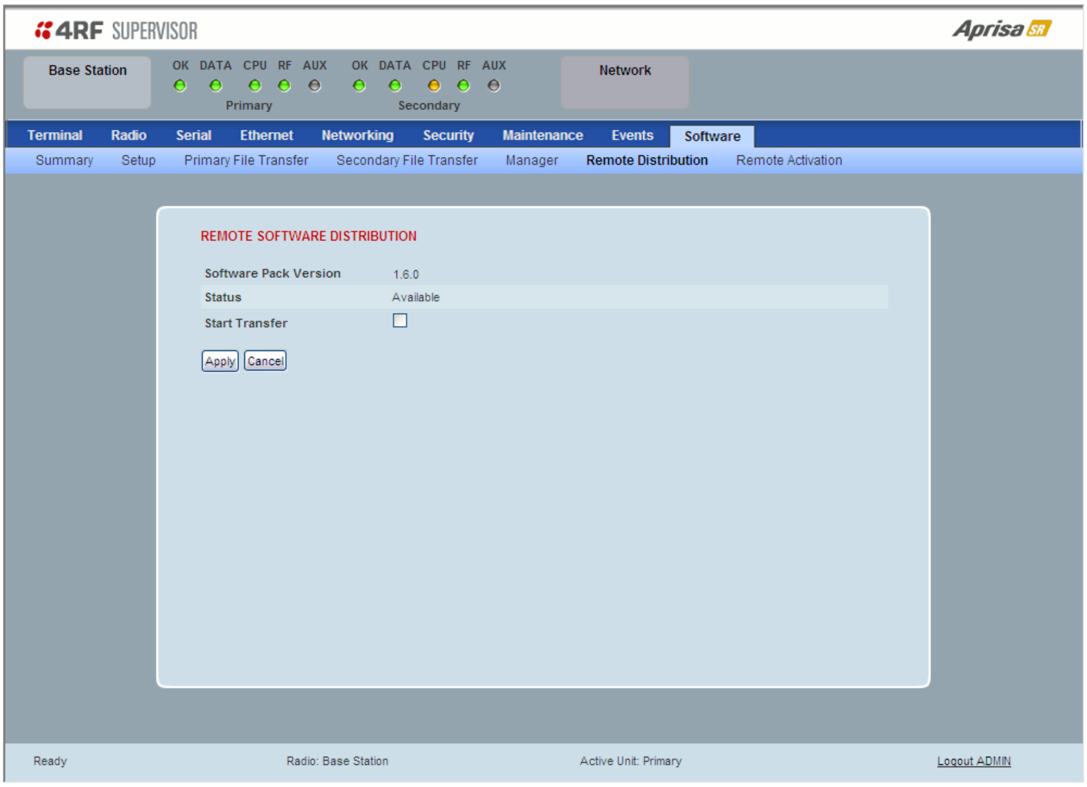
This page provides the mechanism to distribute software to all remote protected stations into the Aprisa SR network (network) and then activate it.

The Software Pack loaded into the base station with the file transfer process (see 'Protected Station: Software > Primary File Transfer' on page 199) is distributed via the radio link to all remote stations from the active radio.

The distribution process is monitored from this page.

When all remote stations receive the Software Pack version, the software can be remotely activated on all remote stations.

This page is only available when the radio is configured as a Base Station.



REMOTE SOFTWARE DISTRIBUTION

Software Pack Version 1.6.0

Status Available

Start Transfer □

REMOTE SOFTWARE DISTRIBUTION

Software Pack Version

This parameter displays the software pack version available for distribution on base station and activate on all stations.

Status

This parameter displays the status of the software pack version.

If a Software Pack is not available, the status will display 'Unavailable' and the software distribution mechanism will not work.

Start Transfer

This parameter when activated distributes (broadcasts) the new Software Pack to all remote stations in the network.

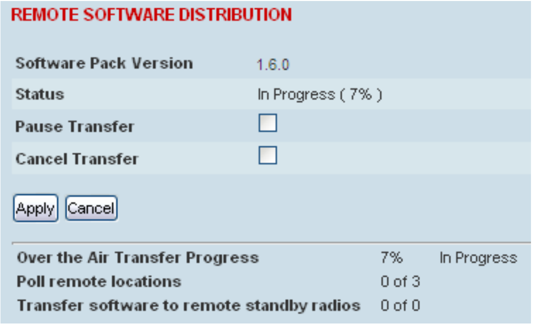
Note: The distribution of software to remote stations does not stop customer traffic from being transferred. However, due to the volume of traffic, the software distribution process may affect customer traffic.

Software distribution traffic is classified as 'management traffic' but does not use the Ethernet management priority setting. Software distribution traffic priority has a fixed priority setting of 'very low'.

To distribute software to remote stations:

This process assumes that a Software Pack has been loaded into the base station with the file transfer process (see 'Protected Station: Software > Primary File Transfer' on page 199).

1. To ensure that the Network Table is up to date, it is recommended running the node discover function (see 'Discover Nodes' on page 142).
2. Click on 'Start Transfer'.



REMOTE SOFTWARE DISTRIBUTION

Software Pack Version	1.6.0
Status	In Progress (7%)
Pause Transfer	□
Cancel Transfer	□

Over the Air Transfer Progress	7%	In Progress
Poll remote locations	0 of 3	
Transfer software to remote standby radios	0 of 0	

Note: This process could take anywhere between 40 minutes and several hours depending on channel size, Ethernet Management Priority setting and the amount of customer traffic on the network.

Result	Function
Over the Air Transfer Progress	The percentage of the software pack that has been broadcast to the remote radios.
Poll Remote Locations	X is the number of radios polled to determine the number of standby radios. Y is the number of remote radios registered with the base station.
Transfer software to remote standby radios	X is the number of standby radios with the new software version. Y is the number of standby radios requiring the new software version.

3. When the distribution is completed, activate the software with the Remote Software Activation.

Pause Transfer

This parameter when activated, pauses the Over the Air Transfer Process and shows the distribution status. The distribution process will continue from where it was paused with Resume Transfer.

Cancel Transfer

This parameter when activated, cancels the Over the Air Transfer Process immediately.

During the distribution process, it is possible to navigate away from this page and come back to it to check progress. The SuperVisor session will not timeout.

Protected Station: Software > Remote Activation

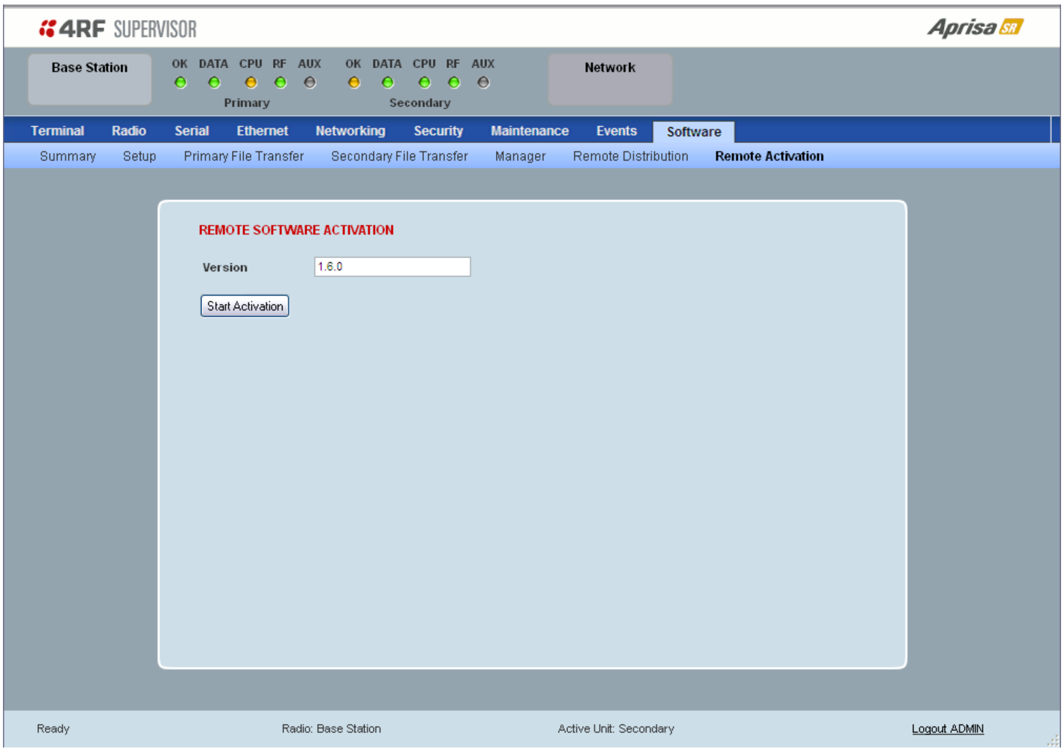
This page provides the mechanism to activate software on all remote protected stations.

The Software Pack has been loaded into the base station with the file transfer process (see ‘Protected Station: Software > Primary File Transfer’ on page 199) and distributed via the radio link to all remote stations from the active radio.

When all remote stations receive the Software Pack version, the software can be remotely activated on all remote stations.

The activation process is monitored by this page.

This page is only available when the radio is configured as a Base Station.


4RF SUPERVISOR
Aprisa SR
Base Station
OK DATA CPU RF AUX
Primary
OK DATA CPU RF AUX
Secondary
Network
Terminal Radio Serial Ethernet Networking Security Maintenance Events Software
Summary Setup Primary File Transfer Secondary File Transfer Manager Remote Distribution Remote Activation
Start Activation
Logout ADMIN

REMOTE SOFTWARE ACTIVATION

Version: 1.6.0

Ready
Radio: Base Station
Active Unit: Secondary

REMOTE SOFTWARE ACTIVATION

When the software pack version has been distributed to all the remote stations, the software is then activated in all the remote stations with this command. If successful, then activate the software pack in the base station to complete the network upgrade.

Version

This parameter displays the software version for activation. The default version is the software pack version but any valid software version can be entered in the format ‘n.n.n’.

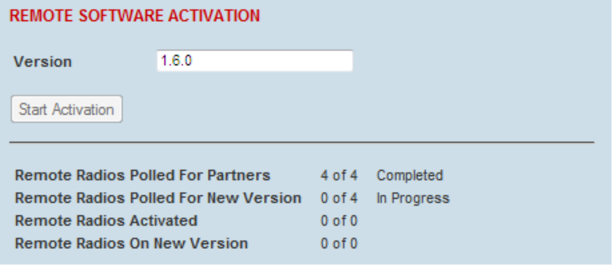
To activate software in remote stations:

This process assumes that a Software Pack has been loaded into the base station with the file transfer process (see 'Software > File Transfer' on page 156) and that distributed to all remote radios in the network.

Note: Do not navigate SuperVisor away from this page during the activation process (SuperVisor can lose PC focus).

---

1. Enter the Software Pack version (if different from displayed version).
2. Click on 'Start Activation'.



REMOTE SOFTWARE ACTIVATION

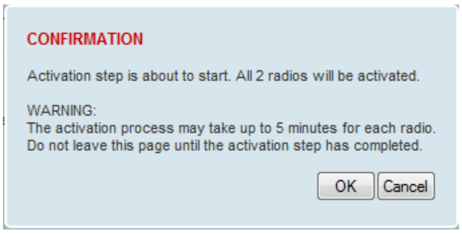
Version 1.6.0

Remote Radios Polled For Partners 4 of 4 Completed
Remote Radios Polled For New Version 0 of 4 In Progress
Remote Radios Activated 0 of 0
Remote Radios On New Version 0 of 0

The remote stations will be polled to determine which radios require activation:

Result	Function (X of Y)
Remote Radios Polled for Partners	X is the number of radios polled to determine the number of protected stations in the network. Y is the number of remote radios registered with the base station.
Remote Radios Polled for New Version	X is the number of radios polled to determine the number of radios that contain the new software version. Y is the number of remote radios registered with the base station.
Remote Radios Activated	X is the number of radios that contain the new software version and have been activated. Y is the number of radios that contain the new software version and can be activated.
Remote Radios On New Version	X is the number of radios that has been successfully activated and now running the new version of software. Y is the number of radios that the activation command was executed on.

When the activation is ready to start:



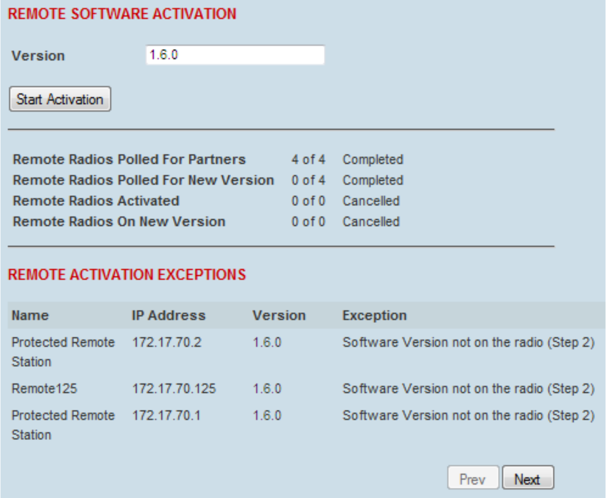
CONFIRMATION

Activation step is about to start. All 2 radios will be activated.

WARNING:
The activation process may take up to 5 minutes for each radio.
Do not leave this page until the activation step has completed.

3. Click on 'OK' to start the activation process or Cancel to quit.

The page will display the progress of the activation.



REMOTE SOFTWARE ACTIVATION

Version 1.6.0

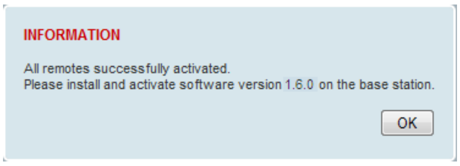
Remote Radios Polled For Partners	4 of 4	Completed
Remote Radios Polled For New Version	0 of 4	Completed
Remote Radios Activated	0 of 0	Cancelled
Remote Radios On New Version	0 of 0	Cancelled

REMOTE ACTIVATION EXCEPTIONS

Name	IP Address	Version	Exception
Protected Remote Station	172.17.70.2	1.6.0	Software Version not on the radio (Step 2)
Remote125	172.17.70.125	1.6.0	Software Version not on the radio (Step 2)
Protected Remote Station	172.17.70.1	1.6.0	Software Version not on the radio (Step 2)

The example shows that during the activation process there were exceptions that may need to be investigated.

When all the remote radios have been activated, the base station radio must now be activated with (see ‘Software > Manager’ on page 159).



INFORMATION

All remotes successfully activated.
Please install and activate software version 1.6.0 on the base station.

4. Click on ‘OK’ to start the activation on the base station.

Command Line Interface

The Aprisa SR has a Command Line Interface (CLI) which provides basic product setup and configuration. This can be useful if you need to confirm the radio's IP address, for example.

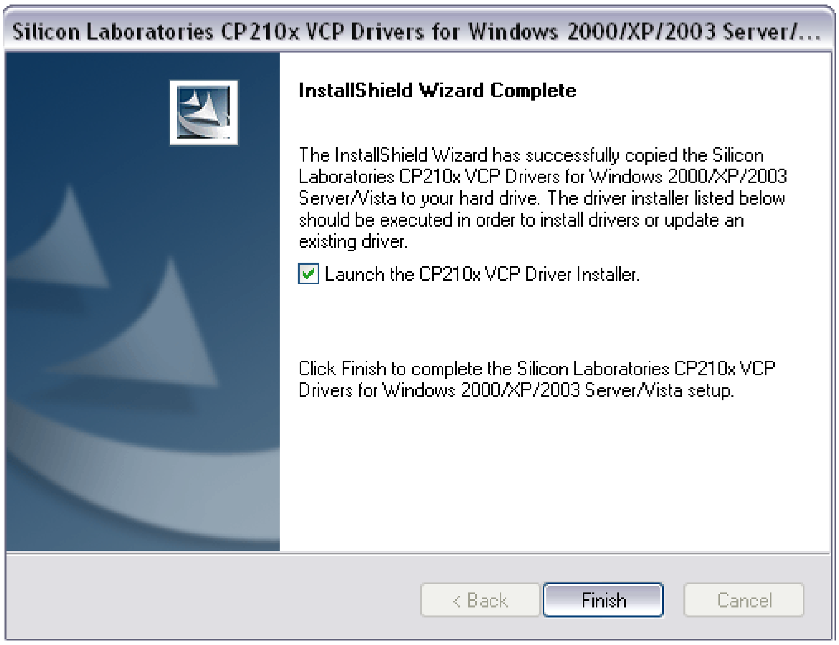
You can password-protect the Command Line Interface to prevent unauthorized users from modifying radio settings.

This interface can be accessed via an Ethernet Port (RJ45) or the Management Port (USB micro type B).

Connecting to the Management Port

A USB Cable USB A to USB micro B, 1m is provided with each radio.

1. Connect the USB A to your computer USB port and the USB micro B to the management port of the Aprisa SR (MGMT).
2. Unzip and install the USB Serial Driver CP210x_VCP_Win2K_XP_S2K3.zip on your computer. This file is on the Information and setup CD supplied with the radio.



Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Server/...

InstallShield Wizard Complete

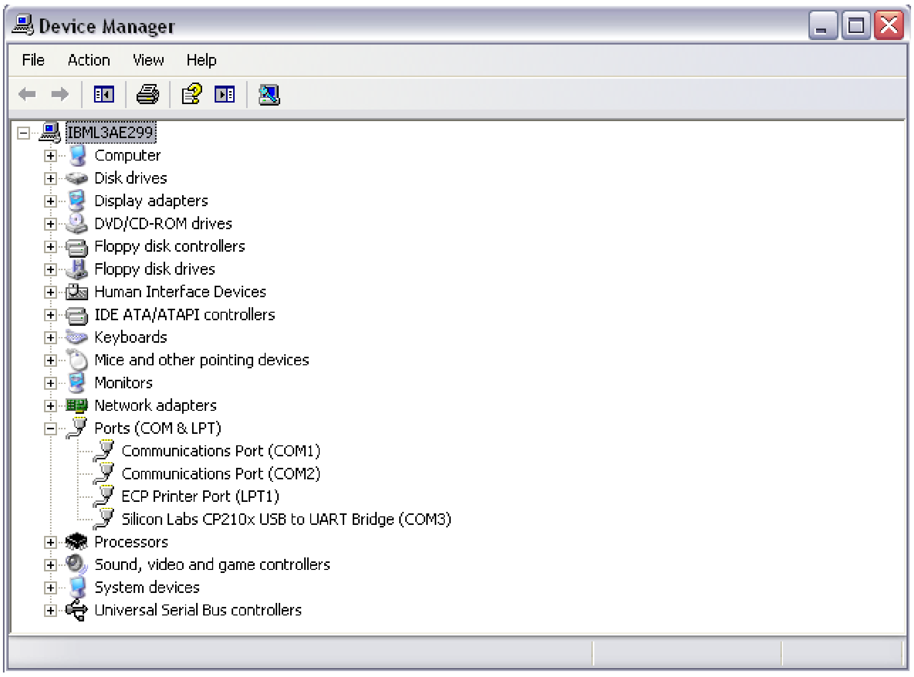
The InstallShield Wizard has successfully copied the Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Server/Vista to your hard drive. The driver installer listed below should be executed in order to install drivers or update an existing driver.

☑ Launch the CP210x VCP Driver Installer.

Click Finish to complete the Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Server/Vista setup.

3. Go to your computer device manager (Control Panel > System > Hardware > Device Manager)
4. Click on 'Ports (COM & LPT)'

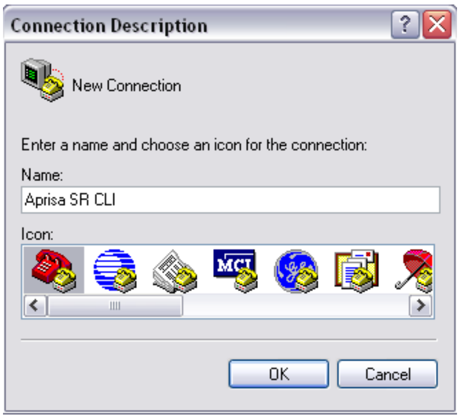
5. Make a note of the COM port which has been allocated to the ‘Silicon Labs CP210x USB to UART Bridge’ (COM3 in the example below)



```
IBML3AE299
    Computer
    Disk drives
    Display adapters
    DVD/CD-ROM drives
    Floppy disk controllers
    Floppy disk drives
    Human Interface Devices
    IDE ATA/ATAPI controllers
    Keyboards
    Mice and other pointing devices
    Monitors
    Network adapters
    Ports (COM & LPT)
        Communications Port (COM1)
        Communications Port (COM2)
        ECP Printer Port (LPT1)
        Silicon Labs CP210x USB to UART Bridge (COM3)
    Processors
    Sound, video and game controllers
    System devices
    Universal Serial Bus controllers
```

6. Open HyperTerminal Session (Start > All Programs > Accessories > Communications > HyperTerminal)

7. Enter a name for the connection (Aprisa SR CLI for example) and click OK.

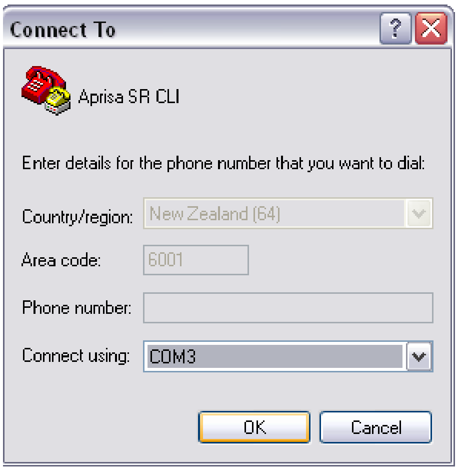


Enter a name and choose an icon for the connection:

Name: Aprisa SR CLI

Icon:

8. Select the COM port from the Connect Using drop-down box that was allocated to the UART USB.



Enter details for the phone number that you want to dial:

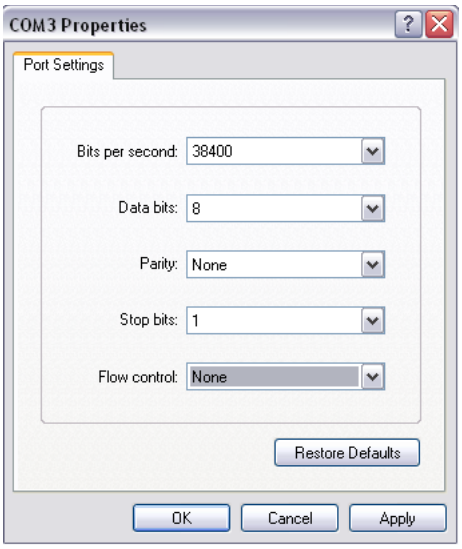
Country/region: New Zealand (64)

Area code: 6001

Phone number:

Connect using: COM3

9. Set the COM port settings as follows:



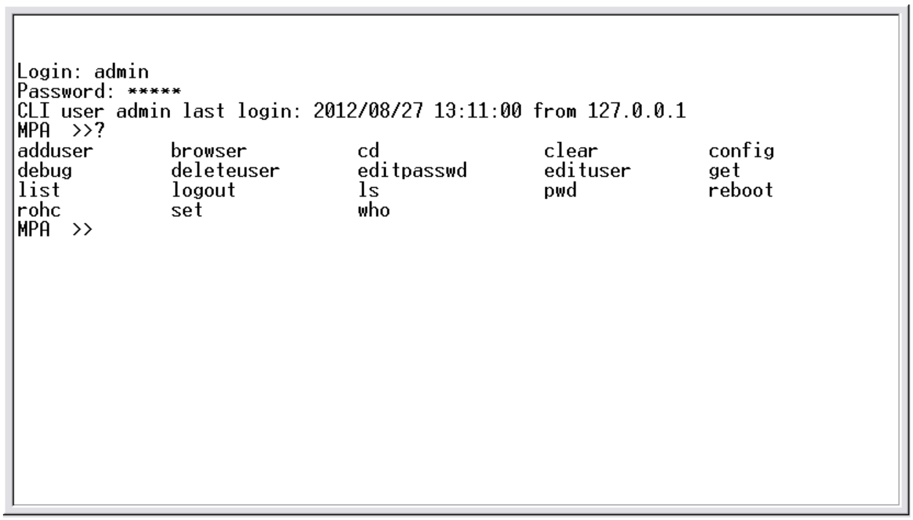
Bits per second: 38400
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None

10. Click OK. The HyperTerminal window will open.

11. Press the Enter key to initiate the session.

12. Login to the Aprisa SR CLI with a default Username ‘admin’ and Password ‘admin’.

The Aprisa MIB menu is shown:



```
Login: admin
Password: *****
CLI user admin last login: 2012/08/27 13:11:00 from 127.0.0.1
MPA  >>?
adduser        browser        cd            clear        config
debug          deleteuser     editpasswd    edituser     get
list           logout         ls            pwd          reboot
rohc           set            who
MPA  >>
```

CLI Commands

To enter a CLI command:

1. Type the first few characters of the command and hit Tab. This auto completes the command.
2. Enter the command string and enter.

Note: All CLI commands are case sensitive.

The top level CLI command list is displayed by typing a ? at the command prompt.

The following is a list of the top level CLI commands and their usage:

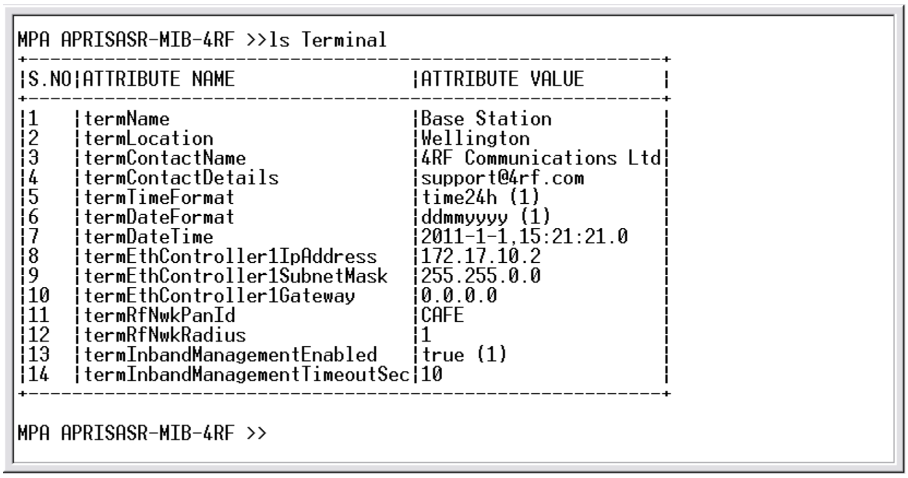
CLI Command	Usage
adduser	adduser [-g <password aging>] [-a <account aging>] [-i <role>] <userName> <userPassword>
browser	browser <state(STR)>
cd	cd <changeMode(STR)>
clear	Clears the screen
config	config userdefault save restore factorydefault restore
debug	set subsystem param(INT) level param(INT) get clear subsystem param(INT) level param(INT) help log dump clear
deleteuser	deleteuser <userName>
editpasswd	editpasswd <oldpassword> <newpassword>
edituser	edituser [-p <password>] [-g <password aging>] [-a <account aging>] [-i]
get	get [-m <mib name>] [-n <module name>] <attribute name> [indexes]
list	list <tablename>
logout	Logs out from the CLI
ls	Displays the next level menu items
pwd	Displays the current working directory
reboot	Reboots the radio
rohc	stats show clear
set	set [-m <mib name>] [-n <module name>] <attribute name> <attribute set v]
who	Shows the users currently logged into the radio

Viewing the CLI Terminal Summary

At the command prompt, type:

MPA >>cd APRISASR-MIB-4RF

MPA APRISASR-MIB-4RF >>ls Terminal

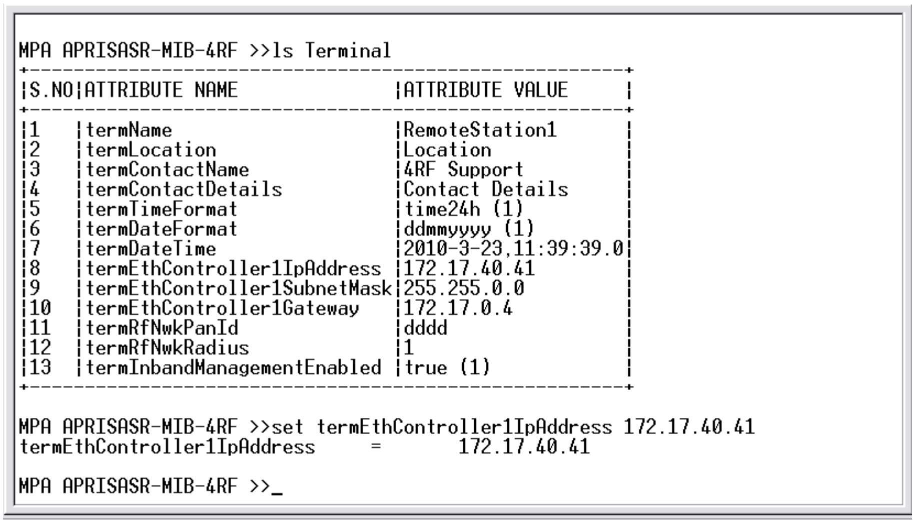


```
MPA APRISASR-MIB-4RF >>ls Terminal
+-----------------------------------------------------------+
|S.NO|ATTRIBUTE NAME                   |ATTRIBUTE VALUE       |
+-----------------------------------------------------------+
|1   |termName                         |Base Station          |
|2   |termLocation                     |Wellington            |
|3   |termContactName                  |4RF Communications Ltd|
|4   |termContactDetails               |support@4rf.com       |
|5   |termTimeFormat                   |time24h (1)           |
|6   |termDateFormat                   |ddmmyyyy (1)          |
|7   |termDateTime                     |2011-1-1,15:21:21.0   |
|8   |termEthController1IpAddress      |172.17.10.2           |
|9   |termEthController1SubnetMask     |255.255.0.0           |
|10  |termEthController1Gateway        |0.0.0.0               |
|11  |termRfNwkPanId                   |CAFE                  |
|12  |termRfNwkRadius                  |1                     |
|13  |termInbandManagementEnabled      |true (1)              |
|14  |termInbandManagementTimeoutSec|10                       |
+-----------------------------------------------------------+

MPA APRISASR-MIB-4RF >>
```

Changing the Radio IP Address with the CLI

At the command prompt, type ‘set termEthController1IpAddress xxx.xxx.xxx.xxx’



```
MPA APRISASR-MIB-4RF >>ls Terminal
+-------------------------------------------------------+
|S.NO|ATTRIBUTE NAME                 |ATTRIBUTE VALUE     |
+-------------------------------------------------------+
|1   |termName                       |RemoteStation1      |
|2   |termLocation                   |Location            |
|3   |termContactName                |4RF Support         |
|4   |termContactDetails             |Contact Details     |
|5   |termTimeFormat                 |time24h (1)         |
|6   |termDateFormat                 |ddmmyyyy (1)        |
|7   |termDateTime                   |2010-3-23,11:39:39.0|
|8   |termEthController1IpAddress    |172.17.40.41        |
|9   |termEthController1SubnetMask|255.255.0.0            |
|10  |termEthController1Gateway      |172.17.0.4          |
|11  |termRfNwkPanId                 |dddd                |
|12  |termRfNwkRadius                |1                   |
|13  |termInbandManagementEnabled    |true (1)            |
+-------------------------------------------------------+

MPA APRISASR-MIB-4RF >>set termEthController1IpAddress 172.17.40.41
termEthController1IpAddress      =        172.17.40.41

MPA APRISASR-MIB-4RF >>_
```

In-Service Commissioning

Before You Start

When you have finished installing the hardware, RF and the traffic interface cabling, the system is ready to be commissioned. Commissioning the radio is a simple process and consists of:

1. Powering up the radios.
2. Configuring all radios in the network using SuperVisor.
3. Aligning the antennas.
4. Testing that the links are operating correctly.
5. Connecting up the client or user interfaces.

What You Will Need

- Appropriately qualified commissioning staff at both ends of each link.
- Safety equipment appropriate for the antenna location at both ends of each link.
- Communication equipment, that is, mobile phones or two-way radios.
- SuperVisor software running on an appropriate laptop, computer, or workstation at the base station radio.
- Tools to facilitate loosening and re-tightening the antenna pan and tilt adjusters.
- Predicted receiver input levels and fade margin figures from the radio link budget.

Antenna Alignment

A base station omni directional collinear antenna has a vertical polarization. The remote station yagi antennas must also have vertical polarization.

Aligning the Antennas

Align the remote station yagi antennas by making small adjustments while monitoring the RSSI. The Aprisa SR has a Test Mode which presents a real time visual display of the RSSI on the front panel LEDs. This can be used to adjust the antenna for optimum signal strength (see 'Test Mode' on page 28).

Note: Low gain antennas need less adjustment in elevation as they are simply aimed at the horizon. They should always be panned horizontally to find the peak signal.

1. Press and hold the ENTER button on the radio LED panel until all the LEDs flash green (about 3 - 5 seconds).

   Note: The time for the LEDs to display the RSSI result is variable, depending on the network traffic, and can be up to 5 seconds. Small antenna adjustments should be made and then wait for the display to refresh.

   The RSSI poll refresh rate can be set with the SuperVisor command 'Transmit Period' (see 'Maintenance > Test Mode' on page 137).

2. Move the antenna through a complete sweep horizontally (pan). Note down the RSSI reading for all the peaks in RSSI that you discover in the pan.
3. Move the antenna to the position corresponding to the maximum RSSI value obtained during the pan. Move the antenna horizontally slightly to each side of this maximum to find the two points where the RSSI drops slightly.
4. Move the antenna halfway between these two points and tighten the clamp.
5. If the antenna has an elevation adjustment, move the antenna through a complete sweep (tilt) vertically. Note down the RSSI reading for all the peaks in RSSI that you discover in the tilt.
6. Move the antenna to the position corresponding to the maximum RSSI value obtained during the tilt. Move the antenna slightly up and then down from the maximum to find the two points where the RSSI drops slightly.
7. Move the antenna halfway between these two points and tighten the clamp.
8. Recheck the pan (steps 2-4) and tighten all the clamps firmly.
9. To exit Test Mode, press and hold the ENTER button until all the LEDs flash red (about 3 – 5 seconds).

9. Maintenance

No User-Serviceable Components

There are no user-serviceable components within the radio.

All hardware maintenance must be completed by 4RF or an authorized service centre.

Do not attempt to carry out repairs to any boards or parts.

Return all faulty radios to 4RF or an authorized service centre.

For more information on maintenance and training, please contact 4RF Customer Services at support@4rf.com.

CAUTION: Electro Static Discharge (ESD) can damage or destroy the sensitive electrical components in the radio.

Radio Software Upgrade

A software upgrade can be performed on a single radio or an entire Aprisa SR network (network).

Network Software Upgrade

This process allows customers to upgrade their Aprisa SR network from the central base station location without need for visiting remote sites.

The Software Pack is loaded into the base station with the file transfer process (see 'Software > File Transfer' on page 156) and distributed via the radio link to all remote stations.

When all remote stations receive the Software Pack version, the software can be remotely activated on all remote stations.

Upgrade Process

The Aprisa SR network upgrade operation is indicated in base station and remote stations by a flashing orange AUX LED.

To upgrade the entire Aprisa SR network software:

1. Using File Transfer, load the software pack into the base station (see 'Software > File Transfer' on page 156).
2. Distribute the software to the entire network of remote radios (see 'Software > Remote Distribution' on page 162).

Note: The distribution of software to remote stations does not stop customer traffic from being transferred. However, due to the volume of traffic, the software distribution process may affect customer traffic.

Software distribution traffic is classified as 'management traffic' but does not use the Ethernet management priority setting. Software distribution traffic priority has a fixed priority setting of 'very low'.

3. Activate the software on the entire network of remote radios (see 'Software > Remote Activation' on page 164).

   Where the new software has been activated, remote stations will re-register with the base station. The remote stations software version can verified with 'Network Status > Network Table' on page 167.

4. Activate the software on the base station radio (see 'Software > Manager' on page 159).

Single Radio Software Upgrade

The software upgrade procedure is different for an Aprisa SR Protected Station (see ‘Protected Station Software Upgrade’ on page 35).

Note: If a radio has been configured for a Protection Type of ‘Redundant’ (see ‘Protected Station: Terminal > Operating Mode’ on page 178), and that radio is no longer part of a Protected Station, the Protection Type must be changed to ‘None’ before the radio software upgrade can be achieved.

File Transfer Method

This process allows customers to upgrade a single Aprisa SR radio.

The Software Pack is loaded into the radio with the file transfer process (see ‘Software > File Transfer’ on page 156) and activated (see ‘Software > Manager’ on page 159).

Upgrade Process

The Aprisa SR upgrade operation is indicated by a flashing orange AUX LED.

To upgrade the Aprisa SR radio software:

1. Unzip the software release files in to the root directory of a USB flash drive.
2. Check that the SuperVisor USB Boot Upgrade setting is set to ‘Disabled’ (see ‘Software > Setup’ on page 155).
3. Insert the USB flash drive into the Host Port .
4. Using File Transfer, load the software pack into the radio (see ‘Software > File Transfer’ on page 156).
5. Activate the software on the radio (see ‘Software > Manager’ on page 159).

USB Boot Upgrade Method

A single Aprisa SR radio can also be upgraded simply by plugging a USB flash drive containing the new software into the USB A host port on the Aprisa SR front panel and power cycling the radio.

Upgrade Process

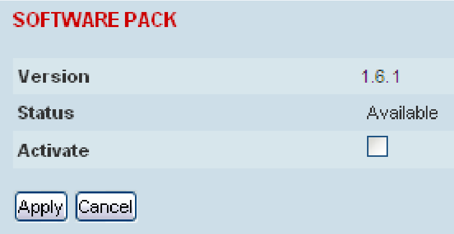
To upgrade the Aprisa SR radio software:

1. Unzip the software release files in to the root directory of a USB flash drive.
2. Check that the SuperVisor USB Boot Upgrade setting is set to ‘Load and Activate’ (see ‘Software > Setup’ on page 155).
3. Power off the Aprisa SR and insert the USB flash drive into the Host Port .
4. Power on the Aprisa SR.
5. The software upgrade process is complete when the OK LED lights solid orange. This can take about 2 minutes.

   The software will have loaded in to the radio Software Pack location.
6. Remove the USB flash drive from the Host Port .
7. Power cycle the Aprisa SR.

Login to the radio being upgraded and go to SuperVisor ‘Software > Manager’ on page 159.

The version of the uploaded software will be displayed in the Software Pack ‘Version’ field.



SOFTWARE PACK

Version	1.6.1
Status	Available
Activate	□

If the upgrade process did not start, the Aprisa SR could already be operating on the version of software on the USB flash drive. This will be indicated by flashing OK LED and then the OK, DATA and CPU will light steady green.

If the radio is not operating on the new software (after the power cycle), it could be caused by the SuperVisor ‘USB Boot Upgrade’ setting set to ‘Load Only’ (see ‘Software > Setup’ on page 155).

In this case, go to SuperVisor see ‘Software > Manager’ on page 159 and tick the Software Pack ‘Activate’ checkbox and click ‘Appy’.

If any Display Panel LED flashes red or is steady red during the upgrade process, it indicates that the upgrade has failed. This could be caused by incorrect files on the USB flash drive or a radio hardware failure.

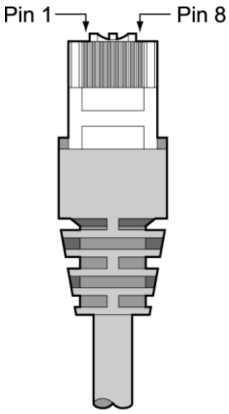
Software Downgrade

Radio software can also be downgraded if required. This may be required if a new radio is purchased for an existing network which is operating on an earlier software release.

The downgrade process is the same as the upgrade process.

10. Interface Connections

RJ45 Connector Pin Assignments



RJ45 pin numbering

Ethernet Interface Connections

Pin Number	Pin Function	Direction	TIA-568A wire colour
1	Transmit	Output	Green/white
2	Transmit	Output	Green
3	Receive	Input	Orange/white
4	Not used		Blue
5	Not used		Blue/white
6	Receive	Input	Orange
7	Not used		Brown/white
8	Not used		Brown

RJ45 connector LED indicators		
LED	**Status**	**Explanation**
Green	On	Ethernet signal received
Green	Flashing	Indicates data traffic present on the interface

Note: Do not connect Power over Ethernet (PoE) connections to the Aprisa SR Ethernet ports as this will damage the port.

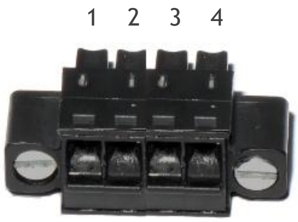
RS-232 Serial Interface Connections

The RS-232 Serial Interface is always configured as a DCE:

RJ45 Pin Number	Pin Function	Direction	TIA-568A Wire Colour
1	RTS	Input	Green / white
2	DTR	Input	Green
3	TXD	Input	Orange / white
4	Ground		Blue
5	DCD	Output	Blue / white
6	RXD	Output	Orange
7	DSR	Output	Brown / white
8	CTS	Output	Brown

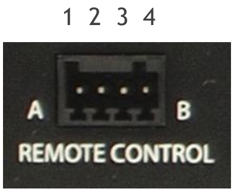
Hardware Alarms Connections

The power and alarm connector provides two hardware alarm inputs for alarm transmission to the other radios in the network.



Pin Number	1	2	3	4
Function	Alarm Port 1	Alarm Port 2	Power Negative	Power Positive

Protection Switch Remote Control Connections



Pin Number	1	2	3	4
Function	A radio active	Ground	B radio active	Ground

11. Alarm Types and Sources

Alarm Types

There are three types of alarm event configuration types:

1. Threshold Type

These alarm events have lower and upper limits. An alarm is raised if current reading is outside the limits.

Note: the limits for PA Current, TX AGC, TX Reverse Power and Thermal shutdown are not user configurable.

2. Error Ratio Type

This is the ratio of bad packets vs total packets in the defined sample duration.

For Serial, it is the ratio of bad characters vs total characters in the duration seconds. An alarm is raised if current error ratio is greater than the configured ratio. The error ratio is configured in ‘Upper Limit’ field and accepts value between 0 and 1. Monitoring of these events can be disabled by setting the duration parameter to 0.

3. Sample Duration Type

Used for No Receive data events type. An alarm is raised if no data is received in the defined sample duration. Monitoring of these events can be disabled by setting the duration parameter to 0.

See ‘Events > Events Setup’ on page 146 for setup of alarm thresholds / sample durations etc.

Alarm Events

Transmitter Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
1	PA Current	critical(1)	Threshold Type	Alarm to indicate that the current drawn by the transmitter power amplifier is outside defined limits.
2	TX AGC	critical(1)	Threshold Type	Alarm to indicate that the variable gain control of the transmitter is outside defined limits.
3	TX Reverse Power	warning(4)	Threshold Type	Alarm to indicate that the antenna is not connected to the radio
4	Temperature Threshold	warning(4)	Threshold Type	Alarm to indicate that the transmitter temperature is outside defined limits.
31	Thermal Shutdown	critical(1)	Threshold Type	Alarm to indicate that the transmitter has shutdown due to excessively high temperature.

Receiver Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
7	RSSI Threshold	warning(4)	Threshold Type	Alarm to indicate that the receiver RSSI reading taken on the last packet received is outside defined limits.
8	RX Synthesizer Not Locked	critical(1)	Not Configurable	Alarm to indicate that the receiver Synthesizer is not locked on the RF received signal.
9	RX CRC Errors	warning(4)	Error Ratio Type	Alarm to indicate that the data received on the RF path contains errors at a higher rate than the defined error rate threshold.

Radio Interface Path Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
34	RF No Receive Data	warning(4)	Sample Duration Type	Alarm to indicate that there is no data received on the RF path in the defined duration period.

Customer Equipment Interface Path Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
10	Port 1 Eth No Receive Data	warning(4)	Sample Duration Type	Alarm to indicate that Ethernet port 1 has no received input signal in the defined duration period.
11	Port 1 Eth Data Receive Errors	warning(4)	Error Ratio Type	Alarm to indicate that Ethernet port 1 received input signal contains errors at a higher rate than the defined error rate threshold.
12	Port 1 Eth Data Transmit Errors	warning(4)	Error Ratio Type	Alarm to indicate that Ethernet port 1 transmitted output signal contains errors at a higher rate than the defined error rate threshold.
35	Port 2 Eth No Receive Data	warning(4)	Sample Duration Type	Alarm to indicate that Ethernet port 2 has no received input signal in the defined duration period.
36	Port 2 Eth Data Receive Errors	warning(4)	Error Ratio Type	Alarm to indicate that Ethernet port 2 received input signal contains errors at a higher rate than the defined error rate threshold.
37	Port 2 Eth Data Transmit Errors	warning(4)	Error Ratio Type	Alarm to indicate that Ethernet port 2 transmitted output signal contains errors at a higher rate than the defined error rate threshold.
13	Serial Data No Receive Data	warning(4)	Sample Duration Type	Alarm to indicate that the RS-232 port has no received input signal in the defined duration period.
14	Serial Data Receive Errors	warning(4)	Error Ratio Type	Alarm to indicate that the RS-232 port received input signal contains errors at a higher rate than the defined error rate threshold.

Component Failure Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
16	Component Failure	major(2)	Not Configurable	Alarm to indicate that a hardware component has failed.

Diagnostic Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
17	Protection Sw Manual Lock	warning(4)	Not Configurable	Alarm to indicate that the Protection Switch Software Manual Lock has been activated.
18	Protection Hw Manual Lock	warning(4)	Not Configurable	Alarm to indicate that the Protection Switch Hardware Manual Lock has been activated.

Software Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
20	Calibration Failure	major(2)	Not Configurable	Alarm to indicate that the RF calibration has failed.
21	Configuration Not Supported	major(2)	Not Configurable	Alarm to indicate that a configuration has entered that is invalid.
32	Network Configuration Warning	warning(4)	Not Configurable	Alarm to indicate a network configuration problem e.g. duplicate IP address.
39	Software Restart Required	warning(4)	Not Configurable	Alarm to indicate that a configuration has changed that requires a software reboot.

Protection Alarms

Event ID	Event Display Text	Default Severity	Configuration Type	Function
23	Protection Peer Comms Lost	major(2)	Not Configurable	Alarm to indicate that the standby radio has lost communication with the active radio.
54	Protection Hardware Failure	major(2)	Not Configurable	Alarm to indicate that there is a failure in the protection switch hardware.

Informational Events

Event ID	Event Display Text	Default Severity	Function
26	User authentication succeeded	information(5)	Event to indicate that a user is successfully authenticated on the radio during login. The information on the user that was successfully authenticated is provided in the eventHistoryInfo object of the Event History Log.
27	User authentication failed	information(5)	Event to indicate that a user has failed to be authenticated on the radio during login. The information on the user that was unsuccessfully authenticated is provided in the eventHistoryInfo object of the Event History Log.
28	Protection switch failed	information(5)	Event to indicate that a protection switch over cannot occur for some reason. The reason for the failure to switch is described in the eventHistoryInfo object of the Event History Log.
29	Software System Check	information(5)	Event to indicate that the software has done a system check on the radio. Any information relevant to the cause of the event is provided in the eventHistoryInfo object of the Event History Log.
30	Software Start Up	information(5)	Event to indicate that the radio software has started. Any information relevant to the software start up is provided in the eventHistoryInfo object of the Event History Log.
33	Protection Switch Occurred	information(5)	Event to indicate that a protection switch over occurs for some reason. The reason for the switch over is described in the eventHistoryInfo object of the Event History Log.

12. Specifications

RF Specifications

Frequency Bands

Broadcast Band	Frequency Band	Frequency Tuning Range	Synthesizer Step Size
VHF	136 MHz	136-174 MHz	6.250 kHz
UHF	400 MHz	400-470 MHz	6.250 kHz

Channel Sizes

Channel Size	Gross Radio Capacity
12.5 kHz	9.6 kbit/s
25 kHz	19.2 kbit/s

Transmitter

Transmit Power output	0.01 to 5.0 W (+10 to +37 dBm, in 1 dB steps)
Adjacent channel power	< -60 dBc
Transient adjacent channel power	< -50 dBc
Spurious emissions	< -37 dBm
Attack time	< 1.5 ms
Release time	< 1.5 ms
Data turnaround time	< 10 ms
Frequency stability	± 1 ppm
Frequency aging	< 1 ppm / annum
Synthesizer lock time	< 1.5 ms (5 MHz step)

Note: The Aprisa SR transmitter contains power amplifier protection which allows the antenna to be disconnected from the antenna port without product damage.

Receiver

		12.5 kHz	25 kHz
Receiver sensitivity	BER < 10^{-2}	-117 dBm	-114 dBm
	BER < 10^{-3}	-115 dBm	-112 dBm
	BER < 10^{-6}	-113 dBm	-110 dBm
Adjacent channel selectivity		> -47 dBm (> 60 dB)	> -37 dBm (> 65 dB)
Co-channel rejection		> -12 dB	

Intermodulation response rejection	> -37 dBm (> 71 dB)
Blocking or desensitization	> -17 dBm (> 90 dB)
Spurious response rejection	> -32 dBm (> 75 dB)
Receiver spurious radiation	< -57 dBm

Modem

Modulation	4-CPFSK
Forward Error Correction	¾ trellis code

Data Payload Security

Data payload security	CCM* Counter with CBC-MAC
Data encryption	Counter Mode Encryption (CTR) using Advanced Encryption Standard (AES) 128, 192 or 256 bit
Data authentication	Cipher Block Chaining Message Authentication Code (CBC-MAC) using Advanced Encryption Standard (AES) 128, 192 or 256 bit

Interface Specifications

Ethernet Interface

The Aprisa SR radio features an integrated 10Base-T/100Base-TX layer-2 Ethernet switch.

To simplify network setup, each port supports auto-negotiation and auto-sensing MDI/MDIX. Operators can select from the following preset modes:

- Auto negotiate
- 10Base-T half or full duplex
- 100Base-TX half or full duplex

The switch is IEEE 802.3-compatible. It passes VLAN tagged traffic.

General	Interface	RJ45 x 2 (Integrated 2-port switch)
	Cabling	CAT-5 UTP, supports auto MDIX (Standard Ethernet)
	Maximum line length	100 metres on cat-5 or better
	Bandwidth allocation	The Ethernet capacity maximum is determined by the available radio link capacity.
	Maximum transmission unit	Option setting of 1522 or 1536 octets
	Address table size	1024 MAC addresses
	Ethernet mode	10Base-T or 100Base-TX Full duplex or half duplex (Auto-negotiating and auto-sensing)
Diagnostics	Left Green LED	Off: no Ethernet signal received On: Ethernet signal received
	Right Green LED	Off: Indicates no data traffic present on the interface Flashing: Indicates data traffic present on the interface

Note: Do not connect Power over Ethernet (PoE) connections to the Aprisa SR Ethernet ports as this will damage the port.

RS-232 Asynchronous Interface

The Aprisa SR radio's ITU-T V.24 compliant RS-232 interface is configured as a Cisco® pinout DCE. The interface terminates to a DTE using a straight-through cable or to a DCE with a crossover cable (null modem).

The interface uses two handshaking control lines between the DTE and the DCE.

General	Interface	ITU-T V.24 / EIA/TIA RS-232E
	Interface direction	DCE only
	Maximum line length	10 metres
Async parameters	Standard mode data bits	7 or 8 bits
	Standard mode parity	Configurable for None, Even or Odd
	Standard mode stop bits	1 or 2 bits
	Interface baud rates	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bit/s
Control signals	DCE to DTE	CTS, RTS, DSR, DTR

Hardware Alarms Interface

Alarm Inputs

The power and alarm connector provides two hardware alarm inputs for alarm transmission to the other radios in the network.

Detector type	Non-isolated ground referenced voltage detector
Detection voltage - on	> +10 VDC
Detection voltage - off	< +4 VDC
Maximum applied input voltage	30 VDC
Maximum input current limit	10 mA

Protection Switch Specifications

RF Insertion Loss	< 0.5 dB
Remote Control inputs	Logic 4700 ohms pullup to +3.3 VDC

Power Specifications

Power Supply

Aprisa SR Radio

Nominal voltage	+13.8 VDC (negative earth)
Absolute input voltage range	+10 to +30 VDC
Maximum power input	30 W
Connector	Phoenix Contact 4 pin male screw fitting MC 1.5/ 4-GF-3.5

Aprisa SR Protected Station

Nominal voltage	+13.8 VDC (negative earth)
Absolute input voltage range	+10 to +30 VDC
Maximum power input	35 W
Connector	2x Phoenix Contact 2 pin male screw fitting MC 1.5/ 2-GF-3.5

Aprisa SR Data Driven Protected Station

Nominal voltage	+13.8 VDC (negative earth)
Absolute input voltage range	+10 to +30 VDC
Maximum power input	35 W
Connector	2x Phoenix Contact 4 pin male screw fitting MC 1.5/ 2-GF-3.5

Power Consumption

Aprisa SR Radio

Mode	Power Consumption
Transmit / Receive	< 22.5 W for 5W transmit power
	< 15.0 W for 1W transmit power
Receive only	< 6 W full Ethernet traffic activity
	< 4.5 W no Ethernet traffic activity

Aprisa SR Protected Station and Aprisa SR Data Driven Protected Station

Mode	Power Consumption
Transmit / Receive	< 31 W for 5W transmit power
	< 23.5 W for 1W transmit power
Receive only	< 14.5 W full Ethernet traffic activity
	< 11.5 W no Ethernet traffic activity

Power Dissipation

Aprisa SR Radio

Transmit Power	Power Dissipation
1W transmit power	< 14.0 W
5W transmit power	< 17.5 W

Aprisa SR Protected Station and Aprisa SR Data Driven Protected Station

Transmit Power	Power Dissipation
1W transmit power	< 22.5 W
5W transmit power	< 26.0 W

General Specifications

Environmental

Operating temperature range	- 40 to + 70˚ C
Storage temperature range	- 40 to + 80˚ C
Operating humidity	Maximum 95% non-condensing
Acoustic noise emission	No audible noise emission

Mechanical

Aprisa SR Radio

Dimensions	Width 177 mm Depth 110 mm (126 mm with TNC connector) Height 41.5 mm
Weight	720 g
Colour	Matt black
Mounting	Wall (2 x M5 screws) Rack shelf (2 x M4 screws) DIN rail bracket

Aprisa SR Protected Station

Dimensions	Width 430 mm Depth 220 mm (incl interconnect cables) Height 90 mm
Weight	4.46 kg
Colour	Matt black
Mounting	Rack mount (2 x M4 screws)

Compliance

	12.5 kHz	25 kHz
Radio	EN 300 113-2	EN 302 561
EMI / EMC	EN 301 489 Parts 1 & 5	
Safety	EN 60950	
Environmental	ETS 300 019 Class 3.4	

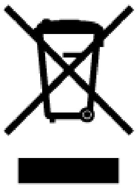
13. Product End Of Life

End-of-Life Recycling Programme (WEEE)

The WEEE Directive concerns the recovery, reuse, and recycling of electronic and electrical equipment. Under the Directive, used equipment must be marked, collected separately, and disposed of properly.

4RF has implemented an end-of-life recycling programme to manage the reuse, recycling, and recovery of waste in an environmentally safe manner using processes that comply with the WEEE Directive (EU Waste Electrical and Electronic Equipment 2002/96/EC).

The WEEE Symbol Explained



This symbol appears on Electrical and Electronic Equipment (EEE) as part of the WEEE (Waste EEE) directive. It means that the EEE may contain hazardous substances and must not be thrown away with municipal or other waste.

WEEE Must Be Collected Separately

You must not dispose of electrical and electronic waste with municipal and other waste. You must separate it from other waste and recycling so that it can be easily collected by the proper regional WEEE collection system in your area.

YOUR ROLE in the Recovery of WEEE

By separately collecting and properly disposing of WEEE, you are helping to reduce the amount of WEEE that enters the waste stream.

One of the aims of the WEEE directive is to divert EEE away from landfill and encourage recycling. Recycling EEE means that valuable resources such as metals and other materials (which require energy to source and manufacture) are not wasted. Also, the pollution associated with accessing new materials and manufacturing new products is reduced.

EEE Waste Impacts the Environment and Health

Electrical and electronic equipment (EEE) contains hazardous substances which have potential effects on the environment and human health. If you want environmental information on the Aprisa SR radio, contact us (on page 15).

14. Abbreviations

AES	Advanced Encryption Standard
AGC	Automatic Gain Control
BER	Bit Error Rate
CBC	Cipher Block Chaining
CCM	Counter with CBC-MAC integrity
DCE	Data Communications Equipment
DTE	Data Radio Equipment
EMC	Electro-Magnetic Compatibility
EMI	Electro-Magnetic Interference
ESD	Electro-Static Discharge
ETSI	European Telecommunications Standards Institute
FW	Firmware
HW	Hardware
IF	Intermediate Frequency
IP	Internet Protocol
I/O	Input/Output
ISP	Internet Service Provider
kbit/s	Kilobits per second
kHz	Kilohertz
LAN	Local Area Network
LED	Light Emitting Diode
mA	Milliamps
MAC	Media Access Control
MAC	Message Authentication Code
Mbit/s	Megabits per second
MHz	Megahertz
MIB	Management Information Base
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
ms	milliseconds
NMS	Network Management System
PC	Personal Computer
PCA	Printed Circuit Assembly
PLL	Phase Locked Loop
ppm	Parts Per Million
PMR	Public Mobile Radio
RF	Radio Frequency
RoHS	Restriction of Hazardous Substances
RSSI	Received Signal Strength Indication
RX	Receiver
SNMP	Simple Network Management Protocol
SNR	Signal to Noise Ratio
SWR	Standing Wave Ratio
TCP/IP	Transmission Control Protocol/Internet Protocol
TCXO	Temperature Compensated Crystal Oscillator
TFTP	Trivial File Transfer Protocol
TMR	Trunk Mobile Radio
TX	Transmitter
UTP	Unshielded Twisted Pair
VAC	Volts AC
VCO	Voltage Controlled Oscillator
VDC	Volts DC
WEEE	Waste Electrical and Electronic Equipment

15. Index