Ultra ELECTRONICS

aep NETWORKS

Secure Communications Optimised Packet Engine (SCOPE)

MegaWATCH

Deployment Solutions

Network & Usage Examples

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1 Introduction

This manual has been designed to give the user an idea of some of the ways in which MegaWATCH can be used to help manage networks. It is not an in-depth document on the facilities provided by MegaWATCH. For that, please refer to the on-line help or the Published User Manual.

1.1 Basic Concepts

AEP MegaWATCH is a Windows based SNMP Network Management Application that allows customers to monitor their network and gather useful information about the condition, status and performance of any AEP or non-AEP Network component deployed.

MegaWATCH is a powerful tool that can create network maps (i.e. graphical views of the network and configuration). MegaWATCH will regularly poll each network component in the system and provide the status of each which can then be reflected in the colour of a displayed element in a Map.

In this document some of the major aspects of MegaWATCH are covered with examples of how users have implemented their own solutions. The following elements of MegaWATCH are covered,

- Maps (graphical network views)
- Folders (tabular displays of network data)
- Alerts (traps and other important events)
- Tools (user aids for Network Monitoring and problem solution)

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2 Maps

Maps provide a graphical display of network objects (nodes, links or channels). Various tools are provided to help draw a layout suitable to the needs of the user. The display can be geographic, symbolic or representational (e.g. a rack of servers). Some examples follow.

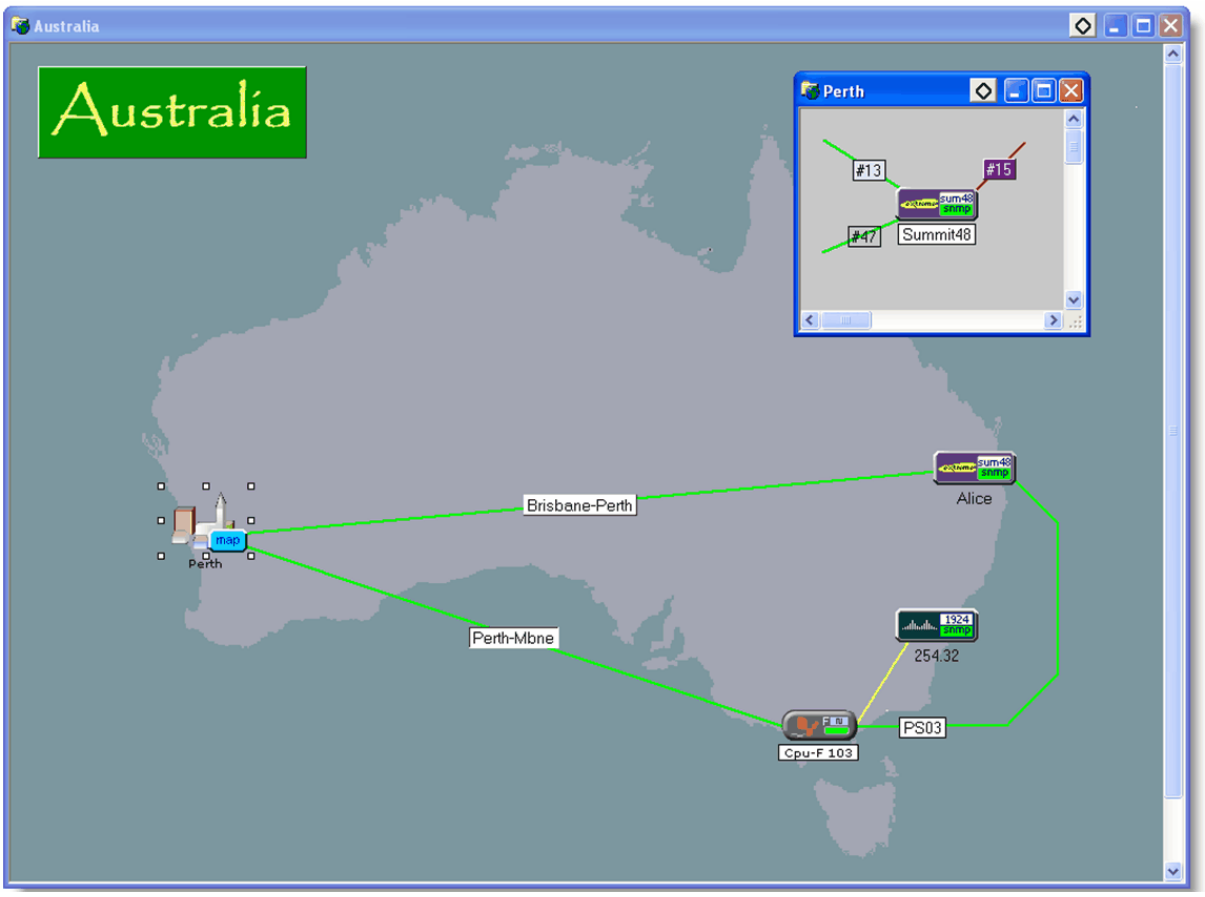
The major points for Maps are

- Graphical View of the Network
- Graphic items can change colour to reflect the current status
- Drawing tools are provided to represent Node, Links or Channels.
- The SNMP poll rate is configurable for each Map.
- All objects within a map are polled at the same rate
- Maps can contain other nested maps or folders

Maps and Folders can be arranged hierarchically, in that they can contain other Maps and Folders. All systems must create a 'top' level Map. This then can be used to navigate and access other sections of the network. The following sections first show some simple maps, to introduce the concept and some of the possibilities, and then some example of top level maps in a working system.

2.1 Simple Geographically Arranged Example

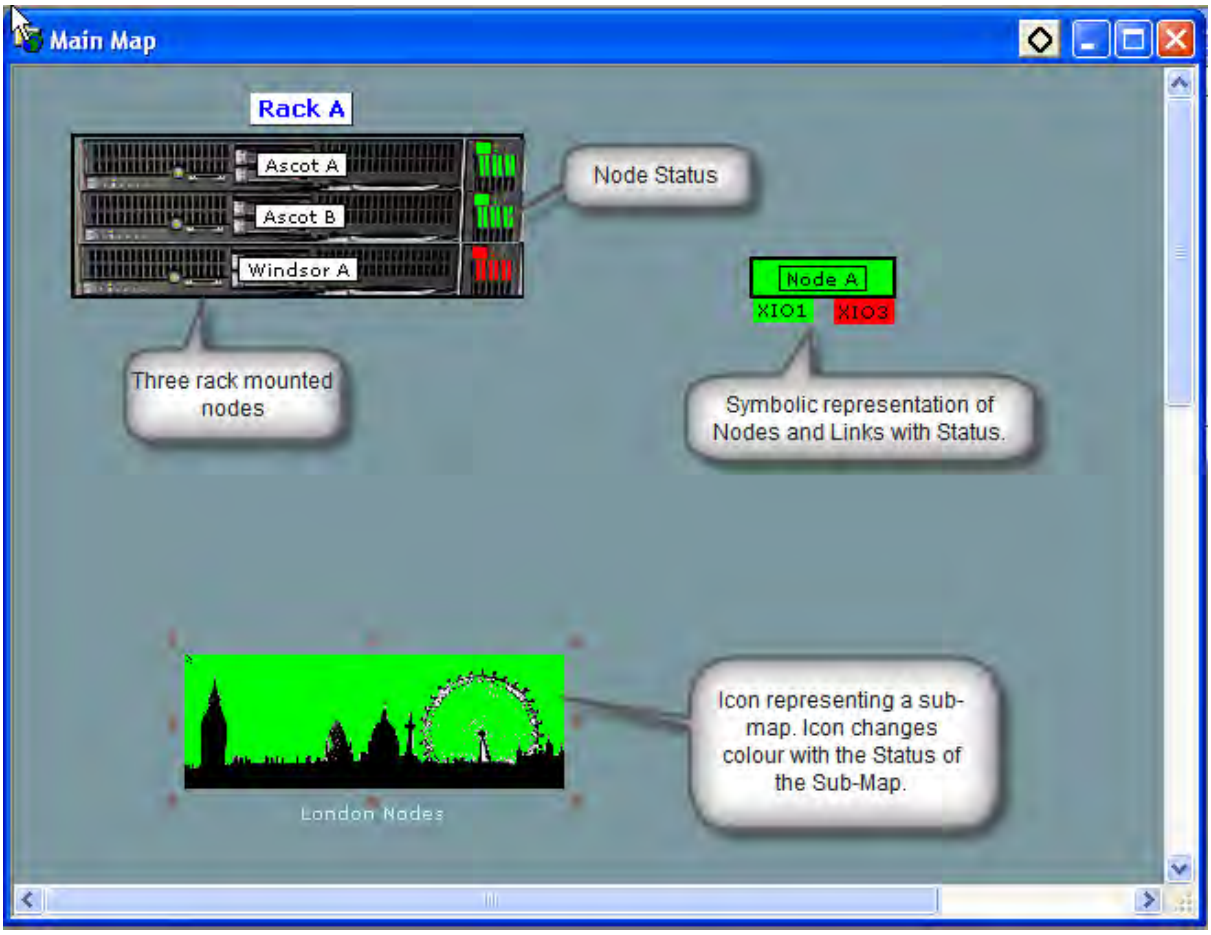
This map is example of how a network may be represented geographically. The map shows nodes positioned within Australia and it also contains an embedded map 'Perth'. Double-clicking the Perth icon will open and display the map of Perth.



2.2 Non-Geographically Arranged Example

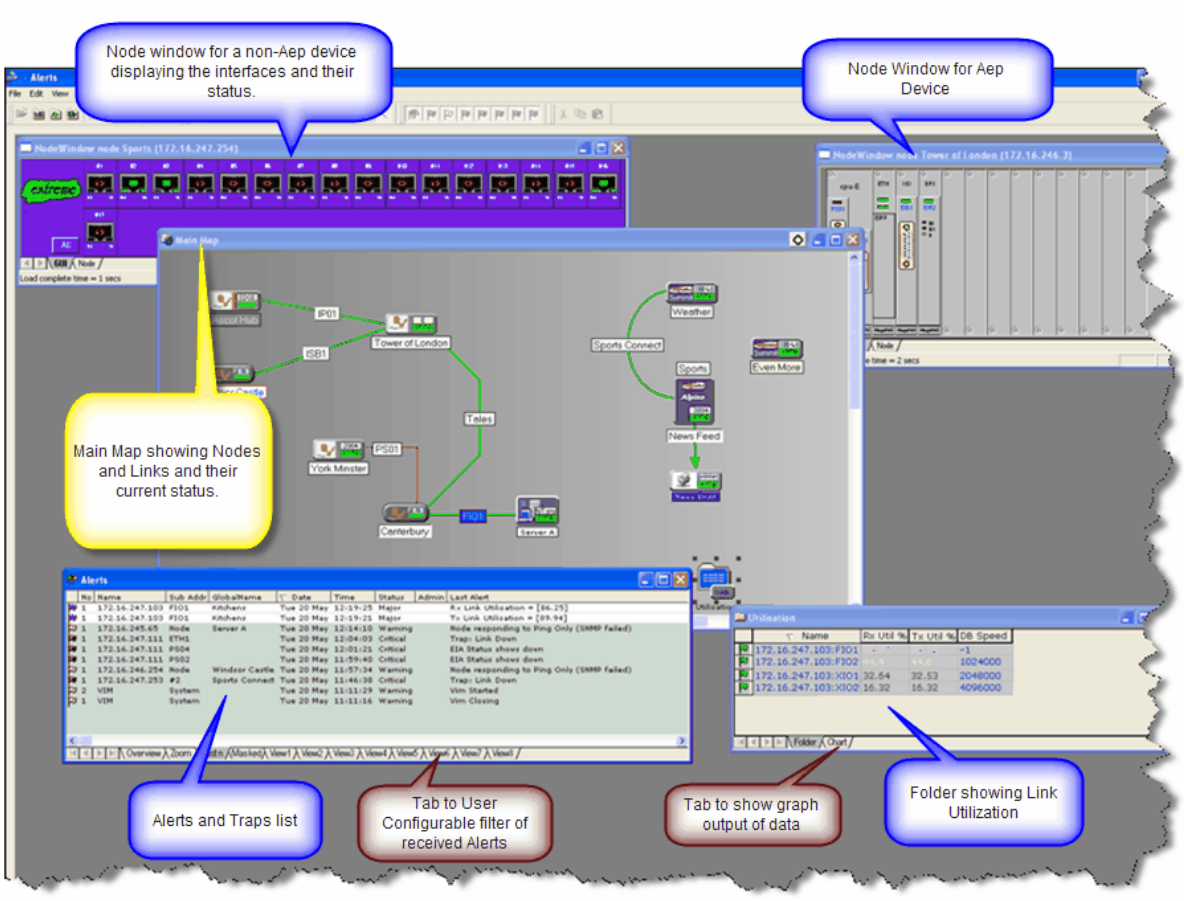
This example shows

- A number of node icons drawn to represent a rack of Nodes
- Colour coded rectangles used to represent a node and two links
- A Gif created to represent a sub-map of London, which reflects the status of the sub-map.



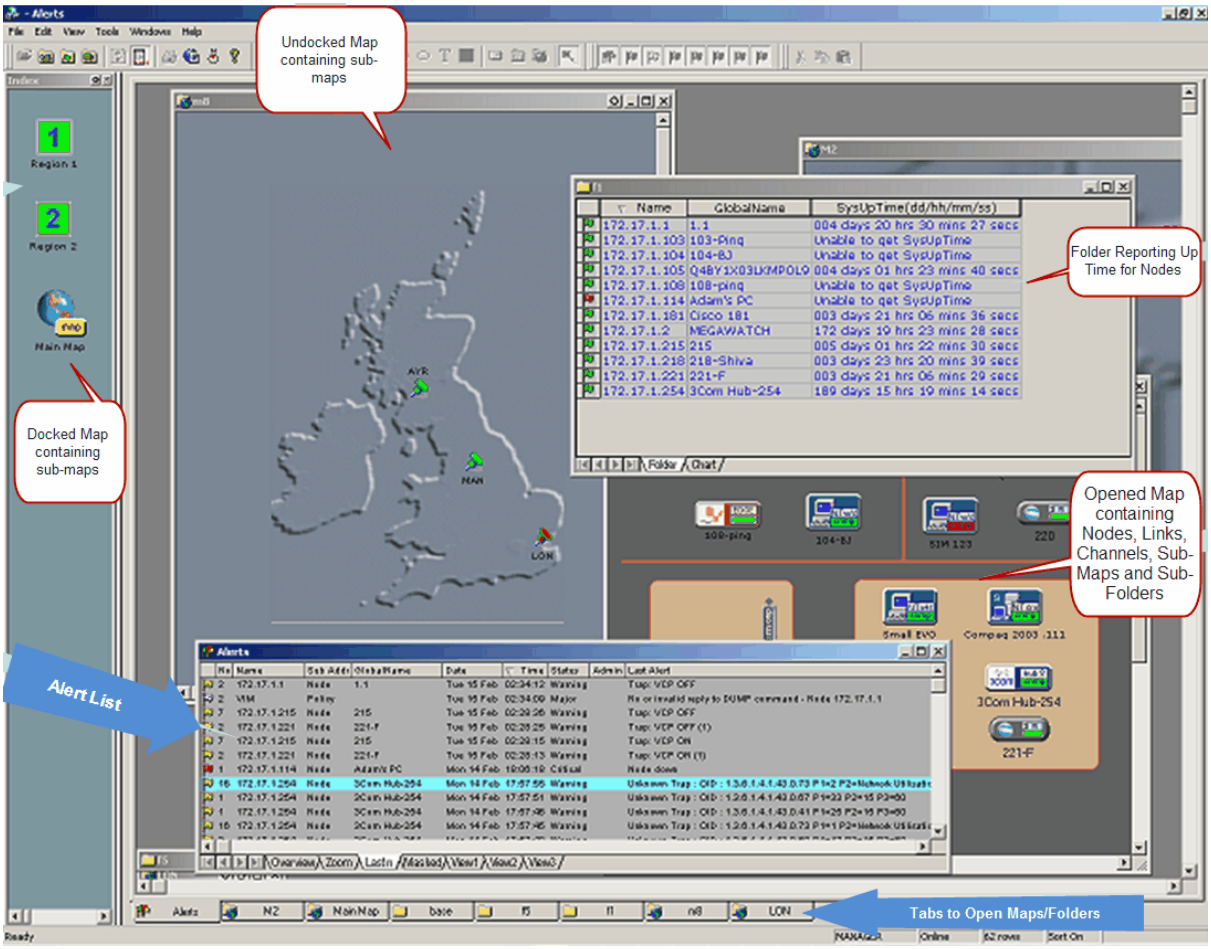
2.3 Top Level Map Example 1

Simple top level display showing a 'Main Map', the Alerts Window and some Node Window interface displays.



2.4 Top Level Map Example 2

This top level view contains a 'docked' map on the left hand side. This remains in a fixed position and viewable at all times while 'docked'. The maps, folders and alert windows in the right hand pane can be resized and repositioned as required. A 'save position' function is provided to make any rearrangement permanent on any Map or Folder.



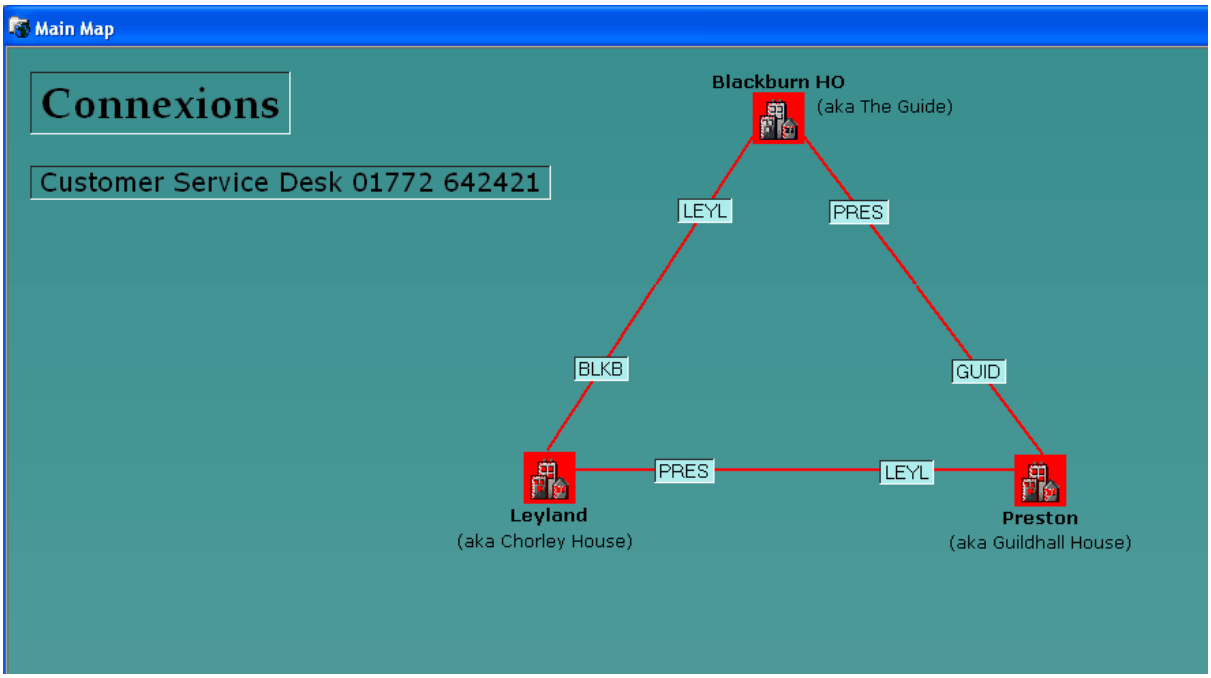
2.5 User Example Map Layouts

This section contains some examples of how MegaWATCH customers have chosen to draw their networks and use the facilities provided by MegaWATCH to aid network management.

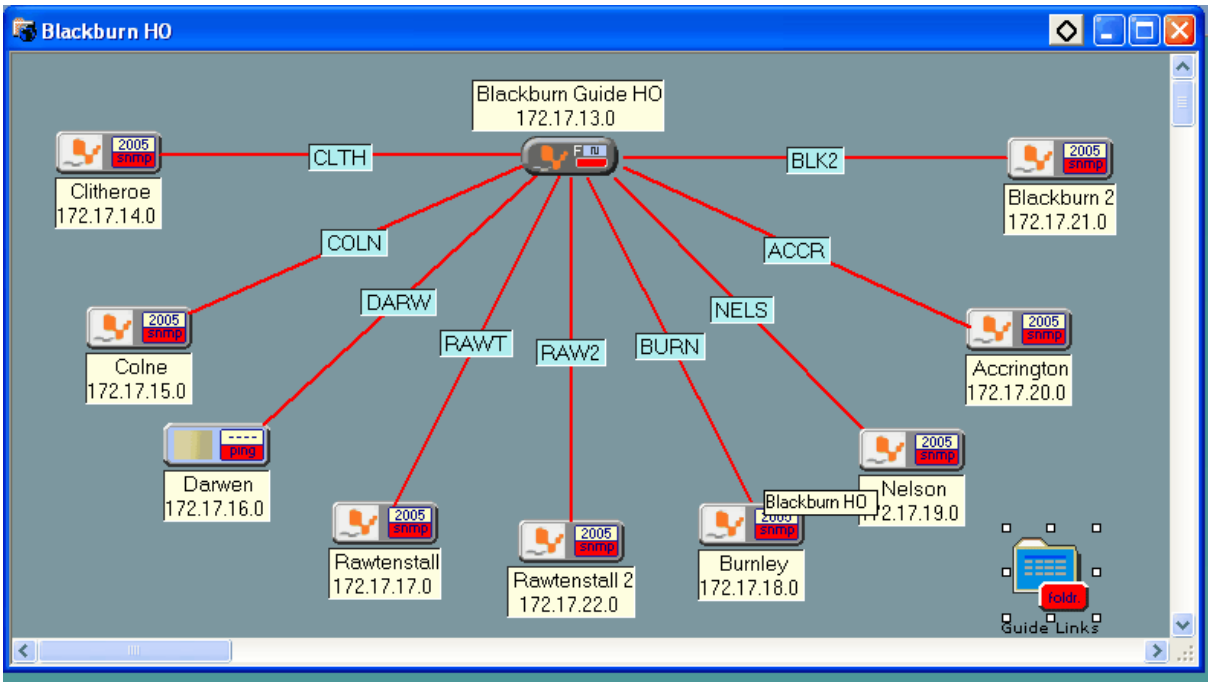
The examples all start with a top level map. Subsequent maps shown are sub-maps accessible from the top level and can be opened by a double-click on the mouse left button.

2.5.1 Map Layout Example 1

This is a top level map containing sub-maps. Double-clicking on a Map icon will open and display the map. See below for the examples of the sub-maps.

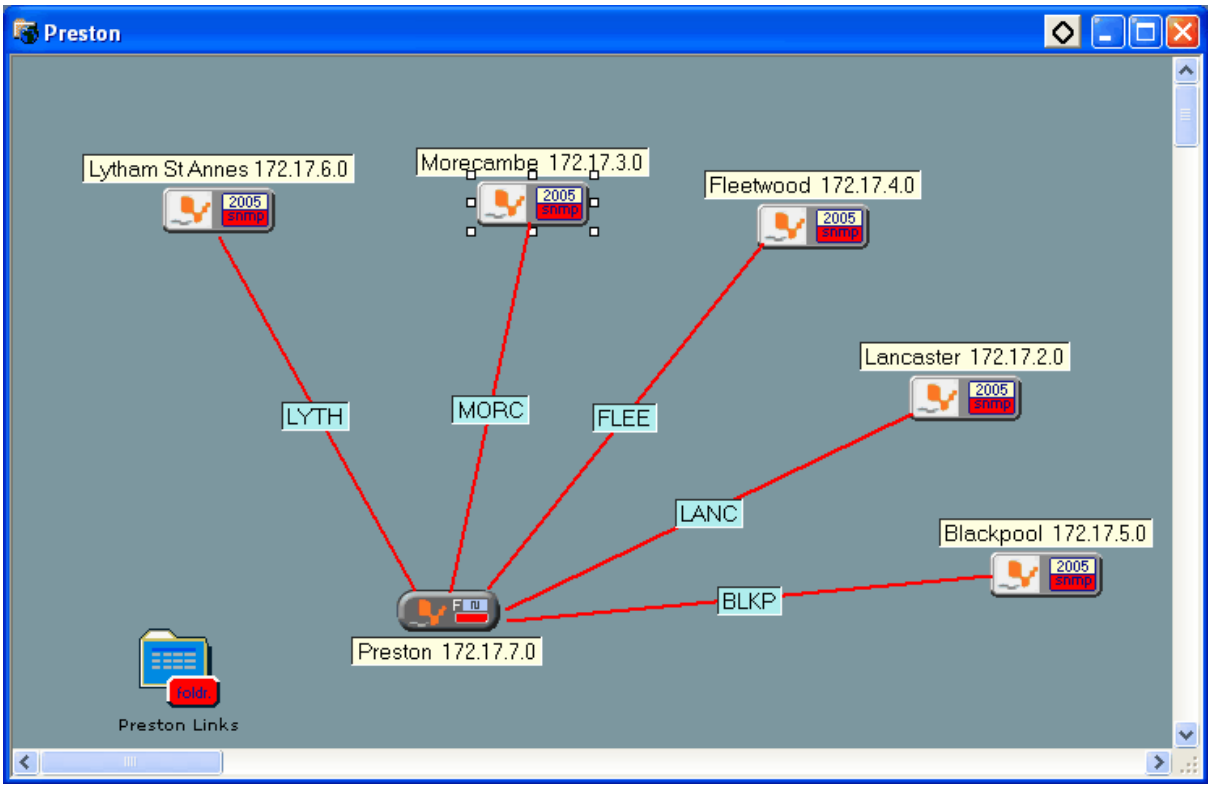


2.5.1.1 Blackburn Sub-Map



2.5.1.2 Preston Sub-Map

Note the 'Preston Links' folder. This is a link to the utilisation folder for the links in the Preston map.

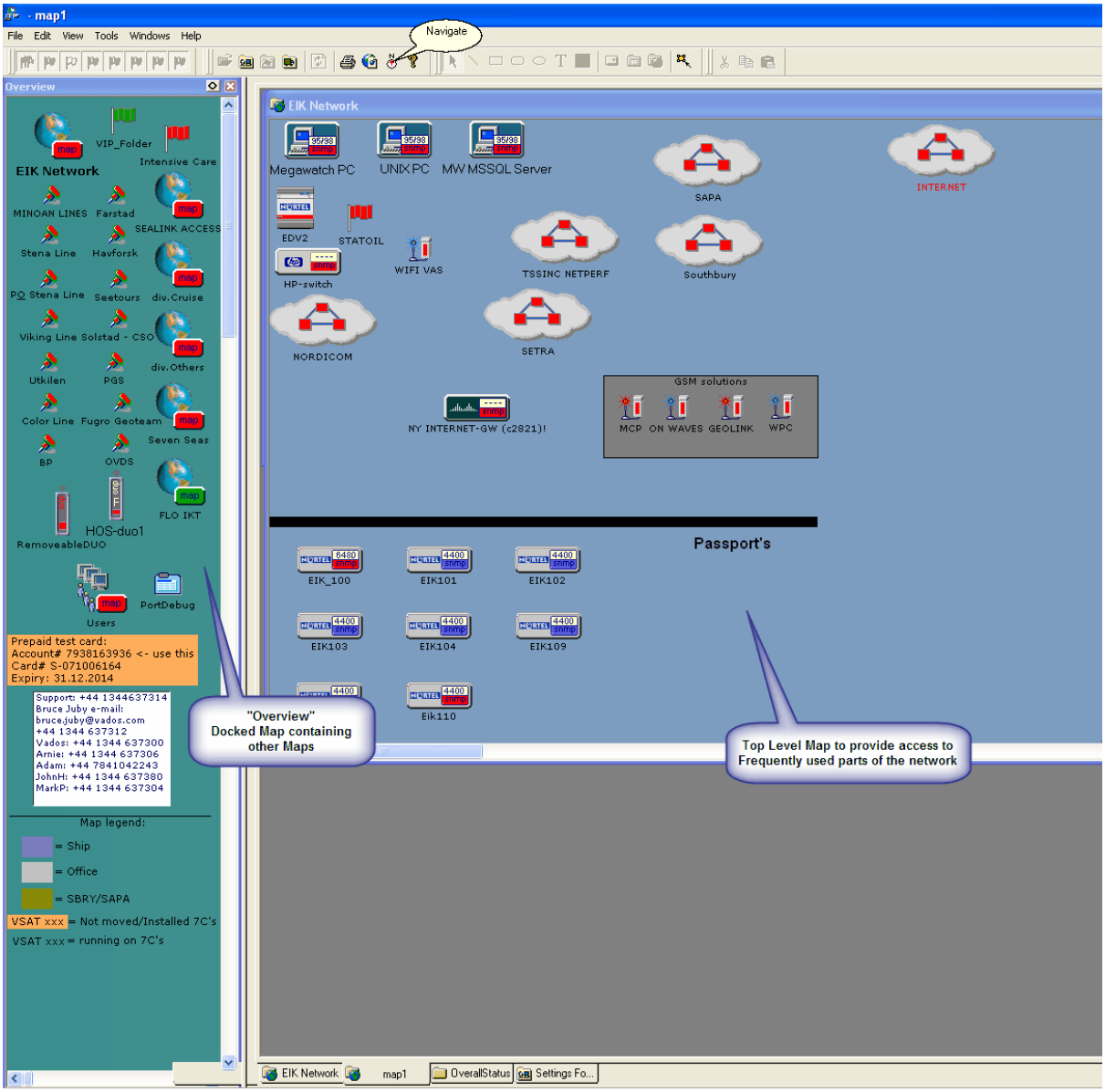


2.5.2 Map Layout Example 2

This is an example of a complex top level map system. In this there are two top-level maps. An 'Overview' map has been created to allow quick navigation to subordinate Maps and Folders and it has been docked at the left hand side of the display. This will not be overlayed by any of the other maps while docked. The right hand pane contains a second top-level map that will get overlayed by other maps and folders as they are opened. Both top-level maps will be automatically opened upon startup.

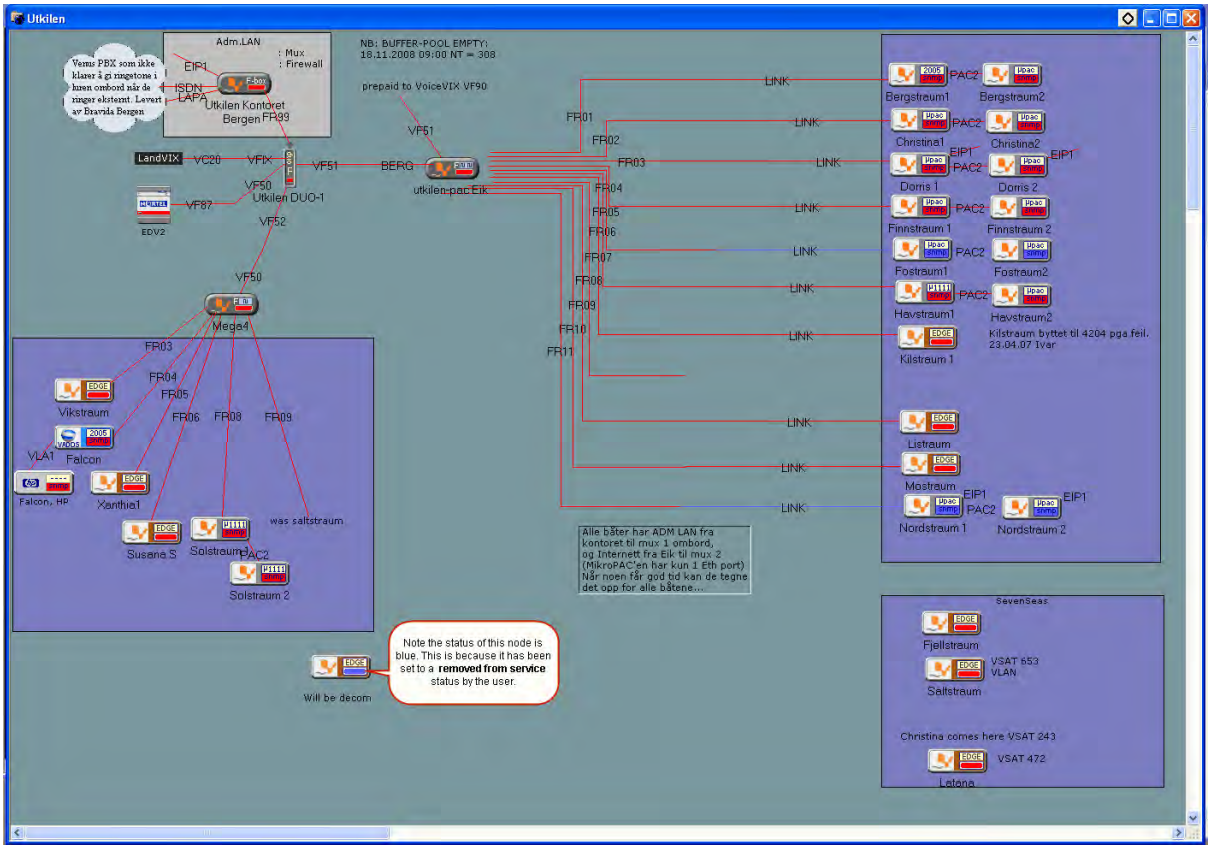
These maps have not been arranged geographically or used to show details like link connections. This would make the maps too complex to draw or negotiate. The detail is drawn in the sub-maps.

A Navigate tool is provided to provide access to other maps, folders, nodes, links and channels in the system. This is covered later.



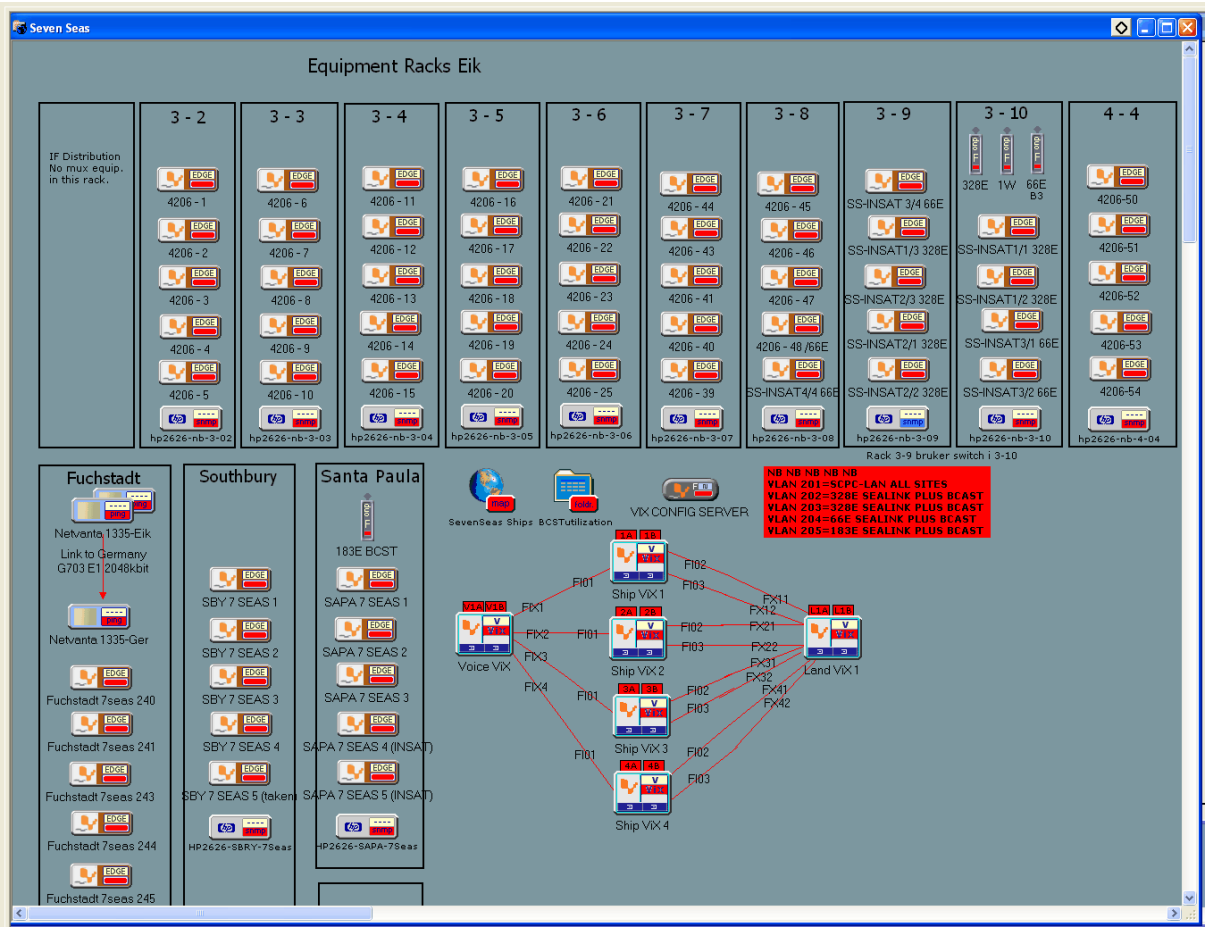
2.5.2.1 Utkilen Sub-Map

This submap is showing the inter-connectivity in the system. The nodes are being represented here as icons and the links by the lines. A number of drawing tools are available to allow the user to be able to draw the connections that best suit their own needs.

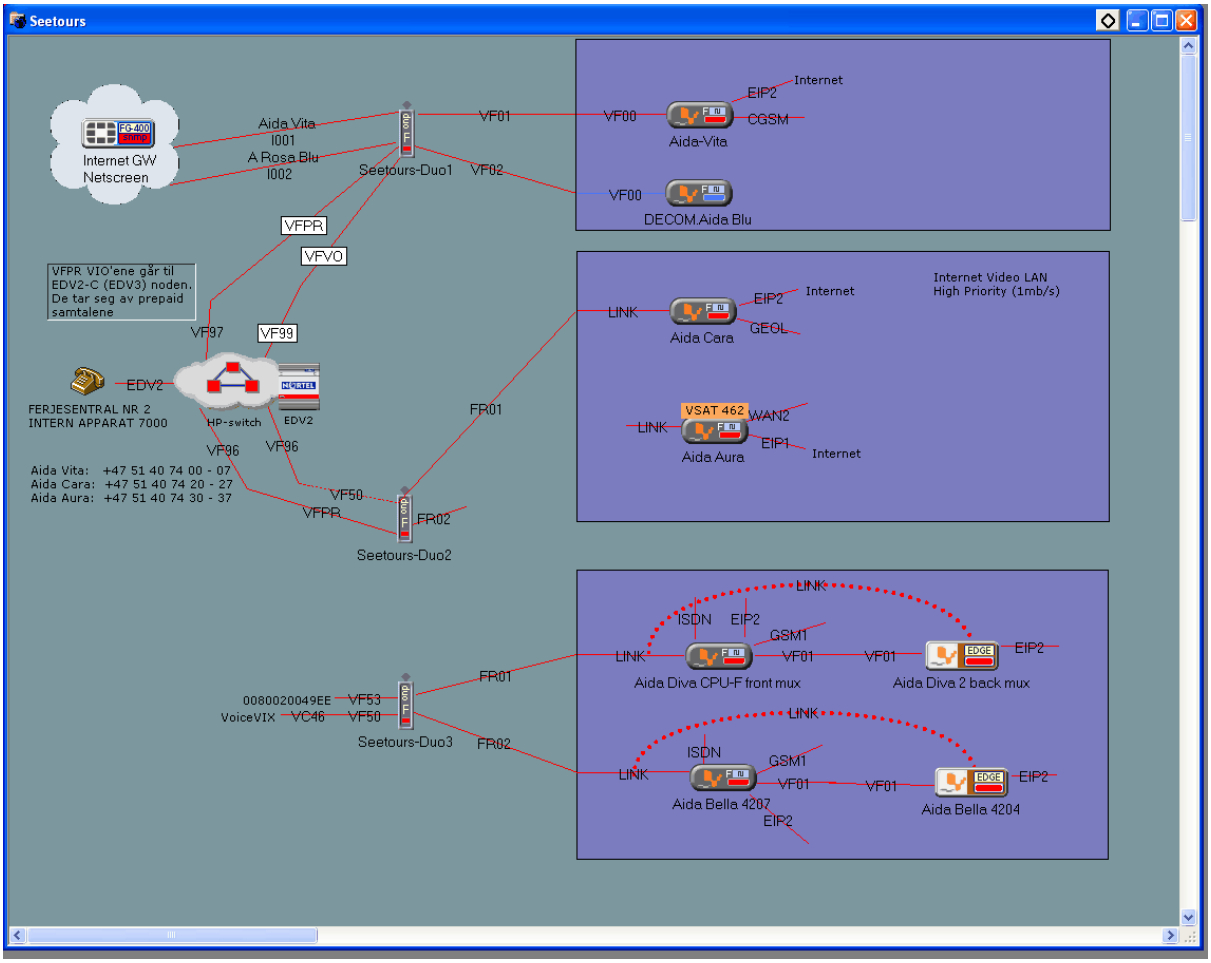


2.5.2.2 Seven Seas Sub-Map

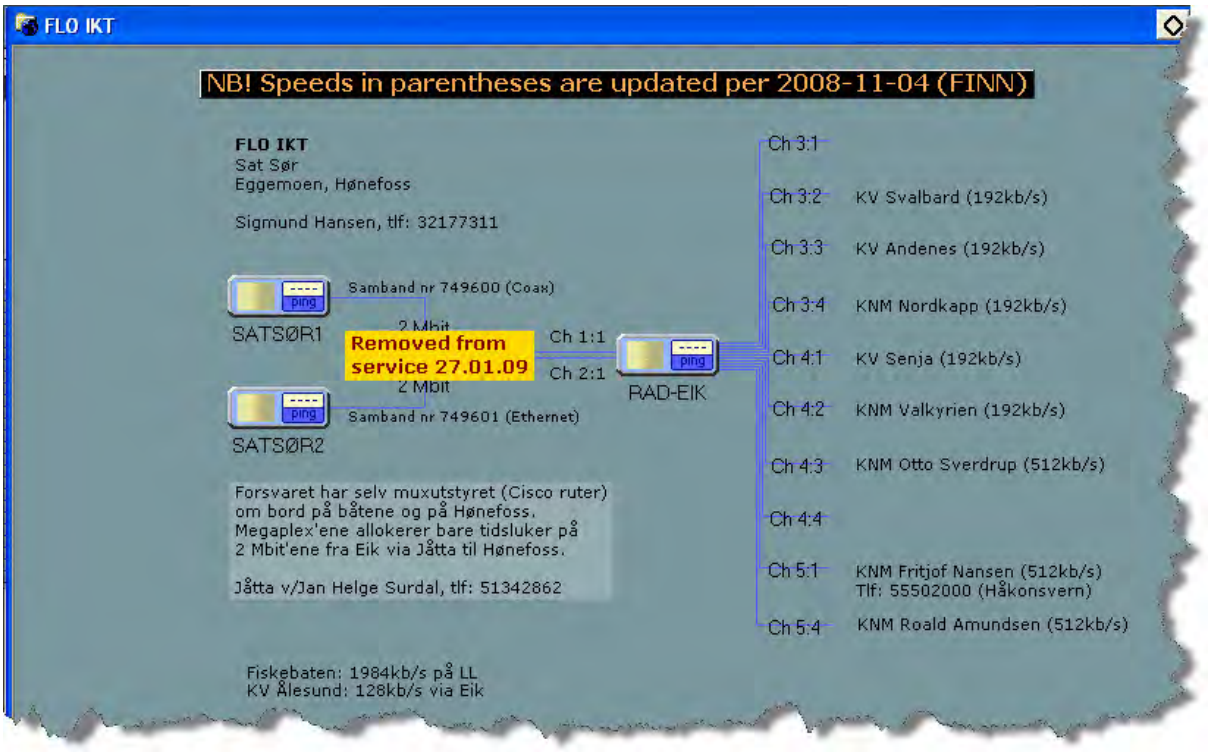
This is another submap of the network. This example shows how Nodes can be arranged to display the order as they exist in the racks. Other tools can be used to add text to the Map to identify the racks and their location or support contact details.



2.5.2.3 SeeTours Sub-Map

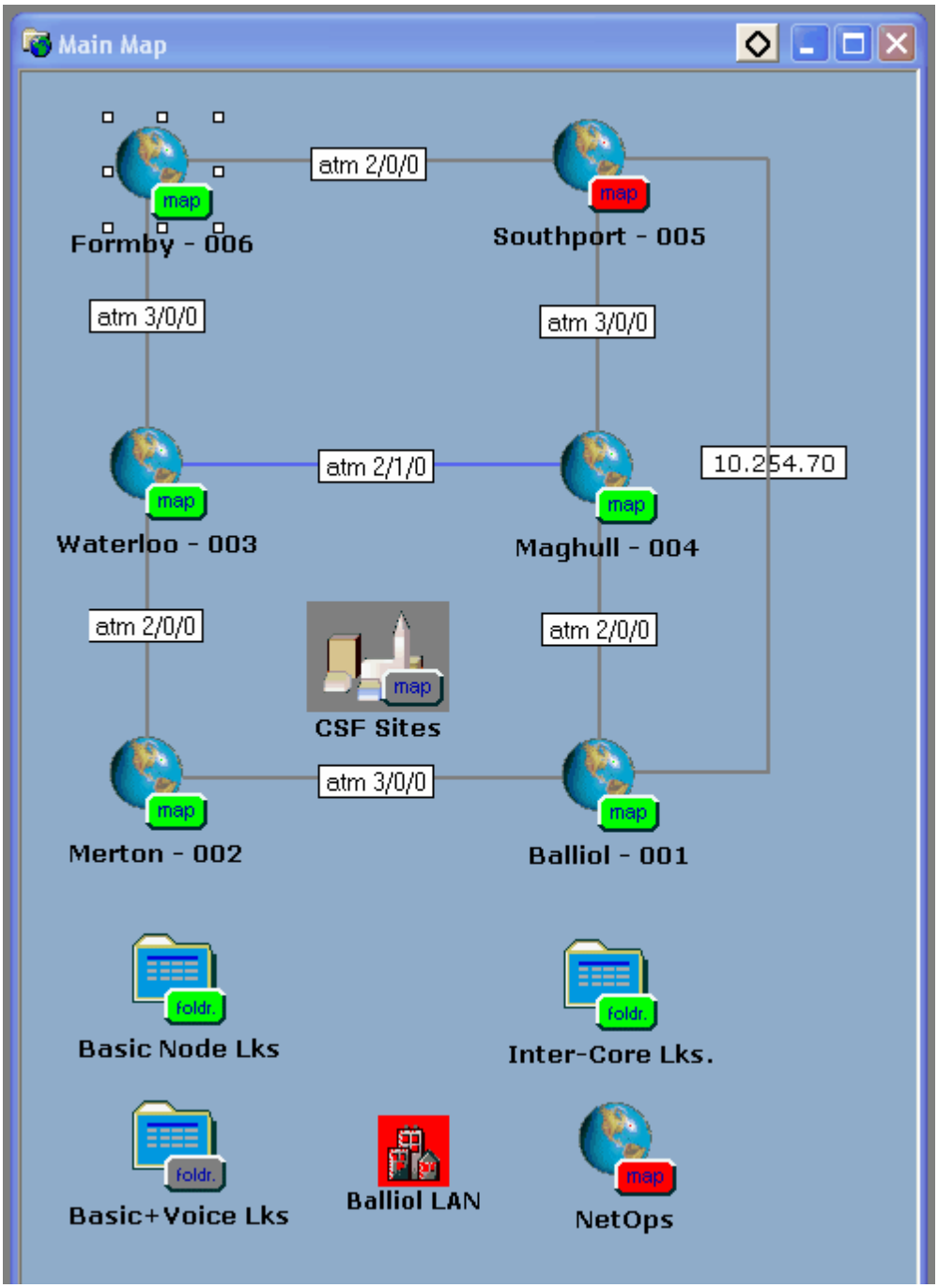


2.5.2.4 Floikt Sub-Map

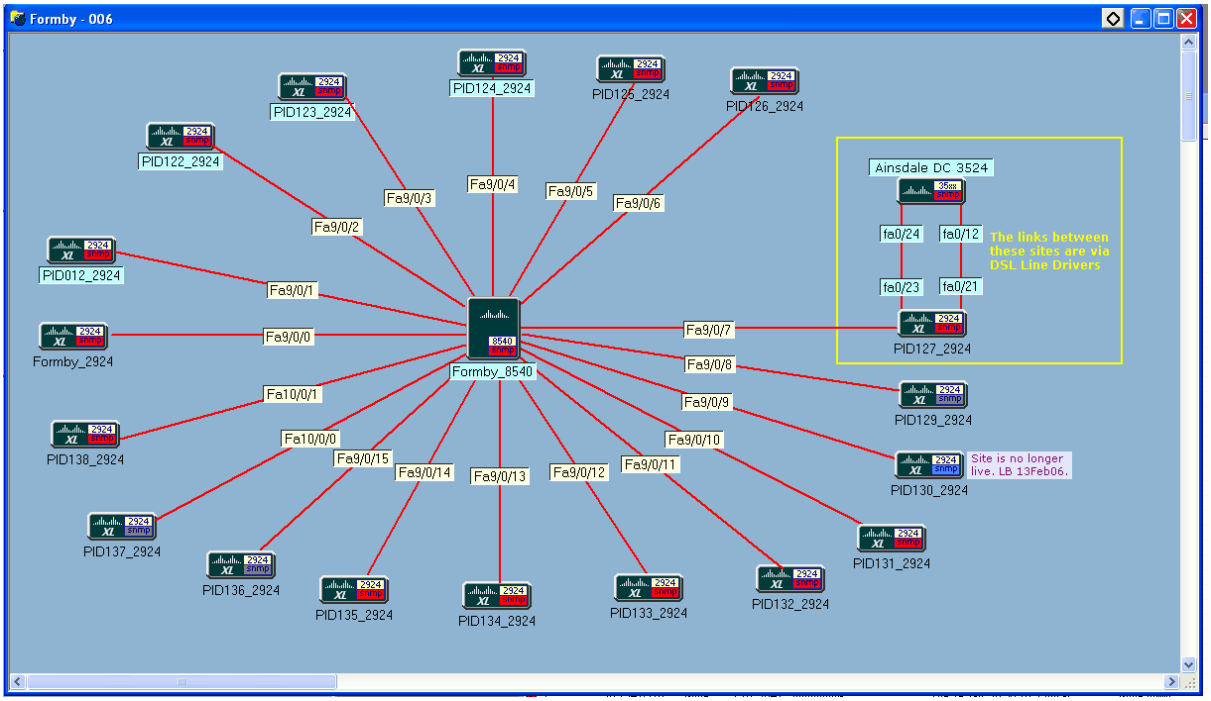


2.5.3 Map Layout Example 3

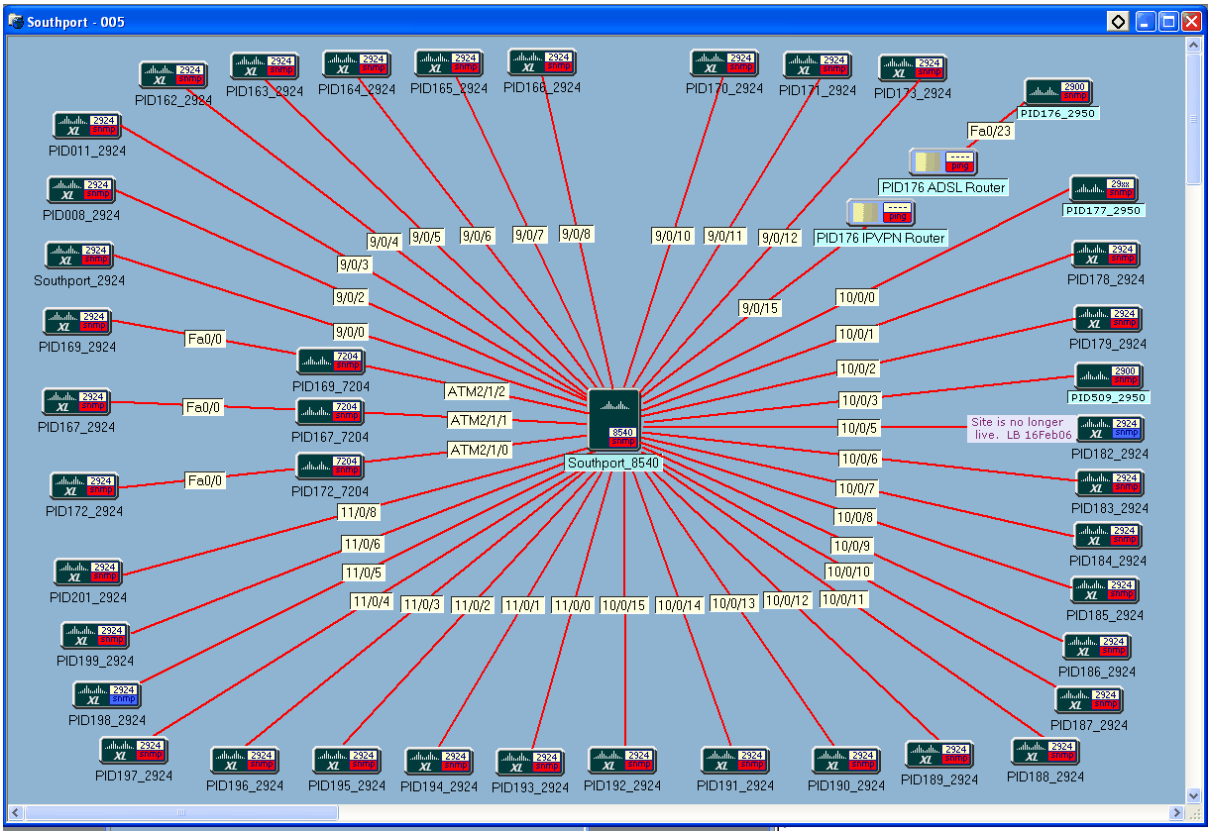
This top level map shows some of the interconnections in the network. They are used here to join together a number of sub-maps, each of which represents that geographical area.



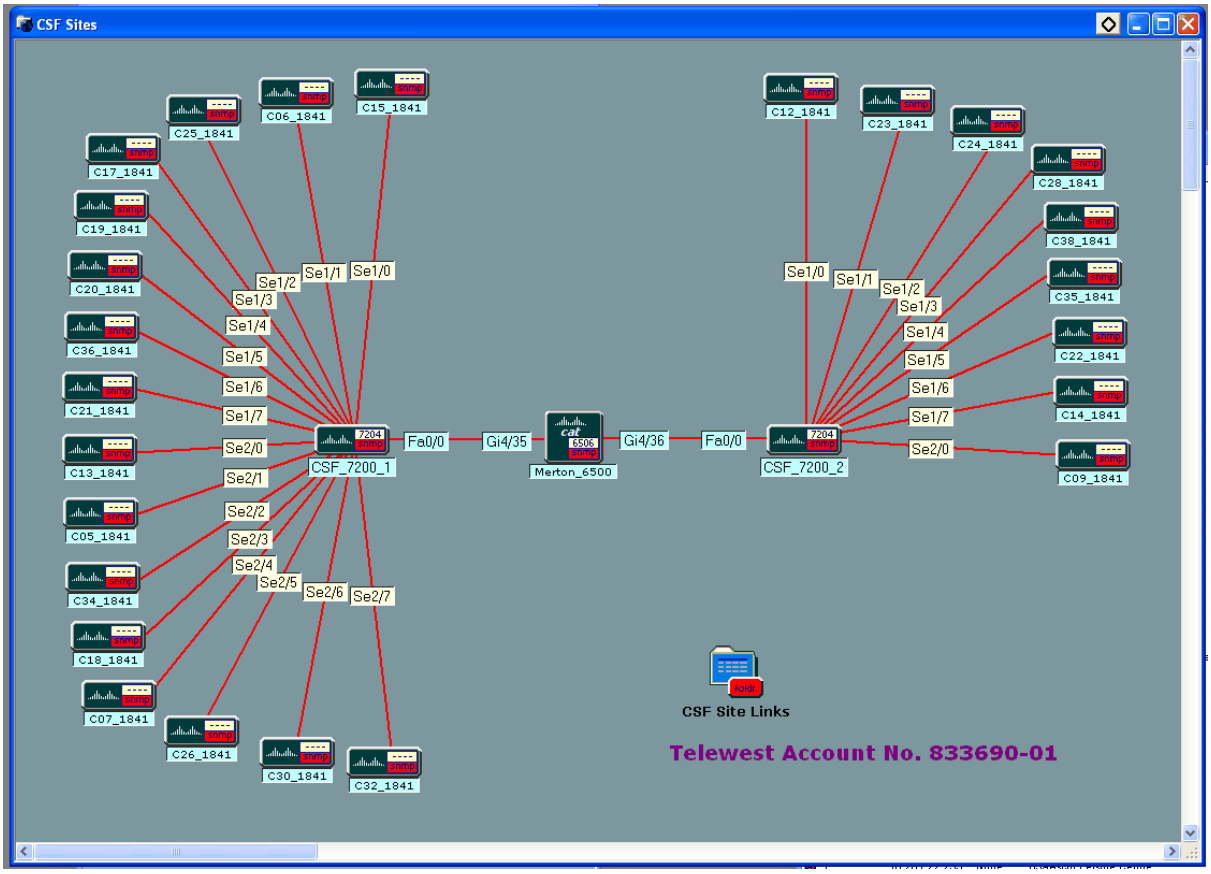
2.5.3.1 Formby Sub-Map



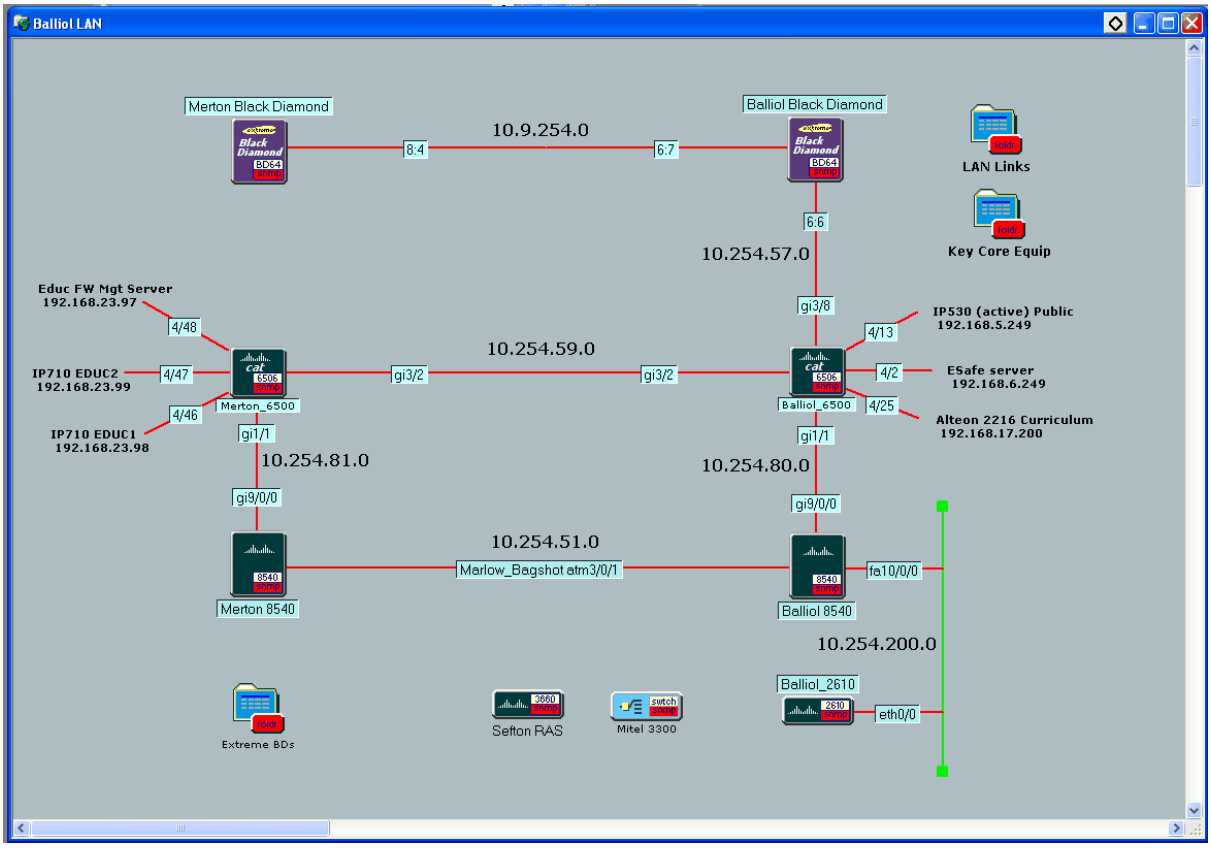
2.5.3.2 Southport Sub-Map



2.5.3.3 CsfSites Sub-Map

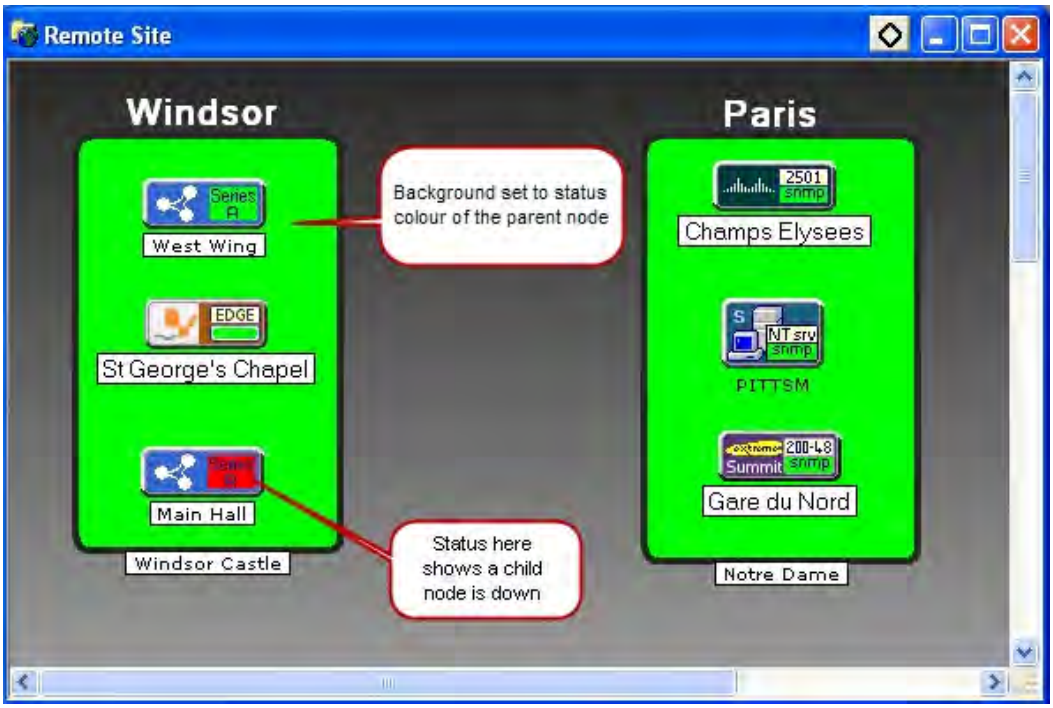


2.5.3.4 Balliol LAN Sub-Map



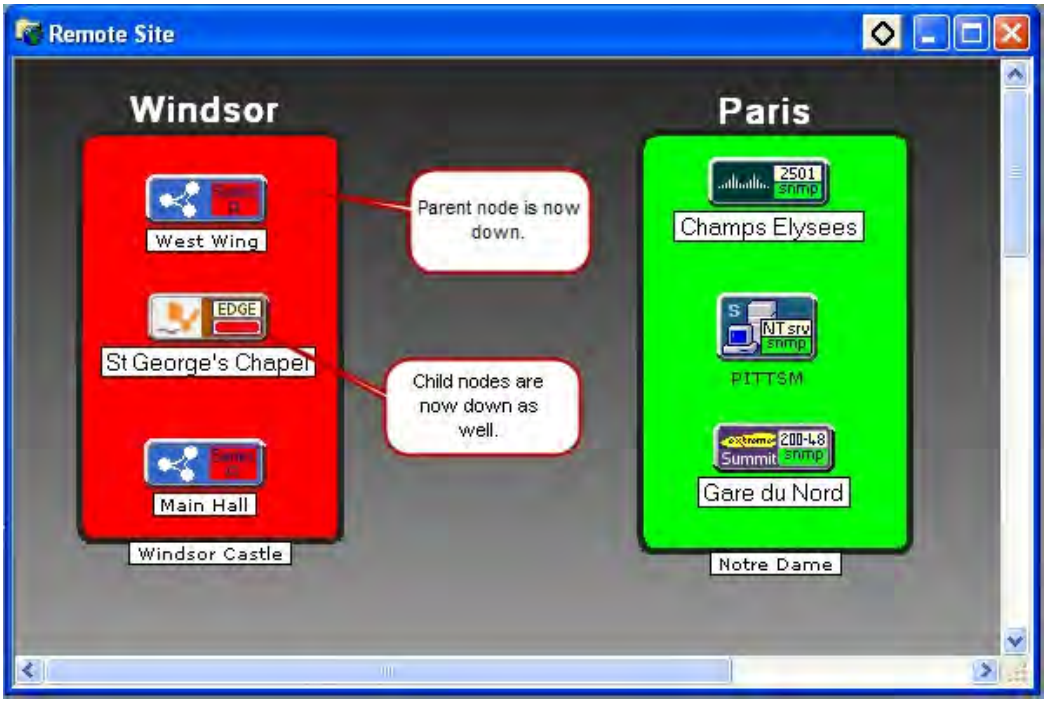
2.5.4 Map Layout (Parent/Child Example)

In some networks child nodes are connected through a parent node. If the parent fails, then all the children will be unreachable. The following example is one way to graphically show this.



In this example, the background colour of the rectangle under 'Windsor' reflects the status of the Parent node but the 'Main Hall' child node is down.

If the parent goes down, then all child nodes of the parent will reflect this - for example,

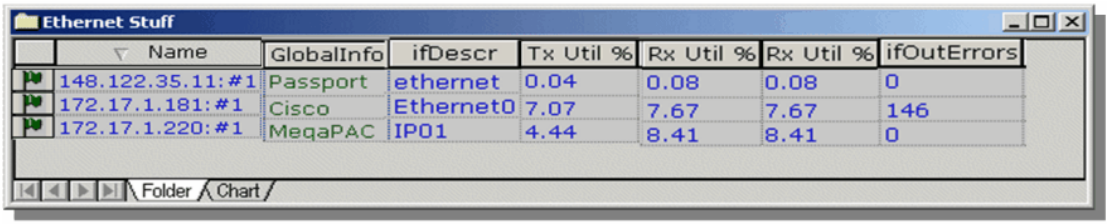


3 Folder Concepts and Examples

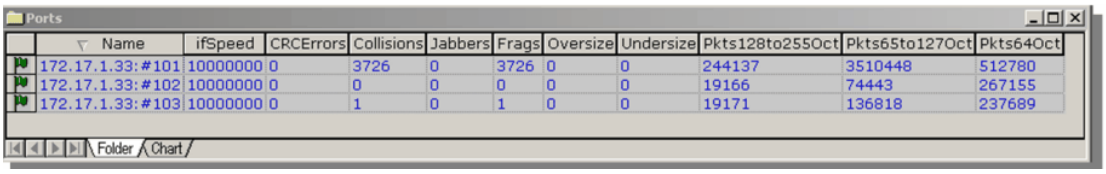
Folders offer an alternative to Map displays. The main differences are

- Less Graphical
- Greater Detail
- Display of Numeric Values
- All items in a folder MUST be of the same type (i.e. Node, Link or Channel)
- Columns represent gathered statistics
- Rows represent objects
- Status Column
- ISO Colouring of Text
- Columns can be configured to run Javascripts which can gather multiple values, do calculations on the values and display the net result. They can also be configured to monitor values and report (via alert or status colour) if an extraordinary value is detected (e. g. temperature monitoring).
- Like Maps, each Folder has its own poll frequency. All items in the folder will be polled at the rate for the folder. This rate can be chosen to suit the object types being monitored or the 'importance' within the network.

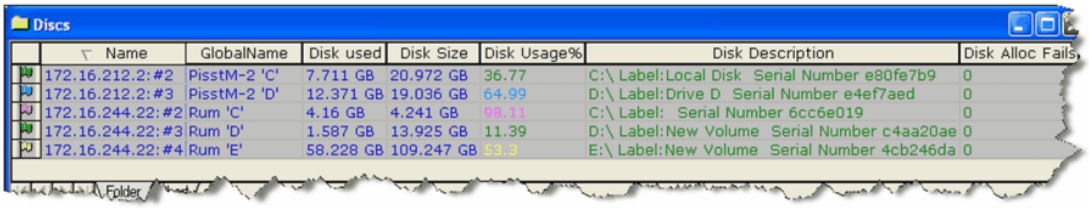
Example showing Utilization



A Folder showing various SNMP variables being displayed



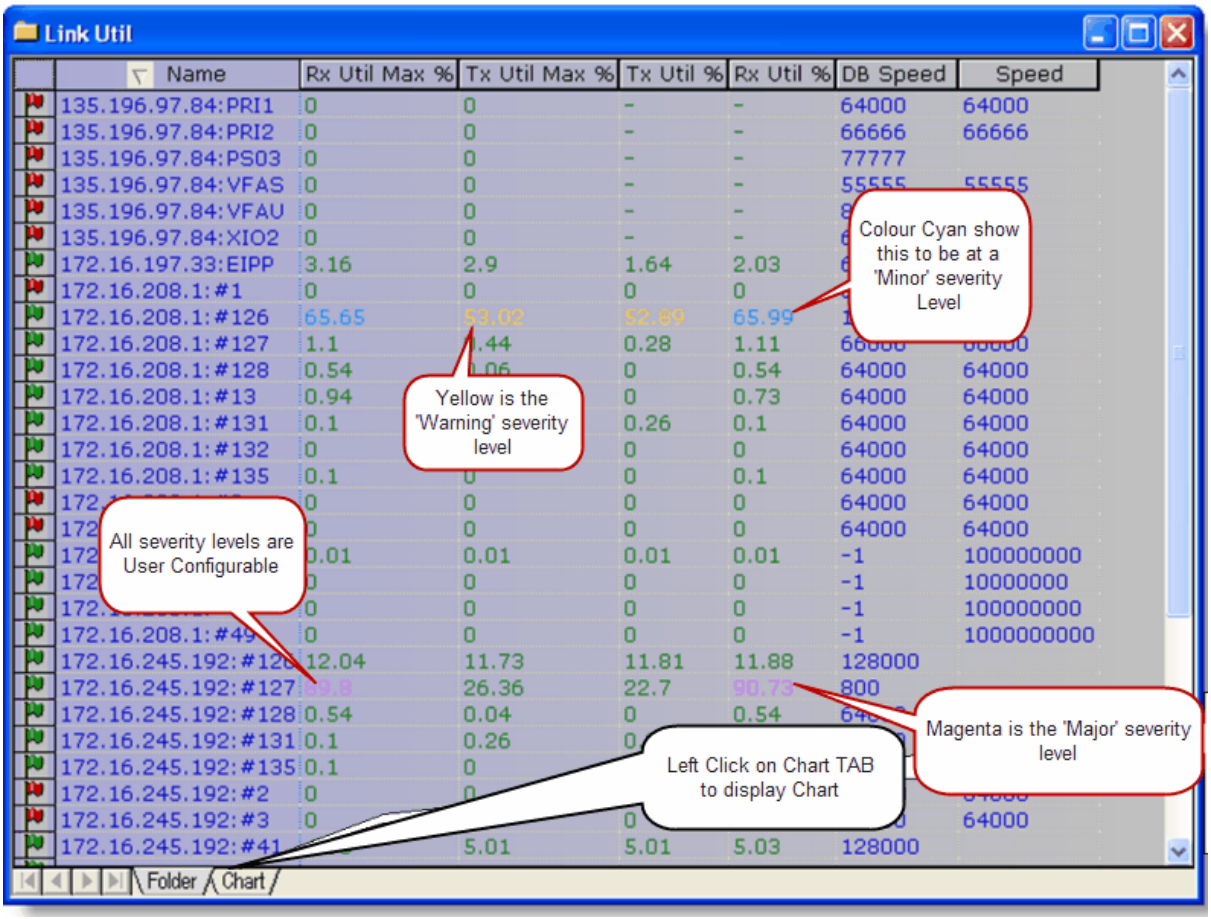
Monitoring Disc Size and Usage. Note the colour coding showing the severity level. Alerts can optionally be generated to report the severity.



3.1 Link Utilisation Folder

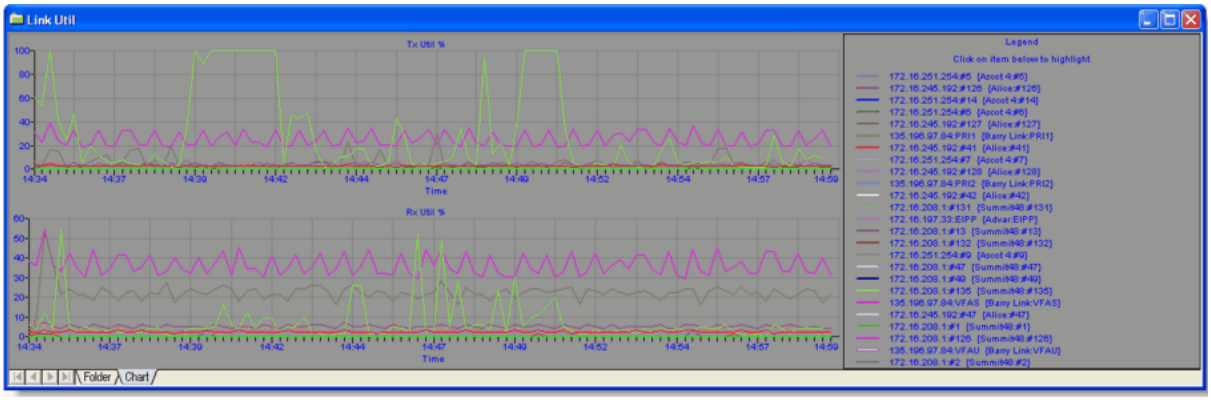
This example shows the utilisation of a number of links being monitored. The Javascript behind the monitoring is checking the utilisation level against User Configured levels and changing the colour of the displayed value accordingly. Additionally, the user can have the script issue an Alert warning at a selected severity level which will appear in the Alert list. Filters can then be used to sound alarms, send e-mails etc.

MegaWATCH will automatically, where possible, 'discover' the speed of the interface required to do the utilisation calculations. However, this is not always accessible and the user can set the speed of the interface in a MegaWATCH column called '**DB Speed'.** If set, this will always supersede any automatically discovered speed. If the network is running with split-speed links an extra column can be added to establish the Transmit speed ('**DB Tx Speed'**). In this situation, '**DB Speed'** represents the Receive speed of the interface.

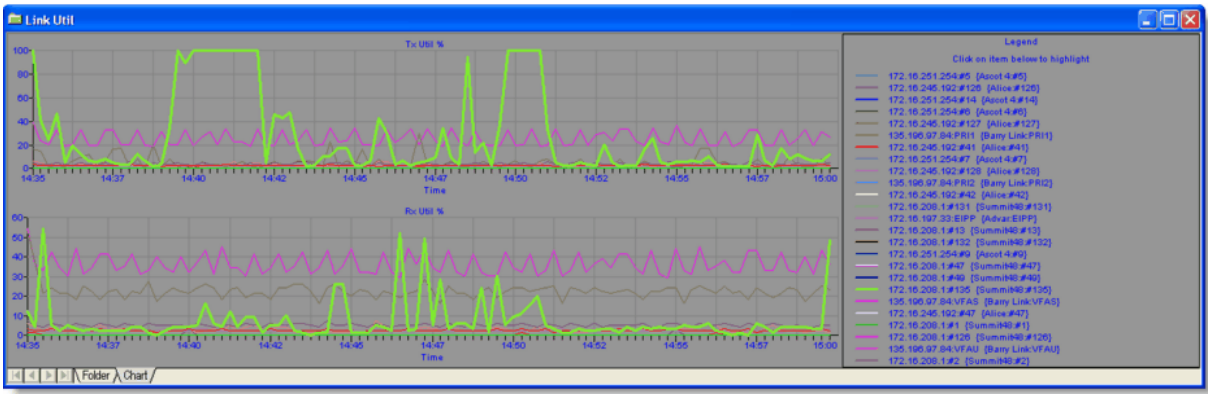


3.1.1 Chart Display Tab of the Utilisation Folder

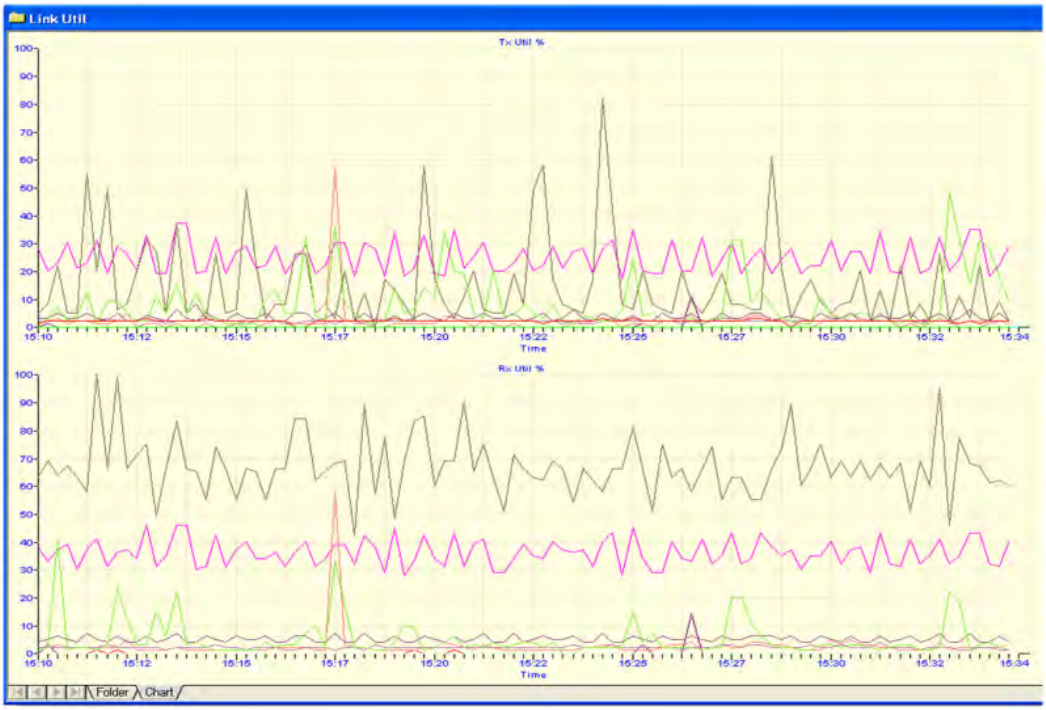
Chart displays are available via the 'Chart' tab at the bottom of the folder display. A Chart displays monitored values plotted over time. The values must appear as columns in the Folder, but the user can select which of the columns are to be monitored as Graphs.



Select a series to highlight by clicking on the graph



Drag and drop borders to re-scale graphs. Use properties to change backgrounds and display formats.



3.2 Other Application of Folders

This section shows the power of scripting under MegaWATCH. The folders in the following examples have columns added that initiate the processing of an associated Javascript. The scripts are able to interrogate network values, make calculations on these values and act according to the results. User parameters, configurable via MegaWATCH, can be accessed by the scripts.

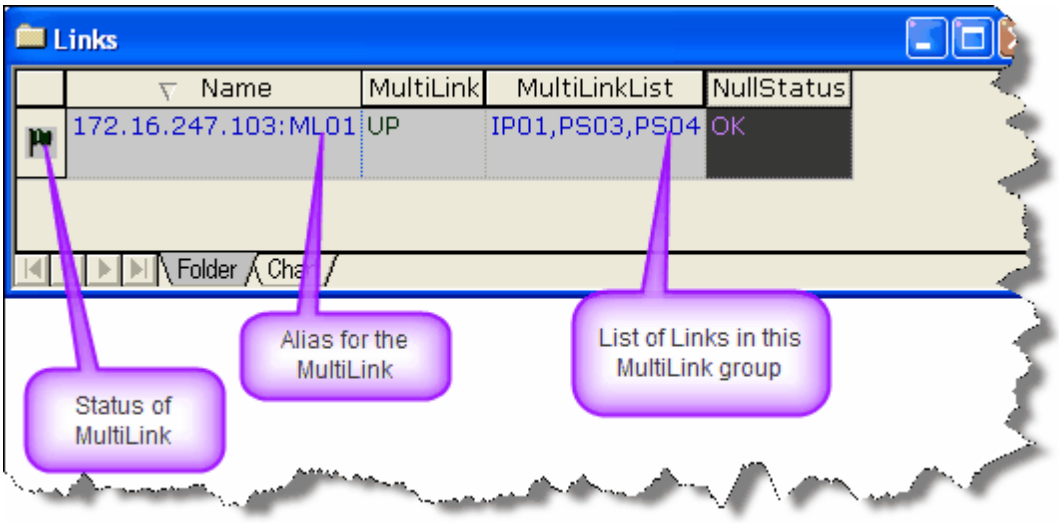
For example, scripts can be used to

- Monitor a set of links and only report when all of them are in a failed condition
- Monitor a Hot-Standby System and report which system is currently active
- Monitor a network object for a unusual condition (e.g. a flow controlled channel that fails to clear after an exceptional period) and automatically issue recovery procedures.

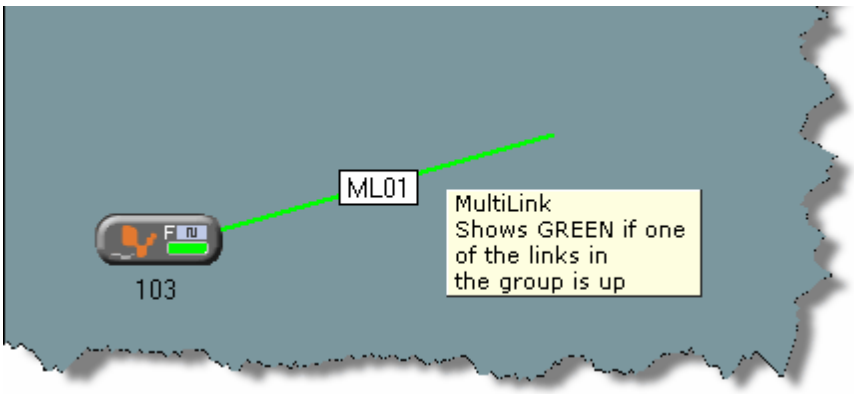
3.2.1 Multi-Link Support

Multiple links can be monitored as a single link so that an Alert is only generated if all links are down. The user can specify an Alias for a link name and then tie that to a group of links. If any of the links in the group are up, the Alias is considered up and will have a '**CLEARED**' status.

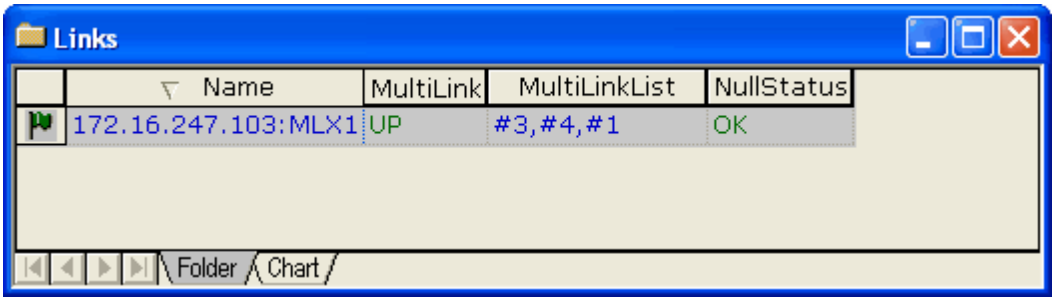
To establish a MultiLink object the user must create a Folder of the form shown below



Once a MultiLink object has been created by including it in a Links folder, a Link can be drawn on a map that references the **Alias** name and the link will show the corresponding MultiLink status.

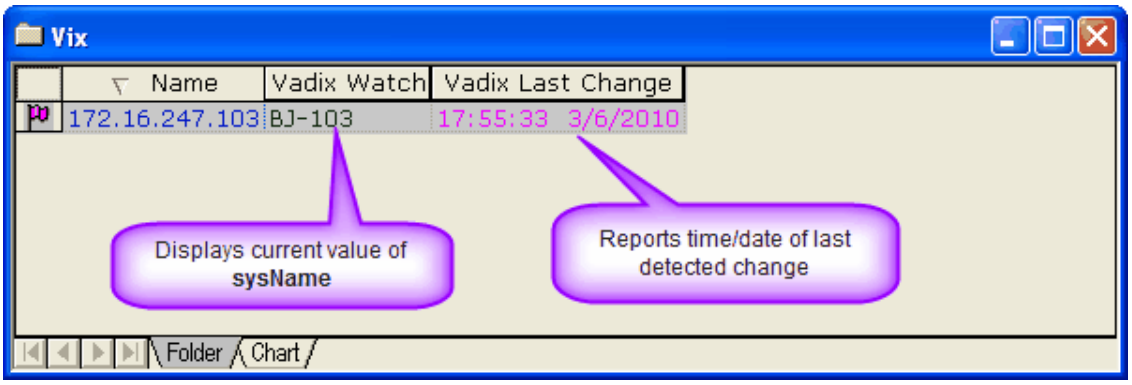


By using interface numbers, non-Vados interfaces can be grouped together to provide a MultiLink object.

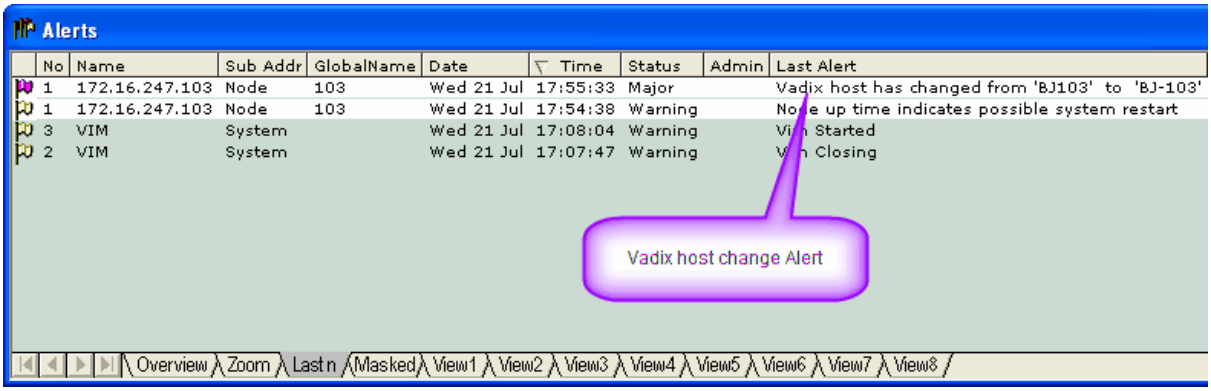


3.2.2 Monitoring a Vadix Dual System

Vadix machines can be configured to act as a pair of machines, one being the active machine and the other being a hot standby. The hot standby will take over if it detects the prime machine has failed. The two machines share the same IP address but are configured with distinct **sysName** values. MegaWATCH can be configured to monitor the Vadix machines and report when a switch is made.



When a change in **sysName** is detected an Alert will be generated as shown below



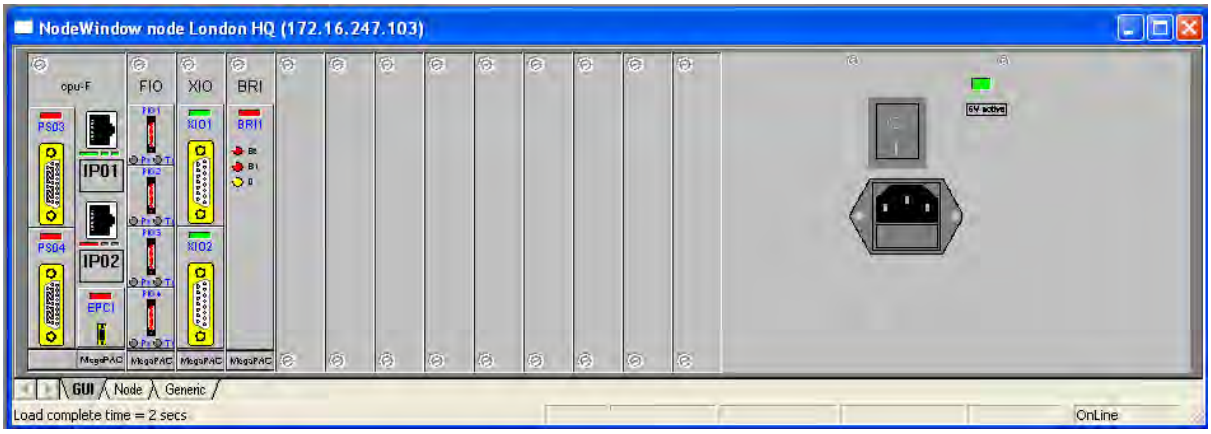
4 Node Window Displays

The Node Window function provides a graphical view of the interfaces of a node. For AEP MegaPAC products, the default view presented is a physical representation of the node. For non-AEP products, a symbolic representation is made.

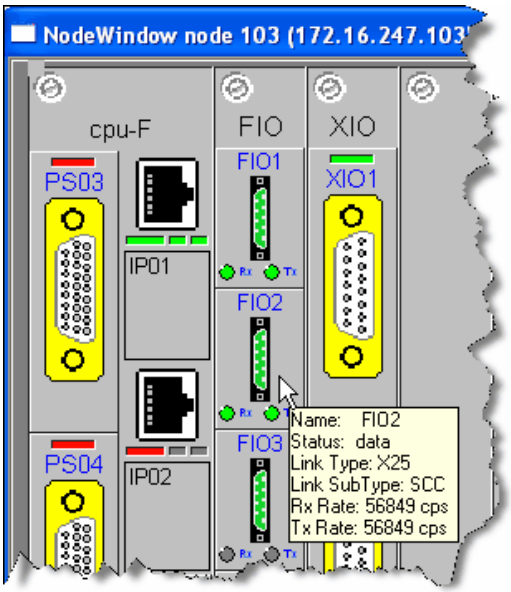
4.1 MegaPAC Node Window Displays

4.1.1 CPU-F Node Window

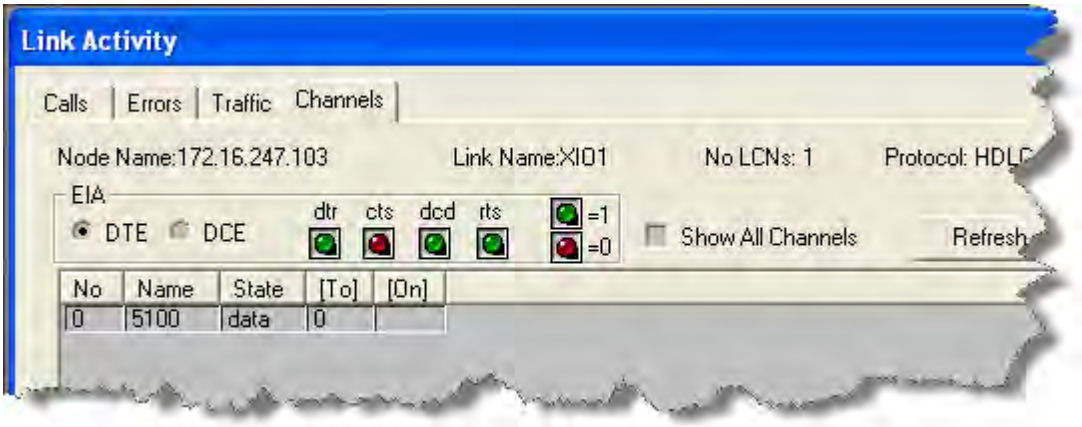
Node window shows the physical interfaces and the current status of each.



Detail of each interface can be viewed from either a hover prompt



or an activity window accessed through the menu or a double-click

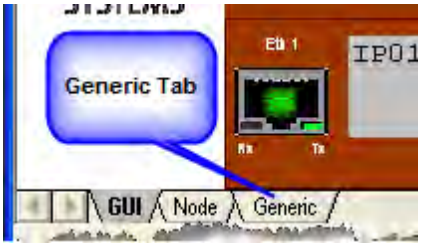


4.1.2 4200 Node Window

An example of a 4200 Node Window displaying the physical interfaces and their status.

4.1.3 Generic Displays on MegaPAC Nodes

To view the status of Virtual interfaces of a MegaPAC node, the **Generic** tab is used,

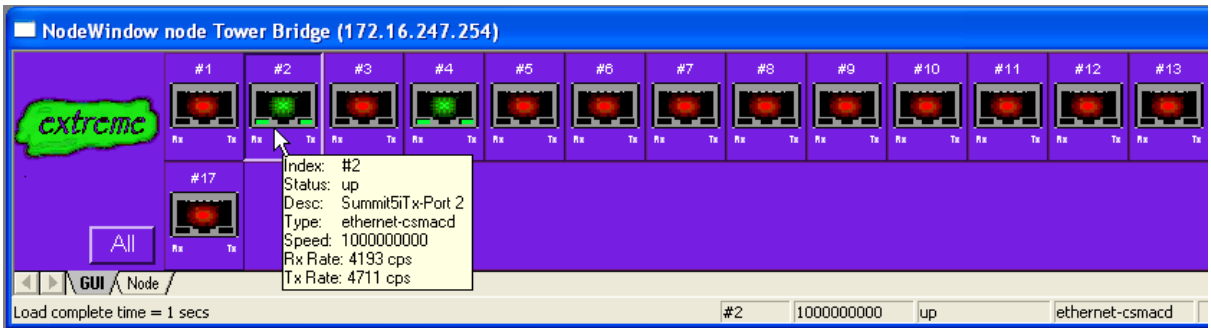


This will display all the interfaces in the node, not just the physical ones,

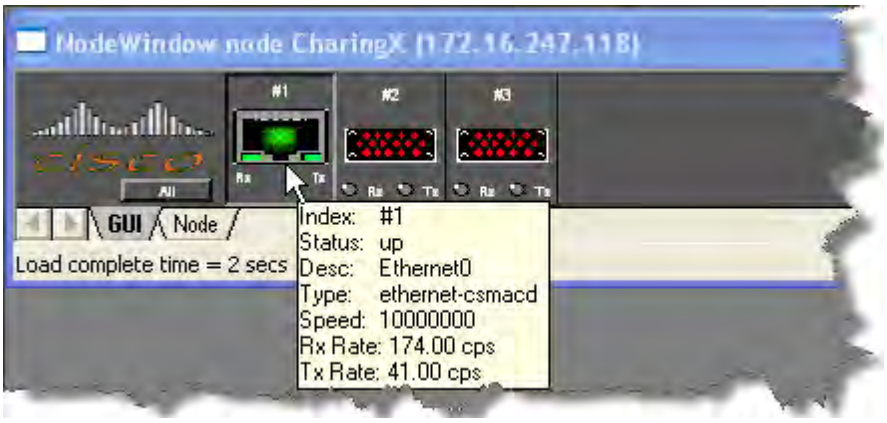
4.2 Non-MegaPAC Node Window Displays

For non-MegaPAC Node Window displays, a logical rather than physical display is given.

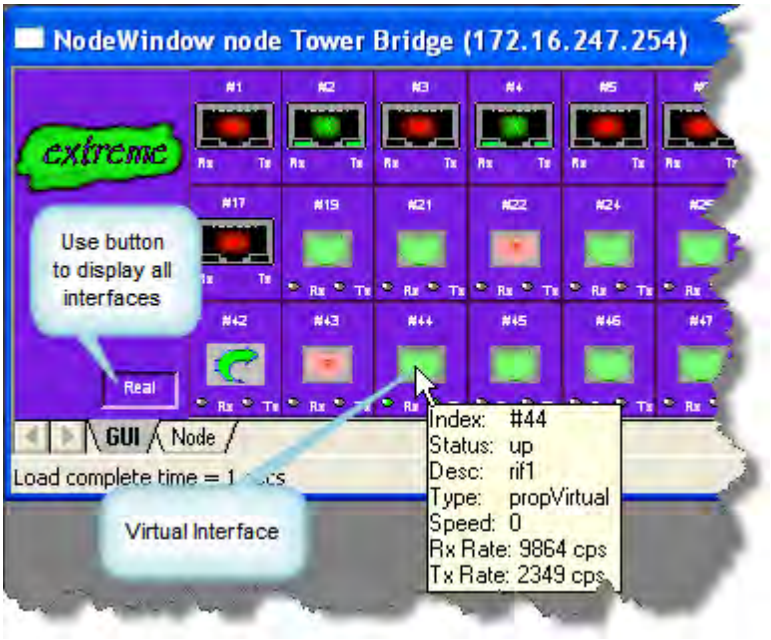
Extreme Summit example



Cisco example

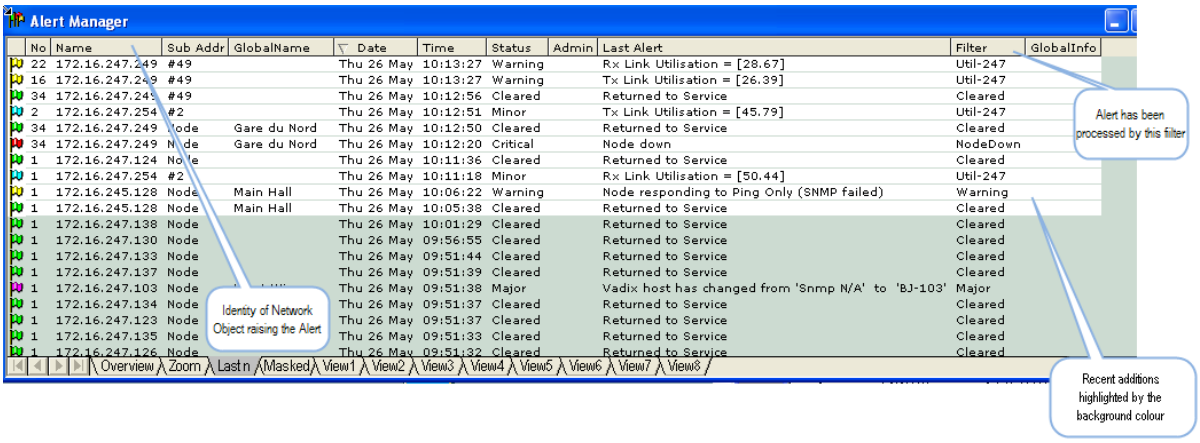


The **All** button can be used on these displays to display all interfaces, including the Virtual Interfaces.



5 Alert Management

Alerts processed by MegaWATCH can come from two sources. They can be as a result of reception of an SNMP Trap from the network or of internal processing by MegaWATCH when it decides an event needs to be brought to the user's notice. The Alert Manager provides tools to modify the behaviour of MegaWATCH when an Alert is raised. The user can change the actions taken of the reception of an Alert. Filters are provided to enable selection of Alerts that are to qualify for specific actions.



5.1 Alert Filter Management

Filters are used to select incoming Alerts and guide the processing of the Alert via the Actions selected.

The selection part of the filter is used to determine if the incoming Alert is to be handled by this filter. Alerts are only ever handled by one filter and the filters are searched to determine which filter should apply. Once a filter has been selected, then the Action taken is determined by the values set in that filter by the user.

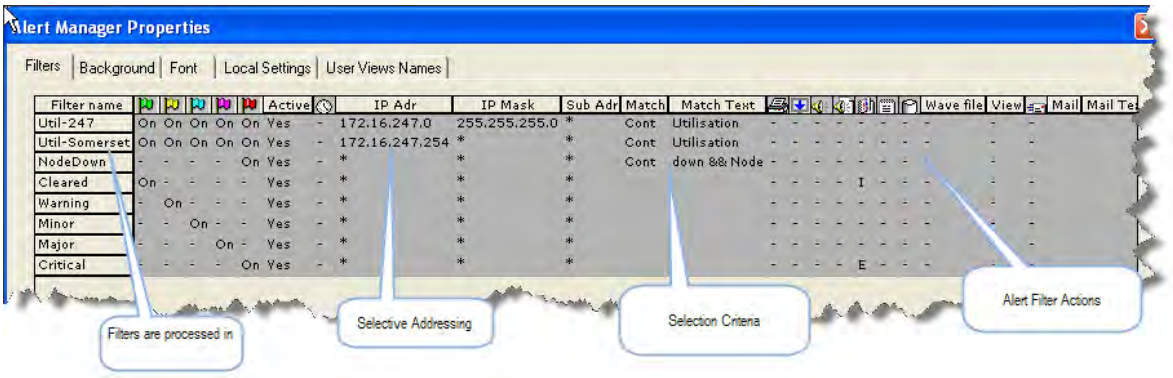
Selection criteria can include

- Select by a IP address or IP address range
- Select by text contained in the Alert Text (this can be a complex match using 'AND' and 'OR' type constructs)
- Select by Sub-address i.e. Link or channel identity
- Select by Severity - filter then only applies to Alerts of the identified Alert levels
- Select by time, day of week (this enables different actions to be taken for out-of-hours Alerts, for example)

Actions taken by a Filter, once it has selected an Alert to process include,

- Sound a selectable WAV file or computer Beep
- Send an E-mail
- Send SMS message
- Initiate another process passing selectable Alert details to that process (Launch)
- Generate a Print
- Write to the System Log
- Discard the Alert
- Also display this Alert in a 'selective' View. The view is then accessed by one of the tabs on the base of the Alert Manager window. The View names are configurable.
- Add Alert to a text file

Below is an example display of the filters in a system. Filters are always processed in order, from the top down.



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