Virtual Access Monitor
Centralised Network Monitoring and Reporting for Virtual Access Routers

• A cost-effective solution for network monitoring and service reporting in conjunction with Virtual Access CPE
• Increased service provider value-add with reduced service delivery costs
• Secure tailored end-customer monitoring views

Large corporate networks have in the past easily justified the use of costly network monitoring tools. Today's service providers of managed broadband IP-telephony, data, and converged networks are under continuous market pressure to increase their service value whilst reducing their service costs.

The Virtual Access Monitor utility is a secure centralised application working in conjunction with each router installed at the edge of a customer's network. Monitor provides centralised access to router connectivity status with email alerting, network utilisation statistics and both LAN and WAN diagnostic information.

Access to the Monitor utility is provided to IP-Touch and IP-Select service partners and can be extended to their end-customers. Monitor allows a Virtual Access customer's support team to proactively monitor their customer's networks for:

• Network availability
• ADSL line history
• Voice call quality
• Bandwidth utilisation
• Performance
• Syslog events

Monitor is based on a hierarchical structure allowing multi-tier service providers to have access to all routers they deploy and for their resellers or end-customers to have access only to devices in their customer domain. Access to each level is managed via login accounts that select appropriate entry points into the hierarchy.

Standard Facilities
Monitor provides Customer Premises Equipment (CPE) operational status, remote CPE diagnostic tools and real-time utilisation statistics from a central point, removing the requirement for costly classical monitoring solutions.

Each Virtual Access router locally monitors a broad range of service attributes such as operational status, real-time data throughput, voice call quality and WAN utilisation using a number of statistical methods.

A number of these services are monitored centrally by access to the Virtual Access secure Monitor portal. Due to the fact that the information is locally pre-processed and stored in battery-backed up memory, information needs only to be transported across the network for periodic central archival. This eliminates network traffic overhead involved in service management resulting in bandwidth savings, increased scalability and in-depth monitoring.

Service Provider Summary Views
Monitor offers multiple summary views to the service provider, ie: hierarchical; linear; and failing device views.

Hierarchical View
The hierarchical view shows the customer identities and their devices. An operator can select an individual device from any of the summary views to display a detailed view for a particular router.

Linear View
A more dense linear view displays additional information.

Failing Device View
The failing device view shows inoperable devices.
Remote Diagnostics Tools for First Line Support

Monitor provides a series of diagnostic views for the individual selected router. Diagnostics applets running locally on the router capture detailed practical information, which can be used for central analysis of installation and run-time problems. In conjunction with the out-of-band management access available with the router, nearly all problems can be centrally diagnosed removing the need for on site visits to solve CPE-related problems.

IP Telephony Networks

IP telephony presents support organisations of managed networks with some specific new challenges. Not least of the challenges is the diagnosis of connection and call quality problems caused by packet loss and jitter. The router incorporates numerous diagnostic facilities such as Connection Monitor, Line History, Event Log, ARP Table, Trace Analyser and Mean Opinion Score historical reports. When used in combination, these facilities enable any support operation to localise the nature of a reported voice call quality problem.

**Connection Monitor**

The Connection Monitor diagnostic view shows the real-time connection status of active interfaces on the router and is used to diagnose connection issues. Virtual Access optional V.90 out-of-band connection allows access to the device to facilitate diagnosis irrespective of the state of the primary WAN connection.

This view provides insight into the level of negotiation at which failure occurs and highlights events that cause connection failure.

**Line History**

This diagnostic view gives a history of ADSL connectivity over the preceding 10 days. A zoom facility allows detailed information to be shown for any hour during that period.

Via Monitor, this information can be downloaded to a browser for offline storage or analysis, providing the managed network provider with valuable evidence of ADSL service disruption occurrence.

**Event Log**

The Event Log diagnostic view is a historical view of the events that have occurred on the router over the preceding period. The contents of the event log and the time period covered by it are dependent on the level of event logging profiled on the router. The Event Log can be uploaded from Monitor to a browser for storage or offline analysis.
Trace Analyser ➤

All top level customers have access to the router's built-in protocol analyser via the Monitor portal. This is an invaluable tool for carrying out in-depth analysis of network issues. Traces from this view can be downloaded for storage or offline analysis.

Change Log

A key consideration in the diagnosis of any issue is a determination of whether the operating parameters of a router have been changed. The Change Log diagnostic display provides a view of any changes made on the box and the timestamp of when these happened. The number of changes to be viewed can be changed and the change log can be downloaded for offline analysis.

Real Time Statistics

In providing a managed service, a requirement of the end-customer's management is often the need for real-time statistics on network performance and utilisation. Monitor offers the service provider access to real-time statistics provided from any of the appliance standard facilities. An operator can select an individual device from any of the summary views to display a detailed view for a particular appliance.

Voice Call Quality Management ➤

IP voice can suffer from significant call quality and performance management problems. Network managers need to understand call quality measurement techniques and need to be provided with the measurement tools to be able to identify and fix problems, preferably before the customer is aware of them.

Mean Opinion Score (MOS) Logs ➤

For each voice call made, the voice data stream will be analysed for the duration of the call, and the call will be attributed with an MOS score.

ADSL Bandwidth ➤

ADSL throughput is a critical factor for any managed network. An ADSL bandwidth diagnostic view provides a real-time display of transmitted and received instantaneous bandwidth.

3G Info ➤

3G signal type, operator signal quality and the amount of data being transmitted over the connection are all displayed in this applet. This information can be vital to support teams when dealing with customer support issues.
Voice Quality Problem Alerts

One of the main objectives of any efficient network management system is to identify and clear faults without any customer awareness. In the case where the MOS score of a call falls below a predetermined threshold, the network manager should be alerted to the problem so that the circumstances of the call can be investigated.

Via Monitor, a real-time display of key VoIP parameters is available to the network manager. MOS results below a configured threshold appear in red. This alert message is also visible in the event log. The event log system can be used to alert appropriate personnel, using email, Syslog, or SNMP.

Syslog Server

Monitor includes a Syslog server that is used to collect events from the network. The SMG acts as a Syslog client and sends events to the Monitor Syslog server. Timestamped events are stored in the database and they can be viewed on a per-device or per-group level. Colour coding is used to signify the event severity.

The Syslog client forwards events based on the event severity to be monitored and in addition the event filtering system can be configured to forward specific events that are of interest to the network manager to the Syslog server. The Syslog server can be on the same LAN as the router or on a remote site.

Traffic Flow Analyser

Through Monitor, a service provider can have access to detailed traffic flow analysis. The router collects and stores data entering and leaving the WAN interface. There are four levels to the traffic analyser: Transaction duration chart; Byte count; Transaction count; and Download CSV file.

This is historical data that is uploaded from the router and stored on the Monitor server. The upload frequency is configurable, therefore it is possible to view traffic statistics soon after they have traversed the network. This type of applet is extremely useful for any service provider involved in deploying PoS terminal solutions, ATMs, VoIP and any other real-time applications.

SLA Reporting

SLA Report Manager can build reports from a list of selected routers presenting a range of statistics including availability, latency, packet loss and 3G signal strength over extended periods of time.

Each Virtual Access router can be configured to store statistics based on the behaviour of a specified traffic flow. The SLA Report Manager can be used to retrieve this information and store it in its database. The user can then create a range of reports displaying this information which can be used to diagnose problematic sites, tailor reports for specific customers or to back up SLA's.