Ascend

COMPETITIVE ANALYSIS

NavisXtend vs. Key Competitors

Overview

Ascend's NavisXtend™ network management applications deliver the industry's first complete set of distributed, scalable management tools with support for all network management functions (accounting, performance, configuration, security, and fault management). No competitor offers this full range of distributed functionality. Most competitors rely on their older, monolithic applications to provide support for network operations. These applications have inherent architectural barriers to distribution and scaling with large networks. Some competitors do offer "xtended" applications, but not a completely distributed approach to network management.

Management Criteria	Ascend NavisXtend	Newbridge 46020	Cisco Strataview	Nortel OMS
Applications	Accounting CNM Statistics and Report Generator Fault Standby Provisioning	Accounting CNM Statistics	Accounting Statistics	Accounting Statistics Fault
Integration	Published APIs can integrate with SPs OSS	No APIs; proprietary	No APIs; proprietary	No APIs; proprietary
Client Interface	Web OpenView	OpenView	OpenView	OpenView
Openess	Published APIs ITU compliant Bellcore compliant ASCII interfaces SNMP-based	Proprietary Partial SNMP support	No APIs Partial SNMP support	No APIs Partial SNMP support
Distributed	A la carte deployment	Cannot deploy separately	Cannot deploy separately	Cannot deploy separately

NavisXtend delivers superior network management to service providers. This can be used as a sales tool to close major business by positioning network management as a key Ascend competitive advantage. NavisXtend also presents the opportunity to sell solutions to the marketing side of the service providers in addition to the traditional operations side. With NavisXtend, service providers can lower operational costs and increase new service offerings, both key business goals in the competitive post-deregulation telecom market.

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Network Management Product Descriptions

Cisco/Stratacom StrataSphere

StrataSphere Overview

StrataSphere is Cisco/StrataCom's management architecture. The StrataSphere family consists of the following products: StrataView Plus, StrataSphere BILLder and Statistics Agent, StrataSphere Connection Manager, StrataSphere Modeler and StrataSphere Optimizer. The largest drawback to the StataSphere system is the lack of integration with any of the Cisco management products; from a company perspective, very little focus has been placed on the Stratacom acquisition, and this is evident in their lack of next-generation management offerings for service providers. Service support is limited to primarily ATM (some Frame Relay support is provided), Frame and ATM services are handled separately by some applications, provisioning is handled through a Command Line Interface (CLI), no Web support is offered, and products are still element-oriented versus service-oriented.

StrataView Plus

Considered to be the functional equivalent of NavisCore™. StrataView Plus is available for HP OpenView and NetView for AIX, provides fault, configuration and performance management functionality. This product has limitations in that it does not provide a graphical interface without the additional of one of the applications below.

Statistics Reports Manager

StrataView Plus Statistics Reports are generated through a graphical reporting package based on the Informix WINGZ application. It layers on top of StrataView Plus.

Statistics Collection Manager

The Statistics Collection Manager provides a forms-based interface to establish and modify statistics collection policies for the network. It layers on top of StrataView Plus.

StrataSphere Service Agent

The Service Agent provides both network and service-layer management including network faults and end-to-end connection management.

StrataSphere Statistics Agent

The Statistics Agent collects statistics from the StrataCom network for billing, performance, and capacity planning. The Informix database must be purchased separately. This application is functionally equivalent to the NavisXtend Statistics Server. Both use TFTP to download statistics stored on the switches to optimize management bandwidth use.

StrataSphere BILLder

StrataSphere BILLder creates Frame Relay and ATM usage-based billing records in AMA based on statistics collected by the Statistics Agent. This application is functionally equal to the Accounting Server application, except Accounting Server also offers ASCII format records.

StrataSphere Connection Management

This application provides an ATM MIB for service providers who want to automate ATM network provisioning and viewing. It has significant limitations when compared to the NavisXtend Provisioning Server (all services, multiple Application Programming Interface [API] options, etc.).

StrataSphere Modeler and Optimizer

These two applications allow a service provider to model traffic patterns for network analysis and planning. They are limited to ATM. Ascend offers this functionality as a turn-key consulting service through the Professional Services organization, which uses automated tools to deliver a complete profile of a service providers network.

Pricing

StrataSphere SNMP Service Agent (<12 nodes)	$5,000	Assy S/W SNMP (<12 nodes)	$5,000
StrataSphere SNMP Service Agent (>12 nodes)	$10,000	Assy S/W SNMP (>12 nodes)	$10,000
StrataView Plus (<12 nodes)	$12,000	StrataView Statistics Agent	$10,000
StrataView Plus (>12 nodes)	$22,000	StrataView Plus Statistics Collection Manager (Billing & Stats)	$10,000

Newbridge Management Executive

46020 MainStreet Network Manager

The 46020 provides fault, configuration, accounting, performance, and security management functions for Newbridge network components. This is functionally equal to the NavisCore application. The 46020 can run in conjunction with OpenView, but the coupling is not tightly integrated.

Management functions available as part of the 46020 include:

- Provisioning of TDM, Frame Relay, X.25, and ATM Permanent Virtual Circuits (PVCs)
- Route tracing and fault isolation functions for PVCs
- Routing of Frame Relay PVCs over ATM backbone networks
- Automatic re-routing of PVCs on network link failures
- Layering of ATM PVCs over VP cross-connects
- Integrated trouble-ticketing system

Each 46020 can only manage 32 switch nodes. For networks with more nodes, additional 46020 "delegate servers" must be purchased and linked to the "master" station. Newbridge markets this as a distributed architecture, but it is not distributed (each station cannot stand alone to manage the entire network). This is an all-server architecture rather than a client/server architecture. The maximum number of delegate stations is 128.

The 46020 is a required element to manage the Newbridge switches. The switches do not have any intelligence and cannot be configured without the NMS. There is no telnet or command line control for initial or remote setup; all management is handled through the 46020.

The 46020 can be "xtended" with the use of the following plug-in applications, although, this is not designed as a distributed system, since all applications must relate through the 46020.

> ### Statistics Reporter
> The MainStreet Statistics Reporter software runs on a 46020 to gather and format data. This product is comparable functionally to Statistics Server, with the severe limitation in distribution tied to the 46020.

KeyInfo

This product is developed by CrossKeys System Corporation and provides a number of reporting functions for the objects within the 46020 network. Reports may be generated on demand or scheduled for automatic creation. The reports available include:

- Inventory (for node equipment, network trunks and UNIs, and PVCs)
- Utilization (bandwidth and slot utilization)
- Availability (for links and PVCs, reports on outages and their duration)
- Performance reports (for the physical layer 1 network and Frame Relay and ATM layers)
- Historical performance data is stored in a database and reports may be generated for any time duration for any of the statistics gathered by the underlying network equipment.

KeyBill

This product is developed by CrossKeys System Corporation and provides a BellCore AMA formatted (BAF) output for usage data on PVCs managed by the 46020 system. Part of the KeyBill configuration includes the association of billing identifiers with the PVCs and a definition of a number of distinct rating periods. Performance data supplied by the Newbridge Statistics Collector application is aggregated over these rating periods before placement into the BAF formatted records. This product competes with the NavisXtend Accounting Server.

Customer Service Management

This system is Newbridge's answer for CNM. In Ascend's products, the solution includes intelligence in the switches (via customer IDs) and partionable servers that can provide CNM access. The Newbridge stations may be either Customer Network Stations that provide views of particular partitions of a network which has been equipped with VBN or VSN partitioning agents. These are additional delegate servers, and count toward the 128 limit.

> ### CSM SNMP Agents
> These agents implement industry standard customer service MIBs primarily intended as an interface for customers to view the configuration and performance of their UNIs and PVCs on the network. Status changes to these objects are propagated from the agents via SNMP traps. MIBs are available for Frame Relay and ATM networks.

ConnectExec

ConnectExec is Newbridge's Common Management Information Protocol (CMIP) software proxy application that sits between the service provider's umbrella manager and the 46020 MainStreet database. Ascend does not provide a comparable product.

Nortel: Magellan Service Management Solution

Open Management Systems

The Magellan Open Management System (OMS) provides management of Magellan products and services including ATM, Frame Relay, LANs and voice services. The Magellan OMS provides provisioning, visualization and performance management of services. OMS runs under HP OpenView.

Management applications include service management (e.g., billing or virtual circuit configuration and performance monitoring), network management (e.g., SONET trunk utilization, network topology display and auto-discovery). There is no distributed support for CNM or provisioning. There is limited support for published APIs, making integration into third-party applications and existing OSS difficult. The NavisXtend applications can be used as a competitive difference to beat out Nortel accounts, or as a means to transition Ascend switches into a legacy Nortel network.

ServiceMonitor

Nortel's Magellan ServiceMonitor allows management of virtual private networks from a PC. Based on a client/server model, ServiceMonitor consists of a user station, a server, and an administration system.

The station, implemented on a PC, interfaces to a server for all its VPN service information. The station can be used by either the customer or by the service provider. The server is implemented on a Sun workstation and provides access to service management information for the stations. The administration system allows Magellan service providers to define their customers' VPNs.

Service Management Reporter

Service Management Reporter provides graphical performance reports which can be used to evaluate the quality of service delivered in relation to agreed upon parameters, including end-to-end availability, throughput, and per-call statistics.

NavisXtend Competitive Advantages

Services
- The only package to support ATM, Frame Relay, SMDS and IP service configuration and control from a single set of applications
- CNM support on many of the NavisXtend applications, customer IDs embedded in switch nodes, partitioning of applications for multiple user access.

Distribution
- The only set of applications to fully support complete, distributed, scalable network management across all management functional areas (configuration, accounting, performance, fault, and security)
- Scalable system; components can be deployed as necessary to grow with the service providers network
- Supports hundreds of simultaneous users with standards-based, cost-effective web browser access

Integration with other applications
- Ships with integrated Sybase client/server SQL database
- Seamless integration with HP OpenView. When a switch is selected, the NavisCore application begins immediately. Many of the servers run transparent to OpenView, and are do not need constant access after initial configuration (such as Provisioning Server).
- Published APIs for seamless integration into existing management infrastructures

User Interface
• Web interfaces on Fault Server today, more Web support forthcoming.

Other
• Supports real-time and historical data collection
• Next-generation architecture ready for large-scale service provider network deployment.

Major Weaknesses of Competitors Products

Cisco/StrataCom
Services
• No support for IP or SMDS, limited Frame Relay integration
• No Customer Network Management development — Users must purchase a 3rd party product
• Device-oriented management, rather than service-oriented

Distribution
• Limited to no scalability; for example:
    - Only one user can provision at a time per switch.
    - All statistics are stored locally on the switch — no external database. In order to query, multiple hits are made to the network.

Integration with other applications
• No database integration — Informix package must be purchased separately.

User Interface
• Provisioning is archaic and difficult; no logical menu structure, no drop down boxes
• No Web GUI on any applications
• StrataView does not support GUI functions up to the level of board.

Other
• No clear vision on future direction for network management
• Standard reports for statistics are only configurable down to 60 minutes, versus Ascend's 5 minutes.
• No Core + Access integration, despite the merger over two years ago. Supports StrataCom products only — does not support Cisco routers, Catalyst Switches remote access servers or LightStream products
• Not fully SNMP-compliant to the switches

Newbridge Management Executive

Services
• No support for IP or SMDS services
• They have done a good job of marketing their CNM solution; with NavisXtend, we have powerful come-back in that all of the servers can be used to deliver CNM solutions.

Distribution
• NME is not a distributed network management platform; all-server instead of client/server.
• One 46020 application and dedicated server is required for each set of 32 switches ($$$$).
• No intelligence in switches forces complete reliance on NMS for even basic setup, as well as more complex re-routing decisions.

Integration with other applications
• Although the 46020 runs under OpenView, it is not seamlessly integrated. When a switch is selected, an additional window pops up and additional selections must be made before the application is launched.

User Interface

- No Web GUI on any of the management products.

Other

- Much of the new NMS development work is done by CrossKeys. Although they are a Newbridge-affiliated company, they are not completely controlled or owned by Newbridge, thus pushing much of the management expertise out-of-house.
- No Core + Access integration; before the merger, Newbridge was working to incorporate management for the Ascend access products into their NME. They do not own any access technology.
- This is a potentially expensive solution with the amount of hardware needed (one server for each 46020 per 32 nodes), plus additional charges for the agents in the switch. In addition, even some cards in the switch require additional management agents, and therefore, additional costs.

Nortel Magellan Service Management Solution

Services

- No support for IP or SMDS
- Not all products can be managed from the same platform

Distribution

- Not fully distributed; only partial support for distributed applications

Integration with other applications

- No published APIs for ATM support

User Interface

- No Web GUI

Other

- Limited standards support: no SNMP to the switches, no CNM standards support
- Each software application requires its own hardware platform.
- Good alarm management application — Fault Server is its equal now

Comparison of Key Features

Provisioning

Features	Ascend	Cisco/Stratacom	Newbridge	Nortel
Product	Provisioning Server	Connection Management	None	None
Fully Distributed Access	Yes	No	No	No
Batch Processing of Configurations	Yes	No	No	No
Service types supported				
ATM	Yes	Yes	No	No
Frame Relay	Yes	No	No	No
SMDS	Yes	No	No	No
IP	Yes	No	No	No
Integrates with existing order entry software	Yes, SNMP, CLI, C, C++	Via SNMP only	No	No
Underlying database	Yes	No	No	No

Statistics

Features	Ascend	Cisco/Stratacom	Newbridge	Nortel
Product	Statistics Server	Statistics Collection Manager	CrossKeys Corp. KeyInfo	Yes
Fully Distributed Access	Yes	No	No	No
Service types supported				
ATM	Yes	Yes	Yes	Yes
Frame Relay	Yes	Yes	Yes	Yes
SMDS	Yes	No	No	No
IP	Yes	No	No	No
Underlying database	Yes, Sybase	Yes, Informix	Yes, Informix	Yes
Configurable poll times	Yes, every 15 minutes with 5 minute peaks up to 1 hour	Yes, every 15 minutes with 5 minute peaks up to 1 hour	No	No

Reporting

Features	Ascend	Cisco/Stratacom	Newbridge	Nortel
Product	Report Generator	Statistics Report Manager	CrossKeys Corp. KeyInfo	Service Management Reporter
Fully Distributed Access	Yes	No	No	No
Service types supported				
ATM	Yes	Yes	Yes	Yes
Frame Relay	Yes	Yes	Yes	Yes
SMDS	Yes	No	No	No
IP	Yes	No	No	No
Web-based Reporting	Yes	No	No	No
Underlying Sybase Database	Yes	No	No	No
Number of Simultaneous Operators	1000 +	128	<100	<100

Fault Management

Features	Ascend	Cisco/Stratacom	Newbridge	Nortel
Product	Fault Server	No	No	No
Fully Distributed Access	Yes	No	No	No
Stand-alone Application	Yes	No	No	No
Service types supported				
ATM	Yes	No	No	No
Frame Relay	Yes	No	No	No
SMDS	Yes	No	No	No
IP	Yes	No	No	No
Architecture supports				
JAVA	Yes	No	No	No
IP	Yes	No	No	No
Web Browser Configuration/Access	Yes	No	No	No

Accounting

Features	Ascend	Cisco/Stratacom	Newbridge	Nortel
Product	Accounting Server	StrataView BILLder	CrossKeys Corp. KeyBill	OMS
Fully Distributed Access	Yes	No	No	No
Service types supported				
ATM	Yes	Yes	Yes	Yes
Frame Relay	Yes	Yes	Yes	Yes
SMDS	Yes	No	No	No
IP	Yes	No	No	No
Call Collection				
PVC	Yes	Yes	Yes	Yes
SVC	Yes	No	No	Yes
Data Output	ASCII, BAF	ASCII, BAF	ASCII, BAF	ASCII, BAF

Standby

Features	Ascend	Cisco/Stratacom	Newbridge	Nortel
Product	Standby Server	None	Yes, mandatory	None
Fully Distributed	Yes	No	No	No
Synchronization Delay	3 minutes	Unknown	Unknown	Unknown

Customer Network Management

Features	Ascend	Cisco/Stratacom	Newbridge	Nortel
Product	CNM Server	None	CSM	ServiceMonitor
Fully Distributed Access	Yes	No	No	No
Service types supported				
ATM	Yes	Yes	Yes	Yes
Frame Relay	Yes	Yes	Yes	Yes
SMDS	Yes	No	No	No
IP	Yes	No	No	No
Underlying Sybase dB	Yes	No	No	No
Standards	FRF.6; RFC 1604	No	No	No

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