Ascend

OVERVIEW SUMMARY

True Access™ Operating System

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ASCEND

Product Positioning

The WAN access industry has grown rapidly, and brought along a host of competitors. Each competitor provides a level of TAOS imitation, but mostly in a single area of scope. Cisco's product are strong in data networking but thin in PSTN support, 3Com/USR focuses on the low-end consumer market, Bay Networks leverages their enterprise solution set, Shiva mainly focuses on the corporate environment, and Livingston/Lucent specifically targets low-end service providers. None of them can provide the breadth of solutions offered by TAOS, which provides industry-leading functionality at every level. Additionally, Ascend is committed to providing industry standard solutions, so that TAOS can fit into the broadest range of network configurations.

Product Overview

Over the years, Ascend's WAN access products have proven their leadership in the market with their extensive and robust functionality. The advanced WAN access hardware, in the form of the MAX™ and MAX TNT™, provide modular chassis that integrate a vast array of technologies that enable service providers and enterprise managers to install customized network infrastructures. These "best-of-breed" products meet current needs while still providing scalable growth for the future. The key underlying element for these solutions is Ascend's True Access™ Operating System (TAOS).

TAOS leverages Ascend's heritage in WAN access solutions. Ascend has poured more research and development into WAN access technologies than any other vendor in the industry and TAOS is the end result of this commitment. TAOS not only represents Ascend's current industry-leading functionality, but it also underlines Ascend's commitment to future WAN access development. TAOS provides the industry's premier WAN access feature set and a platform for next-generation Internet and enterprise applications.

TAOS primarily consists of two components: an embedded kernel and kernel extensions. The TAOS kernel comes standard on all MAX and MAX TNT products and provides a rich foundation of features for mainstream WAN access environments. The TAOS extensions provide targeted software solutions that allow users to customize the MAX and MAX TNT into a wide variety of WAN access environments. Additionally, the True Access Operating System enables external applications that reside on either client or server systems. This extends the solution set of TAOS even further, allowing it to provide the foundation for a robust WAN access configuration.

Target Applications

The following applications are enabled through TAOS:

IntragyAccess™: IntragyAccess is the cross-platform client software application suite that delivers robust dial-in connectivity to remote users. A multi-user IntragyAccess license comes bundled with IntragyCentral for a complete solution, and additional licenses can be ordered separately as your requirements grow.

Ascend Access Control™: Support for standard user-authentication systems fits into your current network security architecture. Networked, server-based authentication makes it easy to manage large-scale remote access applications from a central site. Extended RADIUS functionality allows service providers and network managers to integrate the accounting, authentication and authorization capabilities needed to manage their network.

NavisAccess™: NavisAccess is the first network management tool designed for managing both Points of Presence and enterprise environments and is the only end-to-end, multi-vendor solution designed specifically for ISPs, carriers and corporate WANs. NavisAccess starts with an unprecedented, comprehensive view of the tens of thousands of elements found at the access layer of the network and reaches across the enterprise to bring network devices, services and physical interfaces into clear focus.

Java-Based Ascend Configurator: For easy installation and configuration, Ascend offers the Java-Based Ascend Configurator. This simplifies the installation process, and provides a QuickStart application to get the MAX or MAX TNT up and running in minutes, even for unique configurations.

Features

TAOS Kernel	
IP Router	RIPv1, RIPv2, OSPF
AAA Server	RADIUS, TACACS, TACACS+, PAP, CHAP, MS-CHAP, encrypted token card, Calling Line ID (CLID), transmit and receive packet filtering, callback
Modem Manager	K56flex, V.34, V.FC, V.32bis, V.32, V.22, V.22bis, V.21 and below, MNP and MNP 10-EC error correction, V.42bis data compression, Group 3 fax support up to 14.4, V.120
Management Agent	Telnet, NASI, SNMP II, PPP LQM, Frame Relay ITU Annex A, Frame Relay ANSI Annex D, SNMP MIBs, Password protected Telnet remote management, Local management via VT-100 terminal, ISDN event log and Syslog support
Bandwidth Manager	Multilink PPP (MP), Multilink Protocol Plus™ (MP+), Bandwidth Allocation Control Protocol (BACP), TCP header compression, data compression (Ascend/Microsoft/STAC V9)
WAN Access Server	T1, E1, T3, E3, BRI, PRI, IDSL, RADSL, SDSL, HDSL, D4 framing (T1/E1), G703/732 framing (R1), X.25 PAD, X.25 over B-channel, D-channel multiplexing and X.25 packet services
Terminal Server	PPP, SLIP, C-SLIP, Async PPP, Sync PPP, password-protected access
Scalability Agent	Distributed multiprocessing architecture MAX Stack support for multi-chassis MAX scalability Multishelf support for multi-chassis MAX TNT scalability
DSP Manager	V.110 for GSM-based cellular networks Personal Handy-Phone Systems (PHS) support
TAOS Extensions	
IntragyCentral	Multiprotocol Routing: IPX and AppleTalk Transparent Bridging: Bridging of all non-routed protocols Multiprotocol Access: AppleTalk Remote Access, Async IPX with local spoofing DeskDial: LAN-based dial-/fax-out
Global Digital Access	Digital Access: HDLC processors for ISDN client access ISDN Signaling: BRI and PRI signaling homologation in over 30 countries worldwide, ITU-T R2 signaling on E1, ITU-T R1 signaling on T1, PRI to T1 signaling conversion, D4 to ESF conversion Frame Relay: Frame Relay PVC, PPP-FR gateway, FR NNI, PVC switching Frame Relay forum UNI and NNI, Route to multiple Frame Relay PVCs over single or multiple interfaces, supports up to 4096 PVCs with RADIUS authentication software, Dial-in PPP to Frame Relay gateway function with PVCs on a per user basis, RFC 1490 encapsulation, Dial Access Signaling Interface (DASI), Frame Relay-over-ISDN B-channels
Tunneling	ATMP, PPTP, L2TP, GRE
Virtual Routing	Separate route tables for RIP and OSPF to enable port wholesaling
Inverse Multiplexing	BONDING, AIM, BRI slot cards for connections to the desktop Videoconferencing and backup and overflow applications
SecureConnect Firewall	SecureConnect Firewall, packet filtering, console management (VT-100), PPP callback
NavisAccess Option	Allows NavisAccess to manage the MAX or MAX TNT

Frequently Asked Questions

1. What is the True Access Operating System?

Ascend's True Access™ Operating System (TAOS) is the embedded access software in the MAX™ and MAX TNT™ that provides the widest range of solutions for WAN access environments. TAOS represents the brand name for the leading WAN access feature set for service providers and corporate enterprises. TAOS also underlines Ascend's heritage in WAN access solutions and commitment to research and development for continued leadership in the market.

2. What is Global Digital Access?

Global Digital Access™ is the new name for the Hybrid Access software bundle. This includes software functionality for ISDN signaling, Frame Relay support and ISDN clients. On the MAX, the ISDN signaling includes support for both BRI and PRI signaling, and the ISDN client support enables the HDLC processors on the MAX itself to allow remote ISDN equipment, like the Pipeline® products, to connect into a MAX. On the MAX TNT, the individual components of Global Digital Access are available separately: the HA192 slot card is needed for ISDN client connectivity, and individual software options are available for ISDN PRI signaling and Frame Relay support.

3. What are the differences between the kernel and the extensions?

The TAOS kernel comes standard on all MAX and MAX TNT systems, and represents the functionality required for mainstream WAN access environments. The TAOS extensions are additional functionality available to customize the MAX and MAX TNT into a larger range of applications. The TAOS extensions are either bundled with specific product offerings, like the MAX 2012/2024 that comes standard with Intragy™ and SecureConnect™ Firewall, or are available for purchase separately.

4. Which of the TAOS extensions are bundled with which products?

		Intragy	Global Digital Access	Tunneling	Virtual Routing	SecureConnect Firewall	NavisAccess Option
Low-end	MAX 200Plus	S	S	O	-	O	O
Fixed configuration/modular systems	MAX 2012/2024	S	O	O	-	S	O
	MAX 4030/48/60	O	S	O	-	O	O
Midrange chassis	MAX 1800	S	S	O	-	O	O
	MAX 2000	O	S	O	-	O	O
	MAX 4000	O	O	O	-	O	O
	MAX 6000	O	O	O	-	O	O
High-end chassis	MAX TNT	O	-	O	O	-	O

Competitive Comparison Matrix

Feature		Ascend TAOS	Cisco IOS	Lucent ComOS	3Com HiPer Access	Bay Networks Adapteon	Shiva ShivOS
Modem Support	V.34	Yes	Yes	Yes	Yes	Yes	Yes
	K56Flex	Yes	Yes	Yes	NO	Yes	Yes
	x2	NO	NO	NO	Yes	Yes	NO
	V.90	Future	Future	Future	Future	Future	Yes
	PHS	Yes	NO	NO	NO	NO	NO
	V.110	Yes	NO	Yes	NO	Yes	NO
WAN Access	T1/E1	Yes	Yes	Yes	Yes	Yes	Yes
	V.34	Yes	Yes	Yes	Yes	Yes	Yes
	ISDN BRI	Yes	NO	NO	NO	NO	NO
	ISDN PRI	Yes	Yes	Yes	Yes	Yes	Yes
	PPP	Yes	Yes	Yes	Yes	Yes	Yes
	Frame Relay	Yes	Yes	Future	Yes	NO	Yes
	ISDL	Yes	Yes	NO	NO	NO	NO
	HDSL	Yes	NO	NO	NO	Future*	NO
	SDSL	Yes	NO	NO	NO	Future*	NO
	RADSL	Yes	Future	NO	Yes	Future*	NO
Enterprise Protocol Support	IP	Yes	Yes	Yes	Yes	Yes	Yes
	IPX	Yes	Yes	Yes	Yes	Yes	Yes
	AppleTalk	Yes	Yes	NO	NO	NO	Yes
	Client Software	Yes	NO	NO	Yes	Yes	Yes
	Dial Out	Yes	NO	Yes	Yes	NO	Yes
AAA Server	PAP/CHAP	Yes	Yes	Yes	Yes	Yes	Yes
	RADIUS extensions	Yes	NO	NO	NO	NO	NO***
	TACACS+	Yes	Yes	NO	NO**	NO	Yes
Security	Integrated Firewall	Yes	NO	NO	NO	NO	NO
Bandwidth Management	Multilink PPP (MP)	Yes	Yes	Yes	Yes	Yes	Yes
	Multilink Protocol Plus™ (MP+)	Yes	NO	NO	NO	NO	NO
	Multi-chassis MP	Yes	Yes	Yes	NO	Yes	NO
	Multi-chassis MP+	Yes	NO	NO	NO	NO	NO
	Hardware compression	Yes	NO	Yes	NO	NO	NO
Management	SNMP MIB Support	Yes	Yes	Yes	Partial	Yes	Yes
	Modem Round-Robin Allocation	Yes	NO	NO	NO	NO	NO
	Integrated modem manager	Yes	NO				
	DSP manager	Yes					
Terminal Services	SLIP	Yes	Yes	Yes	Yes	Yes	Yes
	C-SLIP	Yes	Yes	Yes	Yes	Yes	Yes
	PPP	Yes	Yes	Yes	Yes	Yes	Yes
IP Routing	RIP v1	Yes	Yes	Yes	Yes	Yes	Yes
	RIP v2	Yes	Yes	Yes	Yes	Yes	Yes
	OSPF	Yes	Yes	Yes	NO	NO	Future
Tunneling	ATMP	Yes	NO	NO	NO	NO	NO
	PPTP	Yes	NO	NO	Yes	NO	Yes
	L2TP	Yes	NO	NO	NO	Yes	Yes
	L2F	Future	Yes	NO	NO	NO	Yes
	IPSec	Future	Yes	NO	NO	Yes	Yes
Virtual Routing	Separate RIP, OSPF route engines	Future	NO	NO	NO	NO	NO

*Bay Networks has announced plans to integrate xDSL technology via its partnership with Paradyne

** 3Com has announced plans to integrate TrancendWare into the USR RAC products

*** Shiva's VantagePath claims new, expanded multi-level RADIUS functionality

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