



PortMaster 4

Integrated Access Concentrator

High volume, multi-service
network access

The explosion in remote access to networks has placed new demands on the network service providers and corporate depart-

ments that support them. The number of users has increased. They tend to stay on-line longer. The data they exchange has become more complex, the files larger. As a service provider, you must deliver fast, reliable access to meet user demands.



The Lucent Technologies PortMaster® 4 integrated access concentrator supports these high volume, multi-service access requirements with unparalleled flexibility and industry-leading scalability. Its next generation architecture delivers carrier-class capacity and unequalled performance on a single shelf, conserving precious floor space. And its multiple chassis configuration enables seamless growth.

Technical Specifications

TCP/IP	Internet Protocol (IP), Transmission Control Protocol (TCP), User Datagram Protocol (UDP), Internet Control Message Protocol (ICMP), Address Resolution Protocol (ARP)
Routing Protocols	Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Border Gateway Protocol Version 4 (BGP4), Static Routes, RIP V1, V2
Novell Support	IPX/SPX, RIP, IPX/SPX spoofing
LAN Interface	One 10/100 Mbps (FD) Ethernet or One Media Independent Interface, One 10 Mbps (FD) Ethernet
WAN Protocols	PPP Support, Sync PPP, Async PPP, Dynamic IP address assignment, PAP/CHAP authentication, PPP, Multi-link PPP, Multi-chassis PPP, BACP, Stac LZS & MS Stac compression
ISDN Switch Types	North America: Lucent 5ESS & 4ESS, Nortel DMS-100, NI-2, Europe: NET5, VN2, VN3, 1 pr6, Japan: NTT and KDD, ISDN Protocols, NFAS (NI-2)
Signaling	T1 In-band Signaling (Robbed Bit), FXS Loop, Immediate Start, Wink Start, E1 In-band Signaling, R2
Modem Protocols	ITU-T V.90, K56flex, V.34, V.32bis, V.32, V.22bis, V.22 Bell 212A and 103J, V.42 and MNP 2-4 (error control), V.42bis and MNP 5 (data compression)
Security and Accounting	RADIUS authentication, RADIUS accounting, Local user password, PAP/CHAP, Calling Line ID, Callback, Packet Filtering, ChoiceNet Server support, Token Card, Secure ID, Activ Card, L2TP, IPIP
Configuration and Management	Two asynchronous console ports, Telnet, PMVision (graphical configuration and management tool), BOOTP, TFTP network downloads, SNMP MIB II compliant, SNMP Enterprise MIB extensions
Chassis Capacity	North America: 864 modem/ISDN B channel, 36 T1/PRI lines, 1 channelized T3 Mux Europe: 810 modem/ISDN sessions, 27 E1/PRI's, 1 channelized E3 Mux
Dimensions: Operation Temperature: Power requirements: Safety Certificates: Telecom approval: EMI/RF:	19" w x 18" d x 15.75" h 32-104° F (0-40 C) DC: Nominal -48 vdc, Range -36 to -56 vdc AC: Autosensing 90 to 240 v and 47-63 Hz CSA 950, NTRL/UL 1950, TUV EN 60 950 FCC Part 68, Bellcore GR 1089 CORE (pending), Bellcore GR 63 CORE (pending) FCC Part 15 Class B EN55022(CISPR)

For additional information about our PortMaster 4 integrated access concentrator, please contact your Lucent Technologies sales representative, or visit www.lucent.com/dns/portmaster

Lucent Technologies
Bell Labs Innovations



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Printed in U.S.A.

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Industry-Leading Remote Access Software

ComOS Operating System

PortMaster 4 runs on the Lucent Technologies ComOS® operating system. Designed specifically for access routing, ComOS supports a variety of IP routing protocols, including Open Shortest Path First (OSPF), Border Gateway Protocol Version 4 (BGP4), and Routing Information Protocol (RIP). It has been continually enhanced through nearly a decade of use to deliver the exceptional reliability essential for demanding 7x24 operations.

This powerful software tool also provides support for extensive security features for both dial-in and dedicated access, as well as a full compliment of network management functionality. ComOS has a highly efficient, scalable design, allowing you to add features seamlessly. And, significantly, ComOS is unique in its ability to run on multiple remote access platforms - the same software with the same interface - reducing configuration and training time.

PortAuthority RADIUS Servers

Lucent Technologies PortAuthority™ RADIUS server software products offer an unparalleled access management solution - one that is powerful and scalable, yet offers the flexibility that you need. PortAuthority leverages Lucent's extensive access control background. After all, we invented the RADIUS protocol and have continued to make enhancements for a broad spectrum of customers which range from large carriers to the corporate enterprise.

Developed using the cross-platform capable Java programming language, PortAuthority is based on Lucent's unique PolicyFlowSM architecture. Its foundation is a core RADIUS Authentication, Authorization and Accounting (AAA) server module which manages the fundamental access management tasks. Extensible, plug-in software modules enable the construction and management of specific policies that integrate into your existing management infrastructure.

Carrier-Class Remote Access

Any Service, Any Port, Any Time

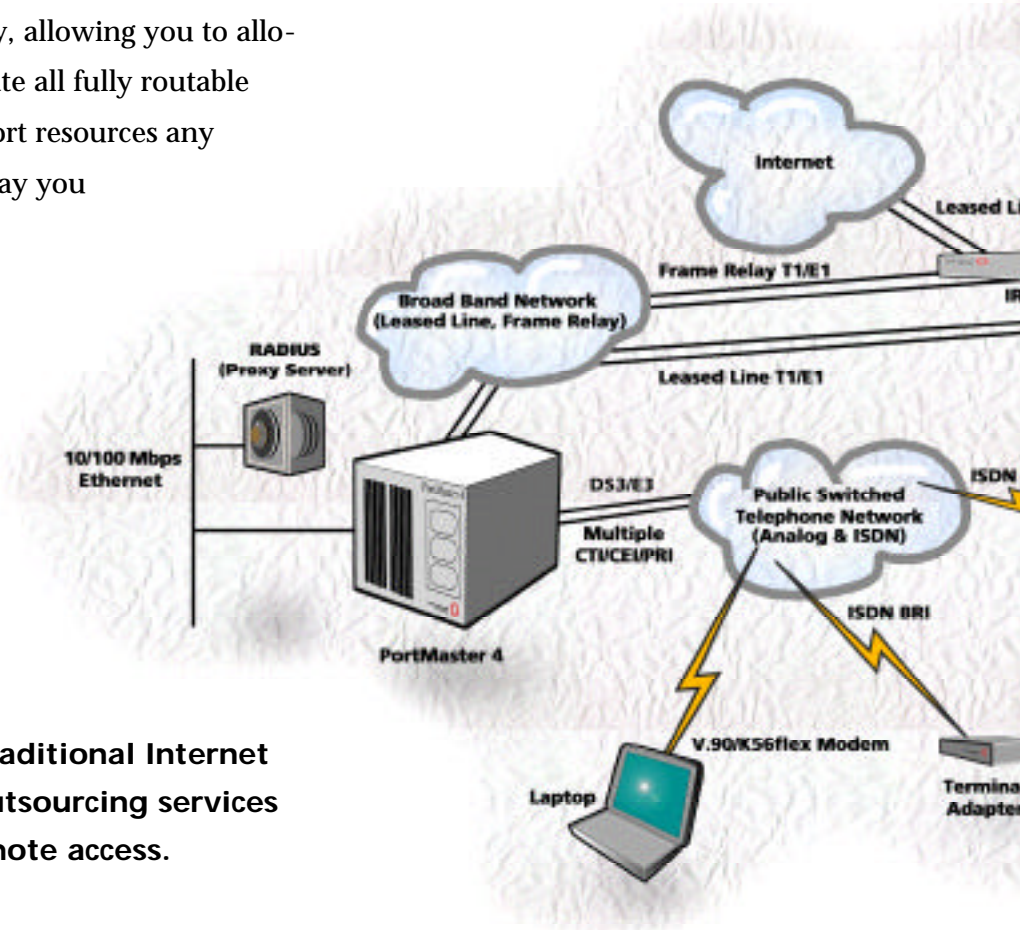
Whether your network supports large scale traditional Internet access, wholesale and outsourcing services, enterprise-wide remote access, or a combination, the PortMaster 4 integrated access concentrator provides the multi-service capabilities you need to succeed. All elements of remote access are supported, including Integrated Services Digital Network (ISDN), 56K modems (V.90, K56flex), a wide array of high-speed leased line connections, Frame Relay, and more. And, the PortMaster 4 permits a seamless migration path to new advanced services, standards, and technology.

PortMaster 4's robust ComOS routing engine allows routes to be configured statically or learned through support for a variety of dynamic routing protocols. OSPF ensures highly efficient allocation of scarce IP address. And BGP4 support provides reliable Internet connectivity by permitting multi-homing application to maintain connections between multiple Internet service providers.

Importantly, PortMaster 4 offers unparalleled flexibility, allowing you to allocate all fully routable port resources any way you

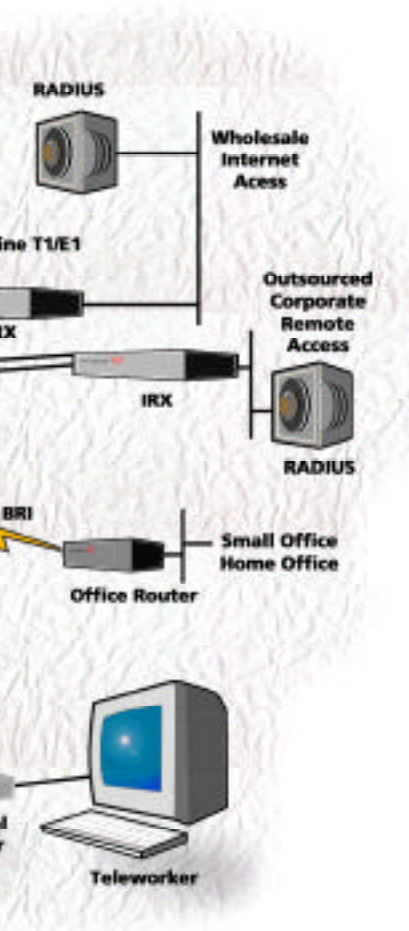
wish. You can have dedicated and switched services in the same concentrator, even on the same card. No longer will you have to dedicate an individual card to a single type of service. You determine the optimal configuration to meet your application and bandwidth requirements. Any service, any port, any time.

PortMaster 4 supports traditional Internet access, wholesale and outsourcing services as well as enterprise remote access.



Superior Density, Modular Scalability

Developed specifically for providers who operate large-scale points of presence, the PortMaster 4's 10-slot chassis supports up to 864 T1 or 810 E1 56K modem connections and/or ISDN sessions in a single chassis occupying only 15.75



inches of vertical rack space. More than 4,000 simultaneous sessions can be delivered within a seven-foot cabinet. And, the PortMaster 4 can multiplex a full T3 or E3 on a single shelf.

Easy scalability is a hallmark of the PortMaster 4. Upgrading port capacity is as easy as inserting a new module. And on-line insertion and removal of modules minimizes service disruptions.

Lucent offers Quad T1/Primary Rate Interface (PRI) modules that support 98 56K modems or High Level Data Link Control (HDLC) sessions for dial-up ISDN. Tri E1 modules provide similar capacity for European installations.

For higher density applications, Lucent offers single slot T3 or E3 modules. The T3 module supports a full 672 Digital Signal Zeros (DSOs) for channelized T3 operation. Further, the module can multiplex any individual T1 stream over the virtual backplane to any installed Quad T1/PRI card, allowing you to further leverage your initial hardware investment and migrate to T3-based service as your business needs grow.

Unsurpassed Performance

The PortMaster 4 features a distributed multi-processor architecture, an embedded 5 Gbps Asynchronous Transfer Mode (ATM) cell-switching fabric, and a virtual backplane design. This next generation architecture allows you to add capacity without affecting performance. Each single slot module provides additional processing capacity to terminate modem and ISDN sessions right on the card, eliminating latencies and potential performance drains inherent in bus architectures.

The design of the System Management Module (SMM), which maintains control functions and manages all chassis modules, contributes to the high levels of performance delivered by the PortMaster. Its high-speed switching fabric is directly linked to a virtual backplane on the unit's chassis, independent from the physical backplane. This provides dedicated, high capacity 155 Mbps service to each module and enables a cost-effective migration path for future enhancements.

The SMM also provides two physical network interfaces -- one auto-detecting 10/100 Mbps Ethernet port and one 10 Mbps management port. And, it maintains statistics on temperature, power consumption, number of modules installed, module type, and configuration data. Where 100% network availability is an absolute requirement, a second SMM can be installed, on standby for a hot crossover -- without any loss of routing information.

High Availability, Outstanding Reliability

The PortMaster 4 brings carrier-class quality of service to remote access concentrators by eliminating all single points of failure. Its fault tolerant design builds on the reputation for outstanding reliability that PortMaster products have earned in the marketplace with features that are critical to central site operation, such as an ability to insert or remove modules on-line, a redundant, load-sharing power architecture, and advanced thermal design.

Up to three hot-swappable, load-sharing power units can be installed. For DC-powered applications, the PortMaster 4 sources power directly through a dual-input rear-panel connector.

Redundant, hot-swappable fans ensure efficient air flow across all modules. Throughout, the redundant nature of the PortMaster 4's carrier-proven architecture minimizes support requirements and helps maximize system up-time.

Comprehensive Management and Security

PortMaster 4 integrated access concentrators can be administered centrally through our Java™-based graphical configuration utility. Network managers can collect statistics, upgrade software, busy-out modems and circuits, even monitor calls in progress all from a central site. Or, if you prefer, the PortMaster 4 can be administered locally, using one of two chassis console ports. Other support includes RADIUS, BOOTp, TFTP, Telnet, and Simple Network Management Protocol (SNMP).

Lucent Technologies Expanding Your World

Lucent Technologies and our innovation arm, Bell Labs, develops communications systems to help carriers and providers meet today's needs and tomorrow's opportunities. Our access solutions, for example, supply dependable, integrated remote access for ISPs and enterprise networks worldwide. More than 2,000 ISPs use the company's PortMaster remote access servers, IRX™, FireWall IRX, Office Router and PortAuthority products.