



# Access Point 1000

## Next-generation IP Services Router

**Access Point™ 1000 is a next-generation, high performance IP services router optimized for service providers wishing to quickly introduce managed IP services at regional offices of enterprise customer premise locations or at the network edge. Access Point 1000 is purpose-built to deliver IP services with multi-access routing, Quality of Service (QoS) with Class-Based Queuing (CBQ), secure Virtual Private Networks (VPN), firewall security, and policy management. The service provider has the advantages of easy deployment to multi-sized customer premises locations or their network edge and the implementation of flexible management facilities that can be both customer and/or service provider managed.**

Users can migrate from basic IP access to more advanced virtual private network (VPN) and Service Level Agreement (SLA) managed IP services with a single, purpose-built IP services platform. The integrated traffic measurement and monitoring capabilities allow service level monitoring, enhanced network planning, and billing support. And as a fully Simple Network Management Protocol (SNMP) managed system, Access Point 1000 is easily integrated into existing network management systems and back-office services.

Access Point 1000 employs an advanced system architecture that achieves high-speed packet forwarding while applying advanced services at very fine granularity. With data forwarding rates of 500 Mbps and 3DES encrypted traffic forwarding rates of up to 155 Mbps, Access Point 1000 sets new price and performance standards for IP access routers.

### Access Point Product Family

The Access Point product family consists of the five AP 300 fixed configurations, AP 450 LS, AP 450 HS, and AP 1000 IP Services routers. Supported WAN interface modules and protocols, routing performance, and application capabilities differentiate the models' IP services characteristics.

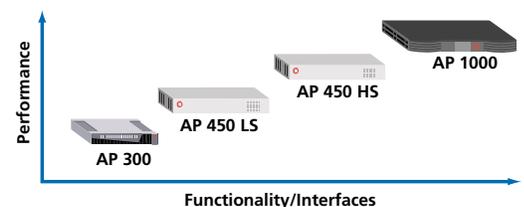


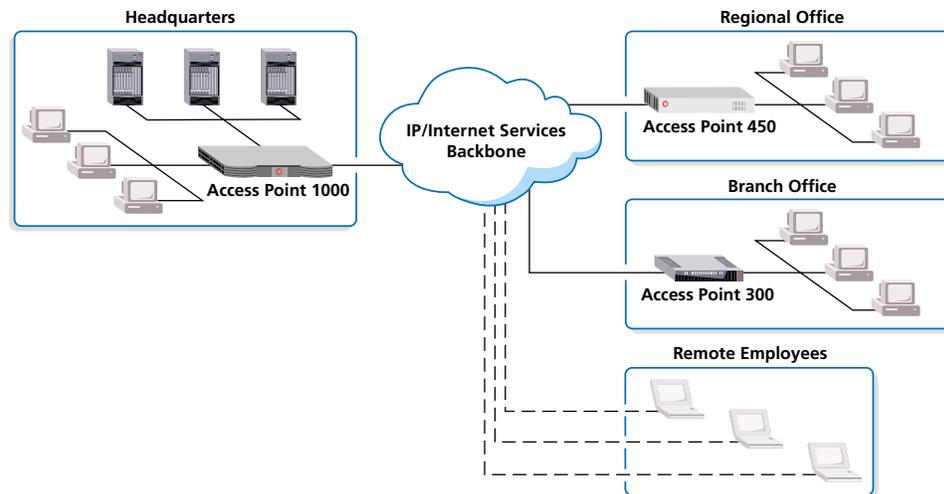
Customers that require higher performance or faster access options should choose the Access Point™ 1000 IP services router. The AP 1000 is ideally suited for both customer premises and network edge (point-of-presence/POP) managed IP services.

Both AP 450 models can be easily deployed at small to medium-sized enterprise regional and branch locations, with AP 450 LS targeted at the smaller facilities. Access Point 450 HS has data forwarding rates of up to 200 Mbps and 3DES encrypted traffic forwarding rates of up to 80 Mbps. The AP 450 HS typically provides a 20% performance increase over the AP 450 LS, with added functionality for supporting applications such as access aggregation and enhanced routing.

With data forwarding rates of up to 50 Mbps and 3DES encrypted traffic forwarding rates of up to 5 Mbps, the Access Point 300 sets new price and performance standards for small and medium-sized branch office IP services routers.

### Access Point Product Family Overview





## Features

- **Robust IP Routing Services**—Access Point 1000 combines high performance, Internet certified and deployed IP routing with a comprehensive suite of world class IP services.
- **Advanced IP Quality of Service**—Class-Based Queuing (CBQ) provides the most flexible and scalable ability to assign, monitor and manage bandwidth policies for the users and applications of the network.
- **Standards-based VPN Security**—High-performance IPSec tunneling and encryption, L2TP Network Server, and stateful and stateless packet-filtering firewall features are integrated into a single, highly secure VPN services platform.
- **Industry Leading Price/Performance**—Access Point 1000 supports forwarding rates of 500 Mbps with 3DES encrypted traffic throughput up to 155 Mbps and up to 1000 site-to-site or 5000 simultaneously active remote access VPN tunnels.
- **LAN/WAN Interface Modularity**—Access Point 1000 supports two on-board 10/100 Ethernet interfaces, plus four slots for additional interface expansion. Options include: POS OC3/STM-1, ATM OC3/STM-1, Frame DS3, ATM DS3, Gigabit Ethernet, HSSI, MSSSI, and 4xT1/E1. Two additional slots are available for hardware encryption accelerators.
- **Centralized VPN, QoS, Firewall, and NAT Policy Management**—QVPN Builder is a centralized policy manager enabling large scale VPN and QoS networks with secure, policy-enabled provisioning of VPN, CBQ, NAT and firewall rules.
- **A Complete Family of Next-Generation IP Services Platforms**—Access Point 1000 IP services routers represent the mid-range members of the Lucent family of IP services platforms,

which support basic access routing, plus next-generation IP services routing and switching, plus VPN Firewalls.

## Broadest Range of IP Applications

With its complete suite of advanced IP services, the Access Point 1000 is used by service providers for a broad range of IP applications:

- High speed, enterprise WAN/Internet access with advanced, policy managed bandwidth QoS
- Combined site-to-site and remote access Internet VPNs that require end-to-end security and SLAs
- High quality Internet/IP access services for the individual tenants of multi-tenant properties
- Scalable, secure bandwidth QoS for Web and application hosting environments
- High speed, IP routing from a service provider's access POP to the Internet backbone
- Enhanced remote access services or internet-working between the Internet and existing frame relay networks using high capacity L2TP tunneling

## An Integrated IP Services Architecture

The Access Point 1000 combines best-of-breed IP services with the price/performance and scale required to meet the needs of next-generation IP services. Users can migrate from basic routing to advanced IP services in a single platform that is easy to deploy and manage. Key features include:

- Robust multi-access IP routing
- Leadership IP QoS with CBQ
- Advanced VPN Security Features
- Rich management services

## Access Point 1000

The Access Point platform features a 262 MHz MIPS R7000 RISC processor. The fast-memory subsystem supports 128 MB synchronous DRAM (expandable to 256 MB), providing extended packet buffering support and expansion potential for future feature enhancements.

### Robust Multi-access IP Routing

The Access Point 1000 features robust IP routing that has been certified and deployed by the industry's leading Internet providers. The standards-compliant IP routing solution includes full support for RIP, OSPF, BGP-4, IGMPv2, DVMPv3, IS-IS, policy forwarding, and static routing.

The BGP-4 implementation is fully interoperable with the most widely installed backbone routers and is critical to providing reliable, multi-homed connections from an enterprise customer premises to a backbone IP network. The ability to operate as a full BGP-4 peer further allows deployment of the Access Point 1000 as a high-performance edge router connecting a carrier's access POP to the Internet/IP backbone.

For high availability environments, the Access Point 1000 supports redundant access from the corporate LAN to a primary or back-up default gateway via support for the IETF-defined VRRP (Virtual Router Redundancy Protocol).

Additional IP features, including IP Load Sharing, Network Address Translation, and Multicast, further enable a broad base of value-added IP services and applications.

### Leadership IP QoS with CBQ

The Access Point 1000 provides leadership IP QoS based on Class-Based Queuing (CBQ), an open, non-proprietary bandwidth management technology defined by leading members of the Internet community. With CBQ, a network administrator can establish and enforce specific bandwidth policies while gaining the visibility necessary to actively manage cost and QoS. This heightened level of control ensures that the required amount of bandwidth is delivered to the right users when and where they need it.

With CBQ, user traffic is easily classified based on information found in the IP packet header. Bandwidth is then explicitly allocated according to the priorities of the network provider. Bandwidth efficiency is achieved with CBQ's bandwidth borrowing capability, which allows a traffic class to burst above its allocated bandwidth if there is idle bandwidth on the link. Ease-of-use is assured

with CBQ AutoClass, which enables the Access Point 1000 to automatically create a set of bandwidth policies or profiles that can then be enforced across many applications and users.

In a VPN environment, the Access Point 1000 provides bandwidth QoS for the "virtual trunks" connecting secure VPN sites while also allowing customers to policy manage application and user access to the bandwidth of those secure virtual trunks.

The Access Point 1000 further enables end-to-end QoS with its support for IETF-defined differentiated services and also Type of Service (ToS) marking. By combining CBQ and DiffServ, a network operator can first prioritize user traffic to meet internal business needs and then map that traffic into the different end-to-end service levels offered by the IP/Internet backbone.

### Advanced VPN Security Features

#### Secure IP Tunneling and Encryption

With its rich security features, performance, and scale, the Access Point 1000 is ideally suited to operate as a fully integrated VPN router or a QoS-enabled VPN gateway that co-exists with already installed routers. The system supports secure site-to-site and remote access VPNs with up to 1000 site-to-site/5000 remote access IPsec tunnels and 3DES encrypted packet-forwarding rates of up to 155 Mbps.

The Access Point IPsec tunneling and encryption is certified by ICSA.net, supporting both 56-bit DES and 168-bit 3DES encryption, with HMAC-MD5 and HMAC-SHA1 message authentication. Session keys are managed dynamically with IKE, while user level authentication is supported via local passwords, Remote Authentication Dial-In User Service (RADIUS), SecureID, or via X.509v3 formatted digital certifications.

#### L2TP Network Server

Access Point 1000 also operates as an L2TP Network Server (LNS), terminating remote user L2TP/PPP tunnels at a network service provider POP or a large corporate site. The L2TP Network Server supports up to 3,500 L2TP/PPP tunnels with support for IPCP, PAP/CHAP, MLPPP and optional IPsec security.

#### Integrated, Stateful Packet Filtering Firewall

Access Point 1000 assures high performance access control via its integrated ICSA-certified stateful, packet filtering firewall. The firewall provides robust security at beyond OC-3 rates, protecting the corporate LAN/WAN demarcation, while preserving application performance and

QoS attributes. Centralized, policy-enabled provisioning of the Access Point 1000 firewall eliminates site-by-site configuration complexity, while also reducing the risk of security holes originating from configuration errors.

### Rich Management Services

The Access Point offers a number of management services that are fully compatible with the service provider's enterprise customer network environments.

#### SNMP Management

Full SNMP management support offers complete compatibility with existing SNMP reporting systems within a standards-based enterprise environment running Hewlett-Packard® OpenView™ or Sun® MicroSystems Solstice™. Network administrators can easily generate a variety of useful statistical reports, support user charge-back and perform service monitoring.

#### Web Management Navigator

The Access Point Web management navigator enables an administrator to easily control the Access Point 1000 using a choice of an intuitive Command Line Interface (CLI), an industry standard SNMP manager, or a graphical Web management navigator. The CLI establishes a new standard for ease of configuration management, while the Web interface provides a powerful graphical tool for continuous monitoring and control of Access Point routers.

The Access Point Web management navigator is fully compatible with installed SNMP management and reporting systems. And a flexible split-horizon management allows separate web-accessible management domains to meet the respective needs of network provider and user.

#### Comprehensive RADIUS Support for Authentication

The Access Point 1000 has an on-board RADIUS client that integrates Access Points in RADIUS managed environments. As a result, user management of VPN and dial-in clients is centralized and simplified for user authentication, call accounting, and support of IPSec client configuration data. In addition, the Access Points share the same user records and call accounting features of other RADIUS supported network services.

#### Centralized VPN, Firewall, and NAT Policy Management

The Access Point QVPN Builder™ is a centralized policy manager allowing policy-based, end-to-end provisioning of site-to-site VPN and QoS networks. Using QVPN Builder, network providers can cost-effectively deploy, manage and scale IP services.

Information, such as VPN topology, security profiles, NAT configuration, firewall rules, and QoS policies are translated into detailed site-level configurations. QVPN Builder then automatically distributes the information to each Access Point site, securely via SNMPv3, non-disruptively and within minutes. By automating and centralizing this process, VPN and QoS networks can more easily and quickly scale to hundreds of individual user sites.

### Delivering Next-Generation IP Services Platforms

The Access Point IP services routers are part of the Lucent family of next-generation IP services platforms. Lucent offers a full portfolio of IP services solutions with service intelligence that deliver basic access routing, IP services routing, and IP services switching to satisfy a range of managed IP services applications and site configurations. Service providers have tremendous flexibility, functionality, and scalability in deploying managed IP services to the customer premises and network edge. The award winning, Lucent VPN Firewall family of solutions complements these next-generation IP services platforms. And to support design and deployment of managed IP services, customers can choose from a full suite of comprehensive global professional services and customer support, providing full network and application analysis, design, implementation, and technical support.

**Dimensions**

17.4" W x 1.74"H x 11.8" D  
(43.9cm x 4.4cm x 30cm)

Standard rack mountable

**Weight**

12 lbs (5.7kg), without  
interface modules

**Embedded LAN Interfaces**

Two 10/100 Base-T Ethernet (RJ-45)

**Expansion Slots**

4 PMC Expansion Slots for  
Interface Modules

2 Internal Slots for Encryption  
Accelerator Modules

**LAN Interface Modules**

10/100 Base-T Ethernet (RJ-45)

Gigabit Ethernet (Multimode Fiber)

**WAN Interface Modules**

MSSI—up to 8 Mbps (V.35 or X.21)

HSSI—up to 45 Mbps

Quad T1/E1 with integrated DSUs  
(RJ-45)

Frame-based DS3 with integrated  
DSU (BNC)

ATM DS3 with integrated  
DSU (BNC)

ATM OC-3/STM-1 Multimode Fiber  
(SC Duplex)

ATM OC-3/STM-1 Single Mode  
Fiber—Intermediate Reach  
(SC Duplex)

ATM OC-3/STM-1 Single Mode  
Fiber—Long Reach (SC Duplex)

Packet over SONET OC-3/STM-1  
Multimode Fiber (SC Duplex)

Packet over SONET OC-3/STM-1  
Single Mode Fiber—Intermediate  
Reach (SC Duplex)

Packet over SONET OC-3/STM-1  
Single Mode Fiber—Long Reach  
(SC Duplex)

**Hardware Assisted Encryption**

Encryption Accelerator Module

**Memory Configurations**

128 MB SDRAM

Upgradeable to 256 MB SDRAM

**Management Ports**

2 x RS232 Console Port

**Power Requirements**

AC Power Input Range: 90–240 VAC,  
auto-selecting, 50/60 Hz nominal

DC Power Input Range: 36–60 VDC,  
6A

Consumption: 125 Watts maximum,  
60 Watts typical

**Environmental Requirements**

Temperature: 0°– 40° C

Internal heat sensor with automatic  
shutdown for high heat

Storage Temperature: -30°–65° C

Relative Humidity: 5–95%  
(non-condensing)

**Safety Certifications**

UL 1950, third edition; CSA C22.2,  
No. 950; TUV/EN 60950; AS/NZS  
3260 and TS001; IEC 950/CB  
Scheme

**EMI/EMC**

FCC Part 15 class A; ICES-003; EN  
55022:1997 and EN 55082-1:1997  
(IEC61000-4-3, ENV50204,  
IEC61000-4-4, IEC61000-4-2,  
IEC61000-4-6, IEC61000-4-5,  
IEC61000-3-2, IEC61000-3-3,  
IEC61000-4-11, env50204); 24;  
AS/NZS 3548; VCCI; CNS 13438

**Homologation/Network Certifications**

US/Canada: FCC Part 68; CS03;  
ISDN-ST; ISDN-U; Quad T1/E1

Europe: Quad T1/E1: CTR-12,  
CTR13; MSSI: CTR-1, CTR-2;  
ISDN-ST: CTR 3

Australia: TS-0016

**Management**

Command line interface via console,  
Telnet, or Secure Shell (SSH); Secure  
Copy (SCP); embedded browser  
interface (HTTP/HTTPS); SNMPv2  
and SNMPv3 support with standard  
and private MIBs; Split horizon man-  
agement for customer and network  
provider; Access Point QVPN Builder  
for centralized policy management of  
QoS, Firewall, VPN and NAT features

**Performance**

IP Forwarding Rate (non-encrypted):  
500 Mbps

IP Packet Throughput  
(non-encrypted): 200 Kpps

3DES IP Forwarding Rate: 155 Mbps

IPSec Remote Access Tunnels: 5,000

IPSec Site-to-Site Tunnels: 1,000

L2TP Tunnels: 3,500

## Software Specifications

**Routing Protocols Supported**

IP, IS-IS, RIP, RIP-2, OSPF, BGP-4,  
IGMPv2, DVMRPv3, IS-IS, Policy  
Forwarding, Static routing

**VPN Tunneling Protocols Supported**

ICSA-certified IPSec, L2TP (LNS),  
IP-IP, GRE

**WAN Protocols Supported**

Frame Relay, PPP, Multilink PPP,  
ATM, SMDS

**Firewall**

ICSA-certified packet filtering  
firewall with state informed and  
stateless packet/port control

Network Address Translation (NAT)

- Basic NAT

- Port Translation NAT

- Load Sharing NAT

Denial of service protection

Interoperable with third part email  
content verification tools

**IPSec Encryption/Authentication**

ICSA-certified IPSec ESP with  
DES/3DES encryption, MD5/SHA1  
authentication, anti-replay protection

**Key Management**

IKE, PKI, X.509 digital certificates,  
Certificate Revocation Lists (CRLs)  
via LDAP or HTTP

**Quality of Service**

Class-Based Queuing with classifica-  
tion and auto-classification by IP  
address, protocol, port number,  
domain name, TOS byte; DiffServ  
classification and marking; band-  
width borrowing; VLAN QoS based  
on 802.1 p/q; Policy Forwarding  
using source-based routing

**Redundancy**

Virtual Routing Redundancy  
Protocol (VRRP)  
BGP-4 multi-homing

**User Authentication**

PAP, CHAP, RADIUS, SecureID

To learn more, contact  
your Lucent Technologies  
Representative, Authorized  
Reseller, or Sales Agent.  
Or, visit our Web site.  
[www.lucent.com](http://www.lucent.com)

Specifications subject to  
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