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Bezpieczeństwo,
Efektywność,
Optymalizacja

Grupa **NETF**, Netfront, Infopower, Agropower
Sukces poprzez profesjonalizm i doskonałość

H3C SecPath L5000 series load balancing devices

Product overview

H3C SecPath L5000 series is a set of industry-leading load balancing (LB) devices, designed for service providers, small and medium-sized data centers, and campus networks.

The device provides complete load balancing features and supports server load balancing, link load balancing, application optimization, and application security. It can be deployed at a data center to balance loads among servers or at the egress of a network with multiple ISP links to balance loads among these links. It guarantees the response speed and service continuity and improves resources efficiency.

The device implements deep integration of load balancing, security, and networking, and provides powerful routing, switching, load balancing, and Layer 2 to Layer 7 security functions. A wide range of interface modules are available to provide various types of interfaces. This enables the device to adapt to complicated network environments and protect customer investments.

The device provides the following benefits for network services:

- Accelerates the access speed.

- Ensures service continuity.

- Increases the access traffic handling capacity.

- Enhances service security.

- Increases egress link efficiency.

- Reduces TCO and improves network flexibility and scalability.

The H3C SecPath L5000 series include the L5030, L5060 and L5080 models.
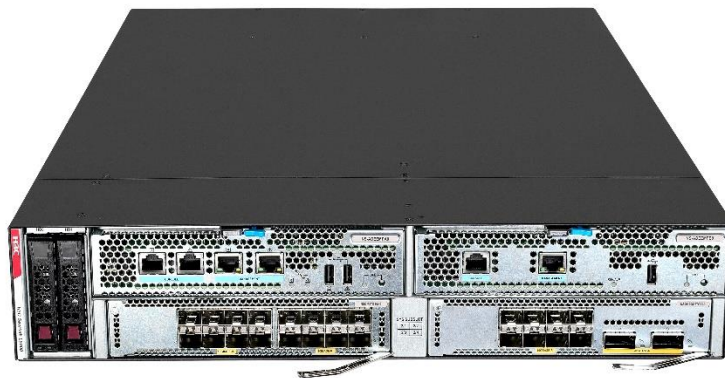

H3C SecPath L5030

H3C SecPath L5060

H3C SecPath L5080

H3C SecPath L5000-AD920

ADEEMPA0   ADEEMPB0   ADEEMPC0

** ADEEMPA0, ADEEMPB0, ADEEMPC0 are the SPU of L5000-AD920

Features and benefits

Powerful hardware architecture

The advanced multicore multithread hardware architecture allows the device to concurrently perform health monitoring, load balancing scheduling, security, and routing tasks without sacrificing performance. The data flow-based fast forwarding reduces route lookup time and improves packet forwarding efficiency. These features enable the device to bring high load balancing and security performance.

The device provides rich interface types and multiple expansion slots to meet varied requirements for interfaces. It provides GE copper and fiber ports and 10GE fiber ports. With NSQM1QG2A interface modules installed, it can also provide 40GE fiber ports.

Efficient health monitoring

The device supports multiple health monitoring algorithms. It allows you to monitor the health status of servers and applications at the network layer and application layer by using the H3C-proprietary network quality analyzer (NQA) technology. This consumes minimum system resources and ensures load balancing performance. The health monitoring algorithms are applicable to Layer 4 server load balancing and Layer 7 server load balancing.

Flexible link load balancing scheduling

The device supports load balancing among ingress links and egress links. It can intelligently schedule the ingress and egress traffic by using the built-in global ISP IP address database and implement load balancing based on service providers, link health conditions, and link bandwidths. This improves user experience, realizes link backup, and improves bandwidth efficiency.

Rich load balancing scheduling algorithms

The device supports multiple load balancing scheduling algorithms for different application scenarios, including round robin, weighted round robin, least connection, weighted least connection, random, source address hash, destination address hash, and source address and port hash algorithms. These algorithms are applicable to Layer 4 server load balancing and Layer 7 server load balancing.

Layer 4 and Layer 7 server load balancing

Layer 4 server load balancing is implemented based on Layer 4 features such as IP address and TCP or UDP port number.

Layer 7 server load balancing is implemented based on Layer 7 contents. It parses and analyzes packets based on the HTTP header, HTTP URL, HTTP cookie, or HTTP content and allows you to configure Layer 7 policies based on the analysis result to distribute HTTP packets and keep the sessions.

SSL offloading and acceleration

SSL offloading and acceleration (RSA, ECDHE, ECC, and GM algorithms) take off encryption and decryption processing from the server and use no or weak SSL ciphers to communicate with the server. This feature greatly reduces SSL processing workloads on the server and saves server CPU resources.

Application optimization

The device takes over all traffic from the clients and servers and can parse and optimize protocol fields of all layers.

The device allows users to use the following profiles to optimize and improve application delivery:

- **IP parameter profile**—You can use the IP ToS field to optimize various types of transmission protocols and improve the transmission performance of key applications.

- **TCL parameter profile**—Options such as transmit and receive buffer sizes improve the link transmission quality and optimize TCP data transmission.

- **HTTP parameter profile**—You can use the following options and parameters to satisfy the user requirements for optimizing and improving HTTP application delivery.

    o Rebalance per-request

    o Header modify per-transaction

    o Header maxparse-length

    o Secondary-cookie

    o Content maxparse-length

The device supports TCP multiplexing. It allows numerous HTTP requests to be multiplexed over a small number of TCP connections. This reduces the server load greatly, decreases the delay caused by new TCP connection establishments, minimizes the number of concurrent connections of the server, and saves server resources.

The device supports HTTP caching, which caches the frequently accessed page elements on the server in its high-speed memory to respond to the client's requests instead of the server. This can reduce the IO overhead of the server and shorten the access path of the client.

In addition, the device supports HTTP content compression, which compresses the contents in HTTP responses by using a high-performance algorithm, greatly reducing network bandwidth cost, decreasing performance cost associated with compression by the server, eliminating redundant data, and increasing the webpage response speed.

Comprehensive security features

The device provides powerful and complete security features such as IPS, AV, and WAF. It can decrypt HTTPS traffic and take actions against attacks, and can defend against various types of attacks such as DoS/DDoS, ARP spoofing, ICMP flood, and address/port scanning.

High availability

H3C proprietary software and hardware platforms make the device highly reliable. Highly welcomed at the market, it is widely used by service provider and enterprise customers.

Specifications

Item	L5030	L5060	L5080	L5000-AD920
Ports	1 × console port 1 × USB port 4 × combo interfaces 8 × GE copper ports 8 × 10-GE fiber ports	1 × console port 1 × USB port 4 × combo interfaces 8 × GE copper ports 8 × GE fiber ports 8 × 10-GE fiber ports	1 × console port 1 × USB port 4 × combo interfaces 8 × GE copper ports 8 × GE fiber ports 8 × 10-GE fiber ports	/
Expansion slot	6 (for interface)	5 (for interface)	5 (for interface)	2 for SPU 2 for interface
Ambient temperature	Operating: 0°C to 45°C (32°F to 113°F) Storage: –40°C to +70°C (–40°F to +158°F)			
Relative humidity	Operating: 10 to 95%, non-condensing Storage: 5 to 95%, non-condensing			
Server load balancing scheduling algorithms	Round robin algorithm Weighted round robin algorithm Random algorithm Least connection algorithm Weighted least connection algorithm Bandwidth algorithm Maximum bandwidth algorithm Source IP address hash algorithm Source IP address and port hash algorithm Destination IP address hash algorithm HTTP hash algorithm Least time algorithm Local priority algorithm			
Link load balancing scheduling algorithms	Round robin algorithm Weighted round robin algorithm Least connection algorithm			

Item	L5030	L5060	L5080	L5000-AD920
	Weighted least connection algorithm			
	Random algorithm			
	Source IP address hash algorithm			
	Destination IP address hash algorithm			
	Source IP address and port hash algorithm			
	Dynamic proximity algorithm			
	Bandwidth algorithm			
	Maximum bandwidth algorithm			
	Local priority algorithm			
	ISP-based algorithm			
Sticky methods for server load balancing	Source IP-based			
	Source port-based			
	Destination IP-based			
	Destination port-based			
	Source IP and source port-based			
	Destination IP and destination port-based			
	Source IP, source port, destination IP, and destination port-based			
	Payload-based			
	HTTP header-/HTTP cookie-/HTTP URL-/HTTP content-/SSLID-based			
	SIP-based			
	RADIUS-based			
Health monitoring	Ping (ICMP), TCP, TCP HALF-OPEN, UDP, SSL, HTTP, HTTPS, FTP, RADIUS, DNS, SIP, RTSP, SMTP, POP3, WAP			
Support for virtual service/real service/real service group	Supports virtual service, real service, and real service group			
HTTP policy	**Match rules:**			
	HTTP header			
	HTTP cookie			
	HTTP URL			
	HTTP content			
	HTTP method			
	HTTP class			
	Generic-class			
	Actions:			
	Inserting an HTTP header			
	Rewriting an HTTP header			
	Deleting an HTTP header			
	Rewriting the SSL URL location			
	Rewriting the URL in the Location header of HTTP responses from the server			

| Item	L5030	L5060	L5080	L5000-AD920
Generic policy	Specifying an SSL client policy **Specifying a real service group** **Match rules:** Source IP Generic-class **Actions:** Specifying an SSL client policy Setting a ToS field value for IP packets			
HTTP parameter profile	**Specifying a real service group** Case sensitivity Maximum length of HTTP headers that can be parsed Maximum length of HTTP contents that can be parsed Reuse of the connection between LB device and server Insert, delete, or modify operation for the header of each HTTP request Load balancing for each HTTP request Delimiter that separates secondary cookies in URLs Start delimiter for secondary cookies in URLs. Action to take when a URL or cookie exceeds the maximum length			
TCP parameter profile	Action to take on the segments that exceed the MSS in the HTTP requests: allow or drop Transmit and receive buffer sizes			
IP parameter profile	ToS field value of IP packets sent to the client			
SSL offloading	Takes off SSL processing from servers SSL server: Supports all SSL server functions, such as certificate management and authentication SSL client: Supports all SSL client functions and SSL-encrypted communications with the server			
Attack prevention	Protection against SYN flood, UDP flood, ICMP flood, and HTTP Get flood			
Network protocol	Ethernet, STP, MSTP, RSTP, QinQ, VLAN, static routing, RIPv1/v2, OSPFv2, BGP-4, IS-IS, IGMP, and PIM			
IPv6	IPv6 forwarding and service processing			
Management mode	CLI (Telnet/SSH) Web (HTTP/HTTPS) SNMPv3, compatible with SNMPv2c and SNMPv1			

Performance

Item	L5030	L5060	L5080	ADEEMPA0	ADEEMPB0	ADEEMPC0
L4 Throughput	40 Gbps	60 Gbps	70 Gbps	120Gbps	50Gbps	120Gbps

| Item	L5030	L5060	L5080	ADEEMPA0	ADEEMPB0	ADEEMPC0
L4 QPS	400,000	500,000	600,000	700,000	350,000	700,000
L4 concurrent sessions	16 million	36 million	92 million	60,000,000	30,000,000	60,000,000
L7 throughput	14 Gbps	14.8 Gbps	15.4 Gbps	30Gbps	15Gbps	35Gbps
L7 CPS	80,000	100,000	130,000	170,000	90,000	180,000
L7 RPS	400,000	450,000	500,000	950,000	500,000	1,000,000
GSLB QPS	100,000	110,000	120,000	220,000	120,000	250,000
SSL offload CPS (2K key, AES256)	9,000	10,000	12,000	20,000	13,000	25,000

Application scenarios

Server load balancing

For quick access to the data center services of a campus network, deploy an H3C SecPath L5000 at the data center to balance and optimize the traffic accessing the data center. Connect the server cluster to the L5000 through a switch. Use the L5000 as the gateway for the servers. Configure the L5000 to use the NAT or indirect mode to implement load balancing among the servers.
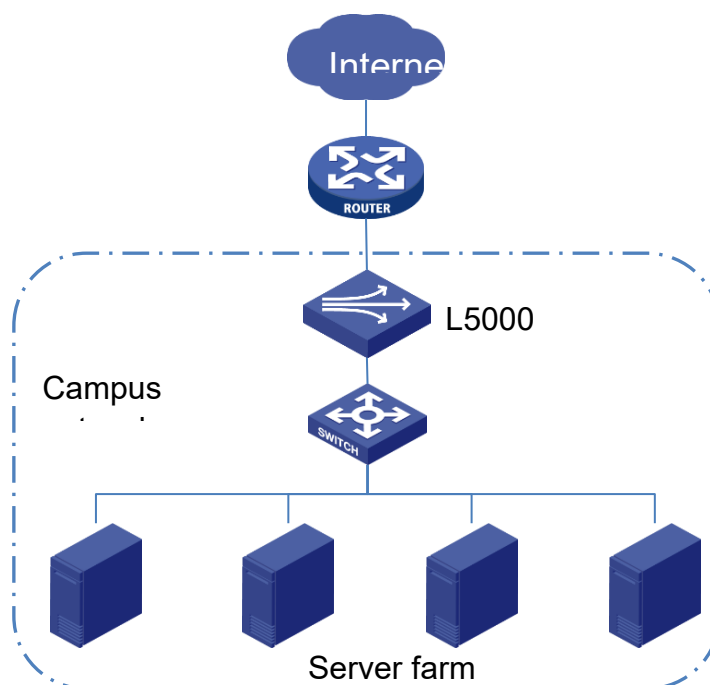

H3C SecPath L5000 NAT-mode server load balancing application scenario
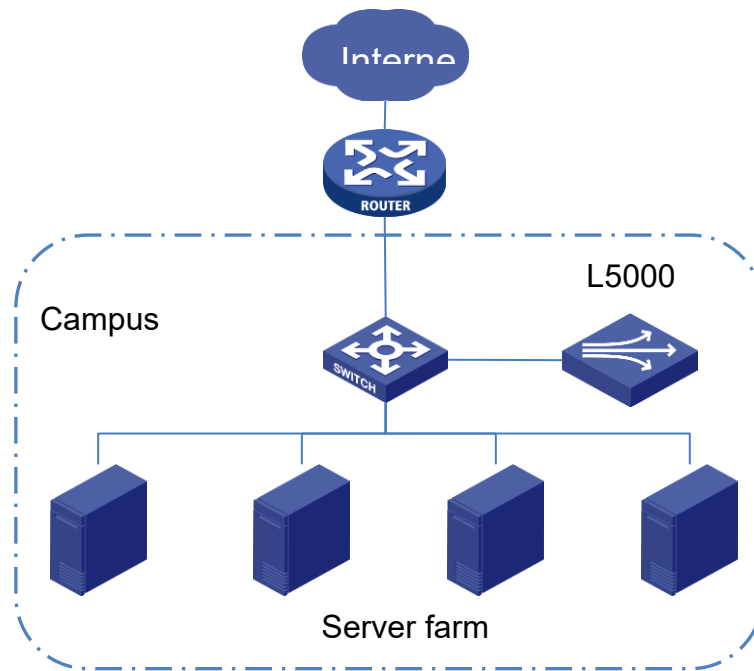
H3C SecPath L5000 indirect-mode server load balancing application scenario

Link load balancing

A campus network leases physical link 1 and physical link 2 from service providers ISP 1 and ISP 2, respectively. For quick response from the external network, deploy an H3C SecPath L5000 at the egress of the campus network. Use the proximity and bandwidth algorithms on the L5000 to select the optimal link to the destination addresses.
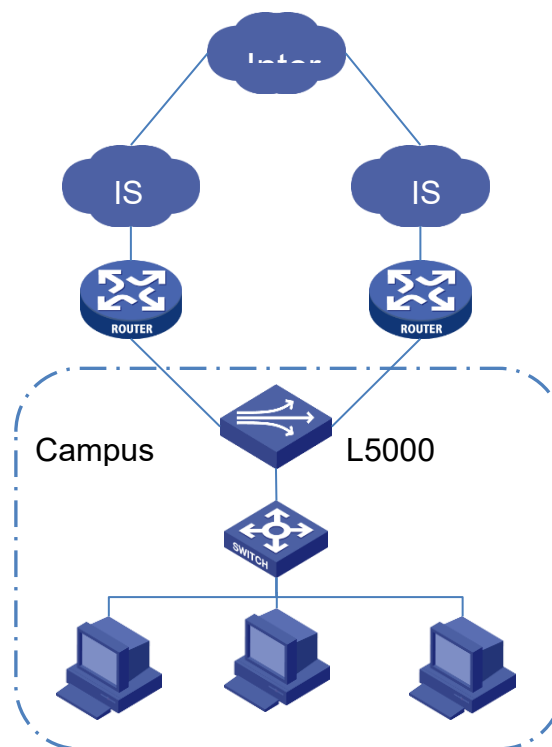
H3C SecPath L5000 link load balancing application scenario

Ordering guide

Chassis

Item	Description	Remarks
H3C SecPath L5030	H3C SecPath L5030 Appliance	Necessary
H3C SecPath L5060	H3C SecPath L5060 Appliance	Necessary
H3C SecPath L5080	H3C SecPath L5080 Appliance	Necessary
H3C SecPath L5000-AD920	H3C SecPath L5000-AD920 Chassis	Necessary

Interface modules

Item	Description	Remarks
NSQM1GT8A	8-port Gigabit Ethernet copper interface module	Optional for the L5030, L5060 and L5080
NSQM1GP8A	8-port Gigabit Ethernet fiber interface module	Optional for the L5030, L5060 and L5080
NSQM1TG8A	8-port 10G Ethernet fiber interface module	Optional for the L5030, L5060 and L5080
NSQM1QG2A	2-port 40G Ethernet fiber interface module	Optional for the L5030, L5060 and L5080
NSQM1GT4PFCA	4-port PFC module	Optional for the L5030, L5060 and L5080
NSQM1G4XS4	4-port GE fiber interface + 4-port 10-GE fiber interface module	Optional for the L5030, L5060 and L5080

SPU modules

Item	Description	Remarks
ADEEMPA0	H3C SecBlade V Application Delivery Engine A Module (MP)	Necessary for the L5000-AD920
ADEEMPB0	H3C SecBlade V Application Delivery Engine B Module (MP)	Necessary for the L5000-AD920
ADEEMPC0	H3C SecBlade V Application Delivery Engine C Module (MP)	Necessary for the L5000-AD920

Hard disks

Item	Description	Remarks
NS-SSD-1.92T-SATA-SFF	H3C SecPath Series 1.92TB 2.5inch SATA SSD Module	Optional for the L5030, L5060, L5080 and L5000-AD920
NS-SSD-480G-SATA-SFF	H3C SecPath Series,480GB 2.5inch SATA SSD HardDisk Module	Optional for the L5030, L5060, L5080 and L5000-AD920

Fan trays

Item	Description	Remarks
FAN-20B-2-A	Fan tray module with port-side intake and power module-side exhaust airflow	Optional for the L5030, L5060, L5080 and L5000-AD920
FAN-20F-2-A	Fan tray module with power-side intake and port-side exhaust airflow	Optional for the L5030, L5060, L5080 and L5000-AD920

Note: You must install two fan trays of the same model for the device.

Power modules

Item	Description	Remarks
PSR650B-12A1-A	650W AC Power Supply	Optional for the L5030, L5060, L5080 and L5000-AD920
PSR650B-12D1-A	650W DC Power Supply	Optional for the L5030, L5060, L5080 and L5000-AD920
PSR650B-12AHD-F	650W HVDC Power Supply	Optional for the L5030, L5060, L5080 and L5000-AD920

Note: You must install one power module for the device. Do not install AC and DC power modules on the same device.

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