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Alteon WebOS 9.0

INTEGRATED CONTENT-INTELLIGENT WEB TRAFFIC APPLICATIONS AND CONTROL SERVICES

Nortel Networks Alteon Web OS provides Layer 2 through 7 Web application, management and traffic control services that seamlessly integrate with Nortel Network's Alteon stackable and modular Content Switch product portfolio. Web OS offers industry leading application support and unparalleled control of Web traffic by providing advanced load balancing (server, firewall, cache, WAN gateway, Virtual Private Network, Wireless Application Protocol, Real-Time Streaming Protocol and Intrusion Detection System), application redirection, high availability, bandwidth management and security services.

FEATURES

- **High-performance content-intelligent switching**
- **Server, Firewall, Cache, WAN Gateway, Virtual Private Network, Wireless Application Protocol, Real-Time Streaming Protocol, and Intrusion Detection Server load balancing**
- **Full inspection of URLs, cookies, and hosts headers across multiple requests and responses**
- **TCP, UDP, HTTP, FTP, SSL, SMTP, LDAP, DNS, Radius, WAP, RTSP, Telnet and NNT and IP server load balancing**
- **Application redirection for any traffic type, including wireless**
- **Persistent connections using multiple L4-L7 parameters**
- **Comprehensive server health checks enable content verification and availability**
- **Gigabit-class, content-intelligent bandwidth management enables SLAs and usage-based services**
- **Response, Bandwidth, Link, Hash, Leastconn, Maxconn, and Roundrobin load balancing metrics for unparalled infrastructure optimization**

NEW APPLICATIONS

Real Time Streaming Protocol (RTSP) Load Balancing Improves Scalability and Cacheability of Streaming Media Presentations and Sessions

Web OS enables companies to optimize streaming media resources by enabling the Content Switch to associate an RTSP request with an entire streaming media session and intelligently assign and synchronize all the presentation streams (audio, video, text etc.) associated with the request to the most appropriate server or content cache based on the configured load balancing metrics. The Content Switch performs stateful inspection and opens dynamic ports as assigned or required L7 parsing enables server specialization based on content, which ultimately facilitates the efficient offloading of streaming presentations to content caches.

Wireless Application Protocol (WAP) Load Balancing Introduces Persistency to the Wireless Environment

Wireless service providers and mobile operators can now confidently offer persistence in the wireless environment by leveraging the sophisticated mechanisms in Web OS. These mechanisms direct and redirect traffic and individual users to the most appropriate wireless gateways and content servers, based on their unique individual attributes (subscriber ID, phone number, device type, etc.), to maintain high availability, improve scalability of wireless applications, and introduce the ability to provide reliable value-added transaction-based services to wireless Internet users. The Content Switch serves as a front end to the wireless gateways and content servers and distributes sessions by identifying the mobile user, understanding their device requirements, and directing them to the same Wireless gateway or content server.

Intrusion Detection Server Load Balancing Increases Performance and Scalability of IDS Solutions

Web OS provides the functionality to assist in intrusion detection system scalability, performance and availability. Intrusion Detection Server load balancing solves the inherit limitations of Intrusion Detection Systems, which include lack of scalability and throughput, by ensuring server availability via health checking. This allows multiple ID servers to operate in parallel and ensures that all sessions entries are maintained and sent to the same ID server.

- **Full network address translation enables multi-site load balancing and traffic redirection**
- **Global Server load balancing to distributed servers based on health, user proximity, server weights, and response time**
- **Virtual Matrix Architecture enables dynamic utilization of all processors and memory**
- **Complete site redundancy via active-active, active-standby, hot-standby and stateful failover for high availability**
- **Up to 256 servers per switch**
- **Up to 1024 services per switch**
- **Up to 2K packet filtering rules per port (AD4/184/WSM only)**

KEY BENEFITS

Local Server Load Balancing (SLB) Increases Application Performance and Availability

Web OS local server load balancing enables virtually unbounded server capacity by transparently distributing client traffic across a server farm. Web OS ensures high application availability through the use of continuous server, application, and content health checking, server, bandwidth and link load monitoring, support for backup and overflow servers, and active-active switch fail-over configurations.

With SLB enabled, Alteon's Content Switches appear to the network as "virtual servers", each represented by a Virtual IP (VIP) address or address range. Web OS supports a virtually unlimited number of VIP addresses, with up to 256 services allowed per VIP address. For maximum flexibility, real servers can be associated with any number of virtual servers.

The content switches distribute load by assigning each application request to the most available real server associated with the destination VIP address, and tracking each session from start to finish. Effective load balancing algorithms tailor request distribution based on application and server types. These algorithms include response time, bandwidth, link (WAN gateway), least/maximum connections, and round robin, with per server weighting and maximum load thresholds, plus hashing to ensure server persistence. Excess load is directed to designated overflow servers that can be located anywhere in the network. Alteon's Web OS API also allows users to design custom server-based scripts and agents to dynamically control load distribution on Alteon Web switches.

Web OS also supports URL-based load balancing, letting administrators optimize servers for different tasks and for storing specific object types. Web OS directs user requests to the appropriate server or server group based on URL or URL sub-string matches.

Application Redirection and Web Cache Redirection Provides High Performance Policy Routing and Load Balancing

With application redirection, powerful filtering rules are used to intercept any type of IP traffic and redirect it to a designated server, server farm or IP interfaces. Filters can be set by source and destination MAC and IP addresses, protocols, Layer 4 source and destination port numbers, as well as URLs and cookies.

Any or all filters can be applied dynamically to each switch port to allow, deny or redirect packets. Application redirection offloads policy routing from expensive routers and increases system performance.

Application redirection also allows DNS requests to be intercepted and transparently redirected to a local DNS server or group of DNS servers regardless of the destination DNS address in the request. This minimizes bandwidth usage and increases user performance.

By using application redirection with transparent Web caches, Internet access response time and WAN bandwidth consumption can be reduced without placing caches in the data path. All requests, or selected requests for specific Web pages, can be transparently redirected to local Web caches.

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Global Server Load Balancing (GSLB) Directs Client Requests to the Nearest, Most Responsive Server

Global server load balancing allows content and servers to be distributed to up to 64 sites around the world and directs client requests to the best site, based on server health, proximity to the client, server weights and response times.

Each Content Switch monitors the health, response time, and performance of other sites and exchanges this information with all other GSLB Web switches. With a global view of each site's health and performance, Alteon Content Switches direct traffic to sites in proportion to their performance metrics

As a result, the best performing sites receive a greater number of user requests than other sites, in proportion to their ability to handle additional requests. This gives users consistently good response times, regardless of where their requests are directed.

In the event all servers at a GSLB site fail or are overloaded, the Content Switch at the site immediately notifies its peer switches and redirects all incoming request to the best peer site using HTTP redirect or IP Proxy. This ensures no service disruption. The prefer local option causes user requests to be redirected to the same site as their DNS request – in effect, directing client requests to the site in closest proximity to their DNS server.

More sophisticated and comprehensive global server load balancing can be implemented by using Alteon's Personal Content Director (PCD), which is the industry's only global load balancing solution that delivers user-aware request-to-content routing capabilities based on Layer 3 through 7 protocol attributes and true user proximity.

Content Intelligent Web Cache Redirection and Server Load Balancing Optimizes Infrastructure Resources

Cache resources can be optimized by using intelligent sub-string matching, which allows requests with specific URLs or URL strings to be identified and transparently redirected and served by designated cache servers. When multiple caches are used, the Content Switch effectively offloads origin servers by maximizing cache hits and only forwarding HTTP GET request for non-cacheable objects directly to the origin server.

Web OS is optimized to work synergistically with the Nortel Networks Alteon Personal Content Cache (PCC), which is the industry's highest performing caching and streaming appliance, based on the newest Alteon Integrated Service Director (iSD) hardware platform.

Firewall Load Balancing Speeds User Response Times, Increases Site Availability

Application redirection allows traffic to be distributed among multiple (up to 256), fully active firewalls to improve performance, with no changes to the firewall software. Health check s are performed on the entire data path through load-balanced firewalls, increasing resilience and availability.

VPN Load Balancing Provides Scalability for Multiple Secure VPN Connections

Using VPN load balancing services ensures that traffic can be distributed among up to 255 active VPN gateways,and improves resiliency in the event of a VPN gateway fail-over. Sophisticated health checking mechanisms enable high availability by redirecting traffic to a healthy device to maintain website services.

Comprehensive Persistence Support Enables Effective E-Commerce Infrastructure and Unparalleled Content Personalization

Web OS provides a variety of persistence methods to facilitate server and content assignment based on specific user information. Persistence can be based on IP source address, HTTP cookies, SSL session ID, Mobile Subscriber ID or phone number in the wireless environment. With these persistence methods, requests from new users are load balanced to the best available device, based on the configured load balancing algorithm. Subsequent requests from the same user are automatically tracked and redirected to the same server or device that initially handled the original request.

The session persistence required for secure eCommerce transactions is intelligently handled by Alteon's iSD-SSL platforms. The Alteon iSD-SSL platforms accelerate secure " shopping cart" sessions by offloading compute-intensive processing from local servers without imposing delays on other traffic in the data path

The session persistence required for wireless customers is intelligently enabled via multiple wireless persistence mechanisms (Radius Snooping and Static Mapping), This ensures that the mobile user is identified appropriately on their unique attributes (subscriber ID, phone number etc..) and is directed to the same Wireless Application Protocol (WAP) gateway or wireless content server.

Multi-Level Resiliency Services Ensure Application Availability

Web OS enables non-stop content access via its support for fully meshed topologies and redundant switch active/active deployments. Active/active redundancy improves resource availability, scalability, network performance and minimizes user impact when failures occur. Web OS constantly monitors server, application, and content availability, bypassing unhealthy servers and services when distributing new sessions and responding to new requests.

Effective Attack Protection and Secure Switch Management

Web OS server security protects websites against malicious attacks, unwanted intrusion while providing continuous service for legitimate connection requests. Web OS L4-7 delayed binding allows the switch to intercept SYN or Denial of Service (DoS) attacks by terminating all requests at the switch and allowing only legitimate session requests to proceed. This is superior to the traditional approach, which forces a threshold for total connections, and can detrimentally affect legitimate users. Other Web OS security measures include Network Address Translation (NAT), access list filtering, and secure switch administration via Secure Shell (SSH) and Secure Copy (SCP) protocols.

Bandwidth Management and Quality of Service Enables New Services and Improves User Experience

Service providers and web hosters can offer value-added differentiated services based on specific application/transaction types or service level agreements. Web OS bandwidth management provides granular control of bandwidth into and out of servers and traffic control via IP Type of Service (ToS) tagging which allows upstream routers and switches to transport specific traffic at the appropriate service levels. Traffic bandwidth can be allocated and metered based on any filtering rule, as well as URLs and HTTP cookies and headers. Classification polices can be configured to allow specific bandwidth limitations and different classes of services based on unique attributes of the user. Bandwidth Management can meter, control and account for resource utilization by any Layer 2-7 attribute including client, server farm, service, application, user class, and content type.

Ordering Information

Standard Web OS

Standard Web OS ships as an integral part of every Alteon Content Switch, providing

- Layer 2 switching
- Layer 3 IP switching and routing
- Filtering
- Ether Channel support
- Network management including CLI, Web UI, SNMP and RMON

Server Load Balancing (SLB) & Application Redirection (AR)

Web OS SLB/AR adds Layer 4-7 switching functionality to Alteon Content Switches, including:

- Load balancing
- Application redirection
- Content intelligence
- Security

720001 – SLB /AR for 180 only

Global Server Load Balancing (GSLB)

Web OS GSLB adds the ability to distribute loads across multiple Web farms, even in geographically divers locations

720003 – GSLB for 180e, 184, AD3 and AD4

Bandwidth Management (BWM)

Web OS BWM enables value-added and differentiated services based on application, transaction type or service level agreement. It provides the ability to allocate and meter traffic bandwidth using Layer 2-7 attributes, including filters, URL and cookies

720010 – BWM for 180e, 184, AD3 and AD4

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WebOS Application Examples

1) Existing Application Redirection
2) Firewall Load Balancing
3) RTSP load Balancing
4) WAP Load Balancing
5) Intrusion Detection Server Load Balancing
6) High Availability
7) Bandwidth Management