**BIG-IP ENTERPRISE CONTROLLER**

Innovative traffic management, application-aware content switching, local and global load balancing in a single appliance

The award-winning BIG-IP Enterprise Controller brings standard layer 2-3 networking and innovative layer 4-7 traffic management together to significantly increase existing web server and network capacities. BIG-IP cost-effectively scales enterprise, managed services, and e-Business applications while delivering on the promise of 99.999% uptime. And the combined best-of-class local and wide area traffic management capability reduces rack space, power consumption, and simplifies management.

**Key Features & Benefits:**

- Highest performing local load balancing for servers, caches, firewalls, VPN gateways, terminal servers, other specialized devices
- Available award-winning wide area load balancing and local area load balancing in a single appliance
- OneConnect™ Content Switching reduces bandwidth costs and server overhead by up to 20%®
- 99.999% uptime for both Internet and Intranet applications
- Application Aware Network — allows applications to directly control network traffic by preemptively avoiding application failures
- Wide area load balancer, content deployment appliance and cache appliance integrations for comprehensive Internet traffic and content management
- SSL processing and integrated load balancing in a single appliance

**Load Balancing:**

- Static and Dynamic load balancing for diverse server platforms and applications
- Active/Active Controller feature for added performance, scalability, reliability, and flexibility
- Full stateful session failover from active to backup or active to active BIG-IP Controller
- Multiple modes of persistence
- Any IP Load Balancing for load balancing TCP and UDP-based traffic
- Firewall like secure device to resist common attacks
- Smart Content Determination to route requests for content to appropriate devices
- Advanced network monitoring and trending of Internet traffic with the SEE-IT™ Network Manager
- Bi-directional Secure Network Address Translation
- 2GB Memory limit — highest capacity in the industry
- Real-time performance monitoring and statistics
- Easy to install and manage
- Configuration wizards minimize configuration errors

**Intelligence for 99.999% Uptime**

Leading-edge performance and innovation in load balancing is critical as Internet business use grows exponentially, and new types of data and applications pose increasingly complex traffic and content management challenges. BIG-IP delivers.

**Beyond The Switch**

BIG-IP is the only load balancer that can receive information directly from application servers (Windows 2000, Real Server, other SNMP systems) to be used in a load-balancing mode called Dynamic Ratio (patent pending). Additionally, unlike competing products designed to handle routine switching functions such as routing requests for services (HTTP, FTP, SSL and others) to specific servers, BIG-IP is capable of reading detailed information in a request header (such as the type of content requested and the IP address of the sender) and using that information to route the request to a server best able to fulfill it.

**The Fastest Layer 7 Performance**

Thanks to F5’s proprietary FastFlow architecture, BIG-IP delivers Layer 7 performance that is three to four times faster than competing products from Cisco Systems (Arrowpoint) and Nortel Networks (Alteon). Fast Layer 7 functionality provides network managers a cost-effective way to ensure that users will have a productive and trouble-free experience each time they transact business over the Internet or corporate Intranet.

**Health Monitors**

Applications and servers of any kind can and do fail. But your customers, partners, and users need never know the failure occurred. Health monitors are a collection of predefined scripts for testing the health and availability of the servers and applications that comprise your web system. Use the configuration wizards in the web interface to customize scripts. Use the Health Monitors to check if a server is responding to WEB, FTP, LDAP, or other request — or to verify that an application (web, database, credit card verification, etc.) is operating properly before sending traffic to that server.

**99.999% Reliability**

To leading enterprises and their business-critical applications, web site uptime is absolutely critical. BIG-IP helps achieve near-perfect reliability and increase the return on investment for their network infrastructure.

**Dynamic Server Activation**

BIG-IP Enterprise lets you assign priority levels to servers in a group. If a certain number of higher priority servers ever fails in the group, a lower priority group will automatically be added to handle the load — ensuring that your site and applications are always on-line.

**HTTP Redirect**

BIG-IP Enterprise further enhances reliability by allowing the automatic redirection of traffic to a different server or site should a single server or all servers fail.

**Fault Tolerance**

BIG-IP Enterprise provides fault-tolerance by eliminating single points of failure. By distributing end user requests across a group of servers, caches, firewalls, and other devices, BIG-IP ensures that content and applications are always available. Dual controllers provide additional fault tolerance with automatic failover in less than a second.

**Session State Mirroring**

Redundant BIG-IP Enterprise Controllers provide seamless failover protection of connections from an active BIG-IP to a standby controller.
- Active/Active Mode
Allows both controllers to simultaneously manage traffic for different virtual addresses. In the unlikely event of a failure on one of the controllers, the remaining active controller assumes the virtual servers of the failed machine.

- Network Based Failover
This can be used in addition to or in place of hardwired failover, and allows a pair of redundant controllers to be physically separated for enhanced manageability and reliability.

- Hardware Based Failover
Every BIG-IP Enterprise Controller includes a hardwired failover capability. This includes one watchdog timer card per BIG-IP and a fail-safe cable that ensures sub-second response.

Link Aggregation/Failover
BIG-IP Enterprise supports industry standard 802.3ad for link aggregation, ensuring that maximum throughput can be attained and that high reliability and availability are built into your system at every point.

Superior Return on Investment
Doing more with less is everything these days. BIG-IP reduces the need for increasingly larger and more expensive servers to accommodate increases in network traffic. It enables many inexpensive servers to function as a single, virtual server. And its intelligent features help customers reduce their total cost of ownership for their web infrastructure.

OneConnect™ Content Switching
OneConnect eliminates the need for clients to open up a separate TCP connection for each of the objects that make up a Web page — speeding page-load performance and reducing bandwidth requirements by up to 20 percent. With OneConnect, the server and network can do more work and handle more traffic, without adding more equipment.

Client Aggregation
Client Aggregation takes requests from separate users and consolidates them on BIG-IP. Consolidated traffic is then sent to appropriate web servers – minimizing the number of connections to the server and enabling more efficient use of existing servers and network resources.

3-DNS Global Load Balancing
Add the industry’s most respected global load balancer to BIG-IP Enterprise for combined server load balancing and global load balancing in a single box that simplifies management, reduces rack space requirements and lowers power consumption.

Application Aware Networks for Enterprise, Managed Services, and e-Business
Web applications respond to requests differently at any given time. Traditionally, load balancing has attempted to predict the ability of the server to handle the next user’s request. With BIG-IP Application Performance Monitoring and iControl™, applications now have more input on how traffic is managed, since BIG-IP can take input from applications and take preemptive measures to avoid system failures.

“Akamaization” On-The-Fly
Customers using Akamai’s Free Flow service can use BIG-IP Enterprise to “Akamaize” their content without having to rewrite all of their HTML code – saving countless hours of development time for dynamically updated sites, or sites with heavy amounts of content.

Superior Load Balancing and Traffic Management
BIG-IP ensures that your mission-critical Internet-based servers and other devices are continuously available and performing reliably – with load balancing capabilities that first set the standard for intelligent traffic management – and continue to do so.

ISP Load Balancing
Enterprise network environments provision multiple ISPs to build redundancy into all systems, including Internet connectivity. BIG-IP Enterprise can load balance and maintain network connectivity along multiple ISP paths, ensuring high availability and reliability in any deployment.
Quality of Service and Type-of-Service Support
Differentiation in service levels can set your web system or service offering apart from your competition. BIG-IP further enhances web site differentiation by supporting the Quality-of-Service (QoS) and Type-of-Service (TOS) standard. With this, your site can recognize and provide differing levels of service. BIG-IP can direct traffic with different policies identified by the policy manager. These priorities can then be sent to the appropriate resource. In the reverse, BIG-IP can set the priority identifier on the traffic from specific web resources. The policy manager then can manage this traffic. In either case, your resources can be appropriately matched to your business requirements.

nPath™ Performance
BIG-IP Enterprise includes an optional mode called nPath. This mode allows servers to bypass BIG-IP when returning traffic back to the client. A business involved in downloading streaming media, for example, can choose to engage this functionality for even faster return responses on bandwidth intensive, media-rich traffic.

The Industry’s Richest Set of Persistence Features
The BIG-IP Enterprise offers a wide variety of persistence capabilities to keep users connected to the right server with the right information. Persistence modes include:
- Source - a particular user’s traffic destined for a specific Virtual Server will go to the same server as long as the persistence timer has not expired.
- Server - a particular user’s traffic will go to the same server regardless of the Virtual Server that is being used unless the persistence timer expires.
- Shopping Cart Persistence - persists on any port, with the same Virtual Server and only switches servers if the Virtual Server changes.
- SSL - BIG-IP Enterprise maintains session state for SSL connections based on session I.D., therefore not concentrating requests from the same IP on one server.
- Cookie - Uses cookie information stored by a client to direct the client connection to the appropriate server.
- Content Affinity - BIG-IP Enterprise automatically assigns and remembers where data is stored across cache arrays, eliminating frivolous duplication of content, optimizing cache memory and increasing the probability of a cache hit.
- Virtual Server - a particular user’s traffic destined for a specific Virtual Server will go to the same server regardless of the port that is being used unless the persistence timer expires, or the server becomes unavailable (in this case, BIG-IP Enterprise sends the connections to an available server for that Virtual Server).

Superior Management and Configuration
BIG-IP consists of F5’s proprietary software on a pre-configured, industry-standard hardware platform — an appliance that doesn’t require the time-intensive installation of software on your servers. It enables routine maintenance or upgrades of servers without disrupting service to the end user. And since it can be used with multiple heterogeneous hardware platforms, it allows businesses to protect investments in legacy hardware installations — as well as to integrate future hardware investments.

Secure Management
- Web-based configuration tool that uses SSL and Access Control Lists to provide secure real-time configuration.
- BIG-IP command line interface via F-Secure SSH client supports remote encrypted login and file transfer from most commercial UNIX platforms, Windows 95, NT and Mac operating systems.
- BIG-IP command line interface via a VGA or serial console with command history.

Simplified Management
BIG-IP Enterprise centralizes the management of server resources and devices such as firewalls, proxy and caches. End users are directed to a single virtual address, easing network administration and maintenance.

Easy Installation
BIG-IP Enterprise can be installed on almost any type of network. There are no internal or external interface limitations; there are just ports with features assigned. This gives the network manager more flexibility to install BIG-IP into the network, and more flexibility to easily access features on any port.

Enhanced GUI
BIG-IP Enterprise includes an intuitive and easy to use web-based GUI. Common configuration tasks are logically grouped, simplifying configuration and management while reducing the cost of implementation and ongoing maintenance of your infrastructure.

Bridging
BIG-IP Enterprise bridges packets between interfaces within the same VLAN, easing configuration and deployment of transparent devices like caches and firewalls while allowing BIG-IP to manage specialized traffic non-obtrusively and ignore the rest.

Configuration Wizards
BIG-IP Enterprise includes configuration wizards to guide administrators in configuring BIG-IP for most common tasks, making installation and implementation easier. Wizards include load balancing, e-commerce, Active/Active, virtual server and rules configuration.

VLANs and Tagged VLANs
VLANs (virtual LANs) allow networks to be administratively divided into numerous separate LANs. BIG-IP Enterprise supports the familiar VLAN architecture utilized by most modern switches, providing greater flexibility and ease in making network topology changes.

“Easy-To-Replace Cisco” Feature
With BIG-IP, traffic can cross single subnet networks without the need to reconfigure servers’ IP addresses; BIG-IP will pass traffic as a standard bridge. This allows BIG-IP to be dropped into any network without costly changes — making the replacement of legacy load balancers, such as Cisco Local Director, a snap.

Cache Manageability
- Smart Content Determination
  BIG-IP Enterprise intelligently determines whether content is cacheable or not, then intelligently directs only the correct content to the cache.
- Hot Content Load Balancing
  Extremely popular web objects deserve special treatment. BIG-IP Enterprise identifies this “hot content” and allows it to reside on a designated group of caches.
- Differentiated Services
  BIG-IP Enterprise provides maximum flexibility and control by allowing you to create groups of caches dedicated for specific functions, enabling personalized services for unique customers.

SEE-IT Network Manager
BIG-IP Enterprise includes SEE-IT™ - the network manager that correlates thousands of pieces of information from your network and components into a centralized, single-glance location for complete traffic management and control.

Like a car dashboard, SEE-IT centralizes the current status of your network operations and all network components - speed, performance, and traffic patterns.
Advanced Security
The BIG-IP Enterprise has a number of inherent security features designed to protect against common attacks and provide added protection for your servers and network devices. BIG-IP ships, by default, in a very secure mode with these features:

- Can perform source route tracing (thwarts IP spoofing)
- Resists unacknowledged SYN without ACK buffers (thwarts SYN floods)
- Thwarts teardrop and land attacks
- Protects itself and servers from ICMP attack
- Does not run SMTPd, FTPd, Telnetd, or any other attackable daemons
- Uses a security tool that identifies any services and ports that receive illegal access attempts
  - Frequency: amount of attempts
  - Port: what port(s) were hit
  - IP Address: the source IP address of attacker

Interface Security and Flexibility
You can control access to the BIG-IP on any interface. By default, BIG-IP denies access unless types of specific traffic are enabled. This allows BIG-IP to be a good addition to a site’s overall security.

Client Certificate Check
SSL is quickly becoming the standard for securing applications. BIG-IP Enterprise enhances your control of SSL through SSL Certificate Checking - allowing you to maintain a list of authorized Certificate Authorities. If the client doesn’t present a certificate that matches the list, the client will be denied access — strengthening the security of your system.

Big-IP 4.0 Specifications:
Server/Node Operating System Compatibility:
Any TCP/IP OS, including Windows NT, Windows 95, all UNIX platforms and Mac/OS

Internet/Intranet Protocol Support:
All TCP, UDP and SSL; nearly all IP-based protocols

Administrative Environment Support:
DNS proxy, SMTP, F-secure, SSH, SNMP, dynamic/static network monitoring, scheduled batch job processing, system status reports and alarms event notification

Network Management & Monitoring:
Secure SSL, browser-based interface, remote encrypted login and file transfer using F-secure SSL monitor; BIG-IP system network monitoring utilities and additional contributed software; SNMP gets and traps

Dynamic Content Support:
JAVA, VRML, CGI, Cool Talk, Net Meeting, Real Audio, Real Video, Netscape, Quick Time, PointCast, any HTTP encapsulated data

BIG-IP Device Redundancy:
Watchdog timer card, fail-safe cable (primary & secondary)

Web Server Application Compatibility:
Any HTTP server

Routing Protocols:
RIP, OSPF, BGP

BIG-IP Enterprise Physical Specifications:
F35 Platform

Dimensions:
7”H x 19”W x 17.8”D (per unit) 4U Indusy standard rackmount chassis

Weight:
36.5 lbs. (per unit)

Processor:
Intel Pentium III 933

Network Interface:
10 BASE-T, 100 BASE-TX (selectable), Optional Gigabit Ethernet

Hard Drive Capacity:
30 GB

RAM:
1GB, optional upgrade to a total of 2GB

Power Supply:
320W ATX 110/220 VAC 7.5/4.8A AUTO Switching

Thermal Characteristics:
983 Btu/hr (per unit) Maximum

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTIFICATION)

The Leader in Internet Traffic and Content Management

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Networks
CONTROL YOUR WORLD

B I G - I P • E N T E R P R I S E C O N T R O L L E R

Part No. SS-BIG-IP-ENT 0201

Redundant BIG-IP Enterprise Controllers are positioned between the router and the server array.