



## Data Sheets

AWS

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Real Application Clusters

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Live Weather data from:  
**WeatherBug Headquarters**  
 Germantown, MD 20876



**30.0°F**

Live camera image:



**AWS Convergence  
 Technologies, Inc.**  
 12410 Milestone Center Drive  
 Suite 300  
 Germantown, Maryland 20876  
 Phone: 301-250-4000

## About Us

Founded in 1992, WeatherBug, a brand of AWS Convergence Technologies, Inc. ensures individuals, schools, businesses and government agencies receive the most precise live weather conditions, the most relevant weather reports, and the earliest weather warnings to safeguard property, lives and to plan ahead with confidence. With 8,000 WeatherBug Tracking Stations and more than 1,000 cameras primarily based at neighborhood schools and public safety facilities across the U.S., WeatherBug maintains the largest exclusive weather network in the world. The live local weather conditions are delivered to millions of consumers via the Internet and mobile devices, to more than 100 state and local government agencies including the National Weather Service, and to broadcast television stations, schools, and businesses. WeatherBug's data is unique in that it is the only live neighborhood weather available anywhere.

WeatherBug started in the education market by pioneering a program which installed professional-grade weather stations at schools then networked them together. The data from these stations allowed teachers to apply real-world weather conditions when teaching math, science and geography. Next, WeatherBug introduced a rigorous curriculum that met national and state education standards for grades K-12. Today more than 250,000 students and teachers log in every year for true hands on learning.

The TV broadcast partnership model was introduced next in 1993. The WeatherBug 'on-air' solution connected schools to broadcast meteorologists across the U.S. Today, local broadcast meteorologists at over 100 NBC, CBS, ABC, FOX, WB and Telemundo television stations are utilizing WeatherBug's live local weather conditions in their weather newscasts and station websites, offering a unique look at the weather from within viewers' neighborhoods.

In 2000, the WeatherBug desktop application was launched to consumer and business users. Leveraging the existing WeatherBug Tracking Station Network, WeatherBug began offering users live local weather conditions, forecasts and life saving, severe weather alerts. Within eight months of the initial launch, 1.5 million users had downloaded WeatherBug to their computers. Since 2002, WeatherBug's application has also come pre-installed on HP and Compaq computers, and Logitech peripherals. To date, WeatherBug has registered over 65 million users for the free WeatherBug product and has become one of the largest news and information sites on the Internet.

WeatherBug developed a strong private/public partnership with the National Weather Service, aiding Homeland Security in 2002. This relationship bolstered the government's ability to aid emergency managers. WeatherBug's data and products enable agencies to precisely assess the impact of current weather conditions on hazardous situations and natural disasters allowing them to determine which municipalities to evacuate, select approach routes for first-responders, and choose the type of equipment to dispatch to a disaster site. In addition, the program provides more accurate and up-to-date data for plume models.

WeatherBug ensures individuals, schools, businesses and government agencies receive the most precise live weather information, the most relevant weather reports, and the earliest weather warnings to safeguard their property, their lives and to plan their day with confidence. The live, local weather conditions are delivered to millions of consumers via the Internet and mobile devices, more than 100 state and local government agencies including the National Weather Service, and to broadcast television stations, schools, and businesses. WeatherBug's data is unique in that it is the only live, neighborhood weather available anywhere.

# FortiGate® -5000 Series

Large Enterprises  
Managed Security Service Providers  
Carrier Networks

Datasheet

## High Performance Modular Multi-Threat Security Solutions

### Today's Threats Against Large Networks

Threats against today's networks are complex, blended attacks that infect computers, steal confidential information, create denials of service, or cause costly network outages. Point-based security appliances are inadequately equipped to protect against these attacks because of the multitude of attack vectors used. The FortiGate-5000 Series addresses this problem by tightly integrating multi-threat protection into a purpose-built platform to effectively block today's file-based threats and network-based threats. Examples of critical threats that are blocked by the FortiGate include: viruses, Trojans, worms, phishing schemes, intrusion attempts, denial of service (DoS) attacks and an ever increasing number of attacks that use blended threat vectors.

### Leading Edge Chassis-Based Security Platform

The Fortinet FortiGate-5000 Series of Advanced Telecom Computing Architecture (AdvancedTCA or ATCA) security chassis deliver multi-gigabit performance and integrated multi-threat protection ideal for securing high-bandwidth enterprise and service provider networks. Complete Unified Threat Management (UTM) features include: content inspection firewall, VPN, intrusion prevention, web filtering, antispam, antivirus, Instant Messaging (IM) controls and Peer-to-Peer (P2P) controls. These security technologies work together to prevent blended attacks from affecting assets protected by the FortiGate system. The FortiGate-5000 Series features three chassis designs and multiple security modules that meet stringent enterprise and service provider requirements. Highly available configurations with redundant power supplies and fans combined with superior UTM features ensure non-stop availability of mission-critical network applications. The Fortinet FortiGuard® Security Subscription service makes the FortiGate-5000 Series an affordable and easy-to-manage security solution for large enterprises and service provider customers.

Key Problems	Solutions
<ul style="list-style-type: none"> <li>High-speed networks require high-performance security systems which will not introduce delays or latency onto the network</li> </ul>	The FortiGate-5000 Series provides a scalable platform that is 10 Gigabit Ethernet ready and delivers throughput ranging from 5 Gbps to 70 Gbps while maintaining ultra-low latency for even the most time-sensitive applications.
<ul style="list-style-type: none"> <li>Virtual server farms need virtualized security solutions to reduce physical space, power and cost</li> </ul>	The FortiGate-5000 Series provides an optional high-density virtual domain (VDOM) feature to allow up to 250 VDOMs per FortiGate module and up to 3500 VDOMs per chassis.
<ul style="list-style-type: none"> <li>Threats against IT systems commonly include attacks that operate at the network and content levels</li> </ul>	The FortiGate-5000 Series provides complete threat protection with the ability to tailor the security policy down to the network or even host level. This means that the security policy can adapt to the customer's requirements without requiring changes in hardware or software components.
<ul style="list-style-type: none"> <li>Data centers require space saving, highly modular, and serviceable networking and security systems for the highest reliability.</li> </ul>	FortiGate-5000 provides fully modular chassis systems with complete redundancy features and hot swappable components including blade modules, power supplies, and fan trays to keep mission critical applications running.



FortiGate-5140  
14-slot chassis



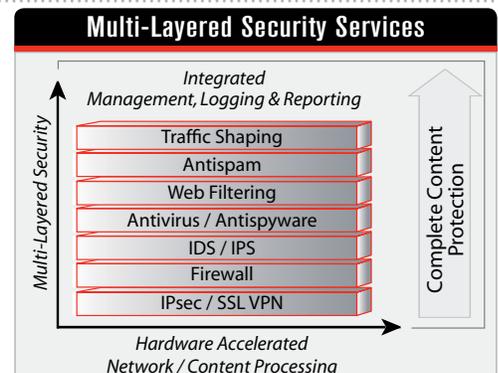
FortiGate-5050  
5-slot chassis



FortiGate-5020  
2-slot chassis

### Fortinet's Multi-Layered Security Solution

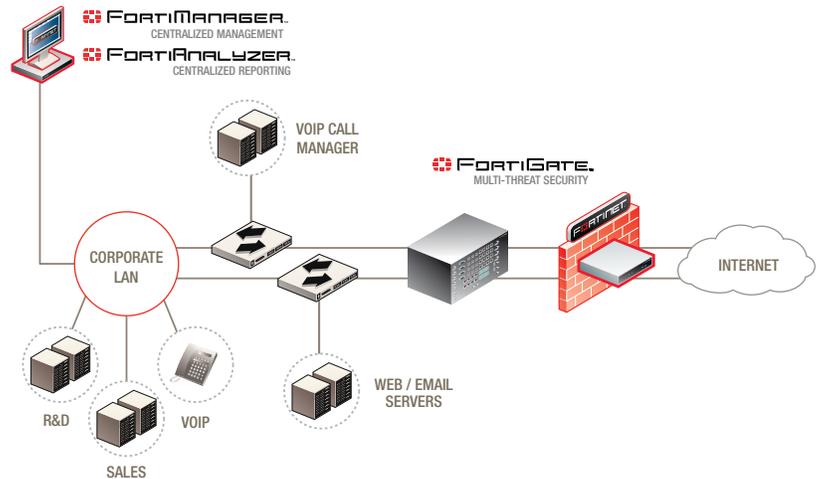
Fortinet's multi-layered security solutions efficiently and economically provide an integrated set of security services in a single, easy-to-manage high-performance appliance that is capable of supporting a wide range of deployment scenarios. In addition, FortiGuard Security Subscription Services include updates for antivirus, antispam, and Web filtering services to ensure that your security environment remains current and your corporate resources remain protected against the latest threats. FortiGate systems come with a one-year limited hardware warranty and 90-day limited software warranty.



## The FortiGate-5000 Series secure large enterprise, service provider and carrier networks.

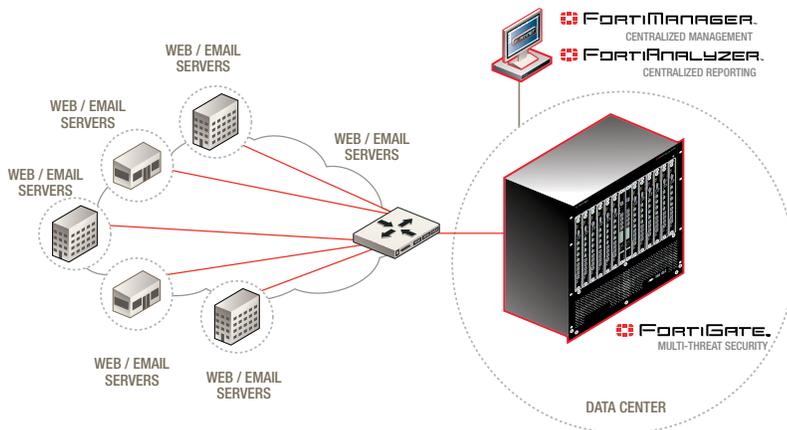
### Next-Generation Perimeter Security

Firewalls alone aren't enough to block today's blended threats. When single packets are examined by point products with no concern for multi-vector attacks, blended threats often pass undetected. Combining content inspection firewall technology with gateway antivirus and intrusion prevention allows packet flows to be tracked. Fortinet multi-layered security technologies examine entire packet flows, from content inspection through reassembly, stopping threats at the perimeter before corporate resources are compromised.



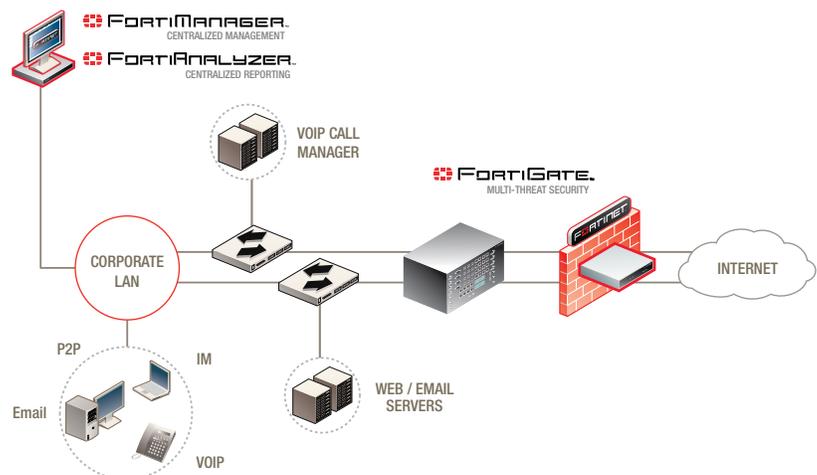
### MSSP Core Security

The FortiGate-5000 Series delivers comprehensive security for Managed Security Service Providers (MSSPs). The full suite of ASIC-accelerated security modules allows for customizable features for specific customers, while virtualization features like Virtual Domains (VDMs) provides up to 3,500 separate security domains. Finally, the full suite of Fortinet integrated management applications—including granular reporting features—offer unprecedented visibility into the security posture of customers while illustrating their highest risks.



### Secure Messaging

Email is an essential corporate communication tool. Malware has adapted to this trend and email is now a primary vector of transmission of malware threats. Instant messaging is quickly becoming a primary propagation vector as IM adoption rate increases. As with any new technology, IM introduces security risks in the form of a new generation of malware that could potentially infect corporate resources. By combining Fortinet antispam technology, IM and P2P controls, antivirus scanning, and web filtering, customers can ensure that email and other messaging remains secure and won't result in lost revenue or lost data.



## FortiGate-5000 Series

FortiGate-5020

FortiGate-5050

FortiGate-5140

### FortiGate-5000-series platforms provide the following security features:

#### FIREWALL

ICSA Labs Certified (Enterprise Firewall)  
NAT, PAT, Transparent (Bridge)  
Routing Mode (RIP v1 & v2, OSPF, BGP, & Multicast)  
Policy-Based NAT  
Virtual Domains (NAT/Transparent mode)  
VLAN Tagging (802.1Q)  
User Group-Based Authentication  
SIP/H.323 NAT Traversal  
WINS Support  
Customized Protection Profiles

#### VIRTUAL PRIVATE NETWORK (VPN)

ICSA Labs Certified (IPSec & SSL)  
PPTP, IPSec, and SSL  
Dedicated Tunnels  
DES, 3DES, and AES Encryption Support  
SHA-1/MD5 Authentication  
PPTP, L2TP, VPN Client Pass Through  
Hub and Spoke VPN Support  
IKE Certificate Authentication  
IPSec NAT Traversal  
Dead Peer Detection  
RSA SecurID Support

#### INTRUSION PREVENTION SYSTEM (IPS)

ICSA Labs Certified (NIPS)  
Protection From Over 3000 Threats  
Protocol Anomaly Support  
Custom Signature Support  
Automatic Attack Database Update

#### ANTIVIRUS

ICSA Labs Certified (Gateway Antivirus)  
Includes AntiSpyware and Worm Prevention  
HTTP/SMT/POP3/IMAP/FTP/IM and Encrypted VPN Tunnels  
Automatic "Push" Virus Database Update  
File Quarantine Support  
Block by File Size or Type

#### WEB FILTERING

URL/Keyword/Phrase Block  
URL Exempt List  
Content Profiles  
Blocks Java Applet, Cookies, Active X  
FortiGuard Web Filtering Support

#### ANTISPAM

Real-Time Blacklist/Open Relay Database Server  
MIME Header Check  
Keyword/Phrase Filtering  
IP Address Blacklist/Exempt List  
Automatic Real-Time Updates From FortiGuard Network

#### TRAFFIC SHAPING

Policy-based Traffic Shaping  
Differentiated Services (DiffServ) Support  
Guarantee/Max/Priority Bandwidth

#### NETWORKING/ROUTING

Multiple WAN Link Support  
PPPoE Support  
DHCP Client/Server  
Policy-Based Routing  
Dynamic Routing (RIP v1 & v2, OSPF, BGP, & Multicast)  
Multi-Zone Support with Routing Between Zones  
Route Between Virtual LANs (VDOMS)  
Multi-Link Aggregation (802.3ad)

#### MANAGEMENT/ADMINISTRATION OPTIONS

Console Interface (RS-232)  
WebUI (HTTP/HTTPS) and Command Line Interface  
Telnet / Secure Command Shell (SSH)  
Role-Based Administration  
Multi-language Support  
Multiple Administrators and User Levels  
Upgrades and Changes Via FTP and WebUI  
System Software Rollback  
Central Management via FortiManager (optional)

#### LOGGING/MONITORING

Internal Logging  
Log to Remote Syslog/WELF server  
Graphical Real-Time and Historical Monitoring  
SNMP  
Email Notification of Viruses And Attacks  
VPN Tunnel Monitor  
Optional FortiAnalyzer Logging

#### USER AUTHENTICATION OPTIONS

Local Database  
Windows Active Directory (AD) Integration  
External RADIUS/LDAP Integration  
IP/MAC Address Binding  
Xauth over RADIUS for IPSEC VPN  
RSA SecurID Support

#### VIRTUAL DOMAINS (VDOMS)

Separate Firewall/Routing domains  
Separate Administrative domains  
Separate VLAN interfaces  
10 VDOMS (standard)  
Up to 250 VDOMS (optional license - models 3000 and higher)

#### HIGH AVAILABILITY (HA)

Active-Active, Active-Passive  
Stateful Failover (FW and VPN)  
Device Failure Detection and Notification  
Link Status Monitor  
Link failover

#### INSTANT MESSENGER /

#### PEER-TO-PEER ACCESS CONTROL

AOL-IM	Yahoo	MSN	
ICQ	Gnutella	BitTorrent	
WinNY	Skype	eDonkey	KaZaa

### FortiGuard Security Subscription Services

With FortiGuard™ Security Subscription services enabled, customers can rest assured that their Fortinet security platforms are performing optimally and protecting their corporate assets with the latest security intelligence. FortiGuard services deliver the latest security content directly to Fortinet products. Fortinet offers four standard subscription services: Antivirus, Intrusion Prevention, Web Filtering and Antispam services to protect against multiple types of new and emerging threats. FortiGuard services are updated by the Fortinet Global Threat Research Team, a team of experts working around the clock and around the world to keep Fortinet customers secure. The Fortinet Global Threat Research Team enables Fortinet to deliver comprehensive multi-threat protection, including zero-day protection from new and emerging threats. The FortiGuard Network is a network of global data centers that automatically deliver updates quickly and reliably to Fortinet products.

For customers requiring guaranteed response time to suspicious malware threats, Fortinet offers a premier version of the FortiGuard Antivirus Security Subscription service. Along with Service Level Agreements (SLAs), the premier service provides the customer with a direct conduit to the Fortinet Global Threat Research Team.

Fortinet also offers a premier version of the FortiGuard Web Filtering Security Subscription service. This higher-tier service offering includes guaranteed SLAs and a larger quota for rating URLs submitted to the Fortinet Global Threat Research Team.

### FortiCare Support Services

Includes:

- 24/7/365 FortiCare Web-based support
- 8x5 telephone-based technical support (24x7 - optional)
- 1-Year limited hardware warranty
- Technical account management service available
- Professional services available
- 90-day limited software warranty



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# FortiWeb-1000B

Web Security Appliance

Datasheet

Network security threats have evolved to target web-based applications that are the interface to confidential information stored on backend databases. Because of their communication with backend databases, any exploitable vulnerability in the web application translates to a potential attack vector against the databases and the information it stores. Ensuring the web-application is free of vulnerabilities is complicated by the ongoing discovery of new vulnerabilities, patching challenges, code revisions, time-to-market pressures, the inherent difficulty of vulnerability identification, and even access to the application code. The problem is further compounded by the existence of multiple web applications and database server resources, which would require both multiple security audits and load balancing. Much like the applications and operating systems of today are inherently vulnerable, web-based applications cannot be assumed to be written or deployed securely; and therefore require independent security measures.

FortiWeb-1000B is a web security appliance that provides web application and XML firewalls to protect, balance, and accelerate web applications, databases, and the information exchanged between them. The FortiWeb-1000B is designed for medium and large enterprises, and can drastically reduce the deployment time and complexities of introducing web-based applications. The FortiWeb-1000B applies Fortinet's industry-leading threat research to protect web-based applications, improving the security of confidential information and aiding in legislative and PCI compliance.

In addition to security, the FortiWeb-1000B leverages an intelligent, application-aware load-balancing engine to distribute traffic and route content across multiple web servers. This load balancing increases resource utilization, application stability, and server response times. Web application traffic is further accelerated by an independent SSL and XML encryption processor, which increase transaction throughput and reduce processing requirements from web servers. In addition to industry leading web application firewall (WAF) technology, the FortiWeb-1000B goes beyond traditional web security devices to provide XML security enforcement, hardware-based application acceleration, and server load balancing to set new standards for the capabilities of a web security appliance.

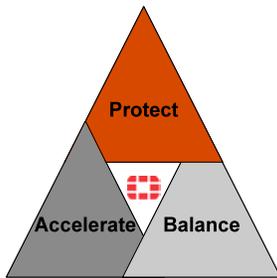


FortiWeb-1000B

Feature	Benefit
Web application firewall and XML firewall	<ul style="list-style-type: none"> <li>Guarantees security of web applications</li> <li>Secures sensitive database content</li> <li>Aides PCI compliance</li> <li>Improves deployment times</li> <li>Simplifies management</li> </ul>
SSL and XML encryption co-processing	<ul style="list-style-type: none"> <li>Accelerates transaction times</li> <li>Offloads encryption functions</li> <li>Reduces server processing requirements</li> </ul>
Server load balancing and content-based routing	<ul style="list-style-type: none"> <li>Increases application speeds</li> <li>Improves server resource utilization</li> <li>Stabilizes applications</li> </ul>
High availability support	<ul style="list-style-type: none"> <li>Active/passive failover with full configuration synchronization</li> </ul>

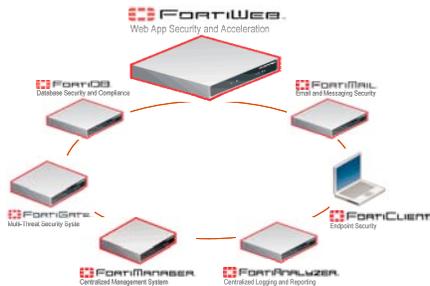


FortiWeb-1000B	
Hardware Specifications	
Security Hardened Platform	Yes
10/100/1000 Ethernet (Copper)	4
USB ports	2
Hard Drive	1 x 1 TB (2 x 1TB drive optional)
System Specifications	
Throughput (HTTP)	500 Mbps
Max Sessions	30,000
New Sessions per Second	10,000
Dimensions	
Height, Width, Length	1.7 x 16.7 x 30.4 inches (4.3 x 42.6 x 77.2 cm)
Weight	36 lbs (16.3 kg)
Rack Mountable	Yes
Input Voltage	100-240 VAC
Input Current	10A
Power Consumption (AVG)	260W
Environment	
Operating temperature	32 to 104 deg F (0 - 40 deg C)
Storage temperature	13 to 158 deg F (-25 to 70 deg C)
Humidity	5 to 95% non-condensing
Compliance	FCC Class A Part 15, / CE Mark



### The Fortinet Product Family

The FortiWeb-1000B web security appliance can effectively protect, balance, and accelerate web applications, and is complemented by the FortiDB database security family, the FortiGate multi-threat security family, the FortiMail email security family, the FortiClient endpoint security family, and the FortiManager and FortiAnalyzer centralized management, reporting and logging solutions.



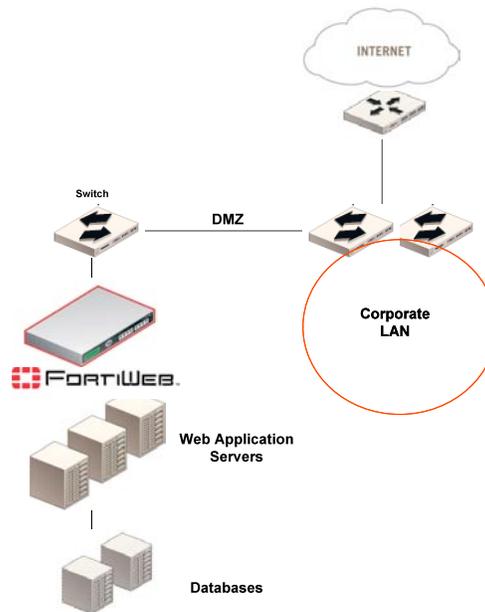
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### Comprehensive WAF and XML Security

Deployed inline in front of web servers, the FortiWeb-1000B leverages signature and pattern detection engines, threshold limits, session management, flow enforcement, parameter validation, and several other technologies to identify threats such as cross-site scripting, SQL injection, buffer overflows, file inclusion, denial of service, cookie poisoning, schema poisoning, and countless other attacks.



A Sample of Technologies Leveraged and Threats Mitigated by the FortiWeb-1000B

#### Technologies

- Signature and pattern Detection
- Threshold-based limits
- Session Management
- Flow enforcement
- Rules-based parameter validation
- Form and form field tampering validation
- Content-based routing
- XML IPS
- SSL/XML Hardware acceleration
- XML schema validation
- WSDL verification
- XML expression limiting
- IP-based policies
- Firewall virtualization
- Server load balancing

#### Threats

- Cross site scripting
- SQL Injection
- Buffer overflows
- OS command injection
- Cross site request forgery
- Outbound data leakage
- HTTP request smuggling
- Remote file inclusion
- Encoding attacks
- Cookie tampering/poisoning
- Session hijacking
- Broken access control
- Forceful browsing / directory traversal
- Site reconnaissance
- Denial of service
- Schema poisoning
- XML parameter tampering
- WSDL scanning
- Recursive payload
- External entity attack

## Sun Blade™ X6270 Server Module

Open network system design for leading virtualization platform



### Highlights

- Supports up to two high-performance Intel Xeon processor 5500 series CPUs to run the most demanding applications
- 18 DDR3 DIMM slots provide capacity for up to 144 GB<sup>1</sup> of memory — ideal for virtualization and other memory-intensive workloads
- I/O flexibility with industry-standard PCI Express (PCIe) 1.1 and 2.0 ExpressModules (EMs), which provide unique I/O per blade, and Network Express Modules (NEMs), for common I/O
- Versatile storage with integrated (optional) hardware RAID controller, and up to four small form factor (SFF) SAS or SATA<sup>2</sup> hard disk drives, or solid-state drives (SSDs)
- Operating system flexibility — run the Solaris™ 10 OS, Linux, Windows, or VMware
- Modular design is highly efficient and serviceable without compromising performance or scalability
- Ease of management with Sun™ xVM Ops Center or third-party software — no additional training required

<sup>1</sup> 8 GB DDR3 DIMMs available in upcoming release.

<sup>2</sup> Available in upcoming release.

Powered by the Intel Xeon processor 5500 series, the two-socket Sun Blade X6270 server module helps you scale your compute resources without adding complexity. The Sun Blade X6270 server module offers streamlined management, breakthrough performance, and superior energy efficiency. When combined with Sun's rich portfolio of software, storage, and service offerings, this server module helps reduce cost and complexity while accelerating time to revenue for datacenters that run a broad range of applications, including Web, enterprise, database, and grid.

The Sun Blade X6270 server module leverages the high-performance, power-efficient features of the Intel Xeon processor 5500 series with Turbo Boost, QPI, and Hyper-Threading Technologies, to run the most demanding applications while reducing power and cooling demands. Supporting all 32- and 64-bit applications, the Sun Blade X6270 server module offers optional high performance with solid-state drives (SSDs) that can combine with Solaris ZFS™ File System for exceptional I/O performance. Additionally, the system provides superior scalability that is streamlined and simplified — with minimal risk. Regardless of the application, a datacenter utilizing the Sun Blade X6270 server module will meet today's challenges as well as the changing demands of business needs in the future.

Utilized in the Sun Blade 6000 and 6048 modular systems, the Sun Blade X6270 server module offers enterprise-class reliability, with many redundant, hot-swappable components — including fans, disk drives, and power supply modules. Each server module is equipped with an Integrated Lights Out Manager (iLOM) service processor offering industry-standard protocols for standalone system manageability as well as integration with many industry-leading management systems, including Sun xVM Ops Center. Combining the Sun Blade X6270 server module with other Sun products and services offers your datacenter unprecedented performance and price/performance.

# Sun Blade X6270 Server Module Specifications

## Architecture

### Processor

One or two Intel Xeon processors 5500 series; 95 W, 80 W, and 60 W, with heat sink

### Cache

- Level 1: 32 KB instruction and 32 KB data L1 cache per core
- Level 2: 256 KB unified (data and instruction) L2 cache per core
- Level 3: 8 MB shared inclusive L3 cache per processor

### Main memory

- Support for 2 GB, 4 GB, and 8 GB<sup>3</sup> DDR3 DIMMs at 1,066 MHz and 1,333 MHz
- Eighteen DIMM slots supporting up to 144 GB<sup>3</sup> of memory per server module

## Interfaces

### Network

- Two 10/100/1000Base-T Ethernet ports using a dual-port Intel 82575EB Gigabit Ethernet Controller
- One dedicated 10/100Base-T Ethernet port for the management network

### Storage

- Four SAS interfaces to the midplane, two to each NEM
- Four hot-swappable SFF SAS or SATA drive bays
- IDE CompactFlash (CF) Module interface (Types I and II)

Note: RAID Expansion Module (REM) required to enable SAS.

### Graphics

Embedded graphics using the AST2100 video controller with 128 MB of shared SDRAM

### Midplane I/O

- Four (x8) PCIe 2.0 busses, two to the PCIe EM slots and two to the NEM slots
- Four 3 Gb/sec SAS/SATA interfaces, two to each NEM slot

- Two 10/100/1000Base-T Ethernet interfaces using an Intel 82575EB Gigabit Ethernet Controller, one interface to each NEM
- 10/100 Ethernet management port to the Chassis Monitoring Module (CMM)

### Front panel I/O

- Available via dangle cable:
  - VGA graphics (DB-15 connector)
  - ILOM serial console
  - Dual USB ports for keyboard, mouse, or storage
- Four SFF drive bays:
  - Supporting SAS/SATA SFF disks and SSDs (REM required for SAS)

## Software

### Operating systems

- Solaris 10 OS 10/08
- OpenSolaris™ OS 2008.11
- Red Hat Enterprise Linux 4.7 (32-bit/64-bit)
- Red Hat Enterprise Linux 5.3 (64-bit)
- SUSE Linux Enterprise Server 10 SP2 (64-bit)
- VMware ESX 3.5
- VMware ESXi 3.5
- Windows Server 2003 (32-bit/64-bit)
- Windows Server 2008 (32-bit/64-bit)

### Networking

- ONC™, ONC+™, NFS, WebNFS™, TCP/IP, SunLink™, OSI, MHS, IPX/SPX, SMB Technologies, and XML

### Management

- Advanced onboard management and monitoring enabled by embedded ILOM service processor, providing:
  - DMTF style CLI
  - Support for SSH 2.0, HTTPS, RADIUS, LDAP, and Microsoft Active Directory
  - Browser-based GUI for control of the system through a graphical interface
  - IPMI 2.0; SNMP v1, v2c, and v3
  - Remote management with full keyboard, video, mouse, storage (KVMS) redirection and remote media capability (floppy, DVD, CD, and more)

## Learn More

To learn more about the Sun Blade X6270 server module, go to: [sun.com/x6270](http://sun.com/x6270).

- Monitor and report system and component status on all FRUs
- Optional Sun xVM Ops Center software — generation of profiles to ensure compliance and compliance reporting, discovery and registration of datacenter assets, job scheduling to perform network tasks, system provisioning, and updates to Linux and the Solaris OS

## I/O modules

- Supported I/O module form factors
  - PCIe (1.1 and 2.0) EM
  - NEM
- Up to two industry-standard (PCI-SIG) form factor, hot-pluggable PCIe EMs per server module
- Up to two NEMs per Sun Blade 6000 modular system
- Up to eight NEMs per Sun Blade 6048 modular system

For information on I/O module choices, go to: [sun.com/servers/blades/iomodules](http://sun.com/servers/blades/iomodules).

## Dimensions and weight

### Height

327mm (12.87 in.)

### Width

44mm (1.7 in.)

### Depth

512mm (20.16 in.)

### Weight

7.9 kg (17.4 lbs.) with four disks, one FEM, one REM, and two CPUs

<sup>3</sup> 8 GB DDR3 DIMMs available in upcoming release.



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## Sun Blade™ 6000 Chassis

The industry's most flexible and capable enterprise-class blade platform



### Highlights

- Up to double the memory and I/O capacity of competing blades and rackmounts
- Shared power and cooling — save up to 45% more energy than equivalent rackmount servers
- Maximal flexibility — UltraSPARC, AMD Opteron™, and Intel® Xeon® processor-based server modules, as well as the Solaris™, Linux, and Windows operating systems
- Most open blade platform, with industry-standard PCI Express (PCIe) ExpressModules (EMs)
- Reduce I/O complexity, costs, and management overhead using Network Express Modules (NEMs)
- Streamlined Sun Blade Transparent Management to ease integration into existing datacenter and management infrastructure
- Hot-swappable, hot-pluggable, redundant modular components to optimize RAS
- Superior investment protection, delivering performance today and capacity for future technologies



Your datacenter is pressured by recent trends and constraints — the move to multicore processors drives increasingly larger node sizes; the maxing out of power and cooling resources and growing management complexity place greater demands on your resources; the needs for virtualization and consolidation challenge your infrastructure; and the needs for expansion, repairs, and upgrades are ongoing. Sun's response to your problems is the Sun Blade 6000 chassis, the foundation of the revolutionary Sun Blade 6000 modular system. The Sun Blade 6000 chassis is designed to support highly capable blades that deliver more compute, memory, and I/O capacity than traditional blades and rack servers. This platform provides maximal performance with the optimal cooling, space, and power requirements. It also supports a wider variety of applications, offering blades based on UltraSPARC, AMD Opteron, and Intel Xeon processors.

The Sun Blade 6000 chassis reduces costs and provides superior performance, maximizing ROI. The chassis fits in a compact form factor — only 10U — while supporting up to 10 full-featured, top-performance blade server modules. With 2.7 Tb/sec maximum I/O throughput, and up to 10 server modules per chassis — offering up to 960 cores per rack and up to 10.24 TB memory per rack — the Sun Blade 6000 chassis is a versatile solution to your datacenter's needs.

The modular design of the Sun Blade 6000 chassis helps consolidate a much broader range of datacenter applications than is possible with traditional blade computing.

It keeps costs down if you are virtualizing or building out large-scale HPC clusters or Web farms, and helps take new systems to production faster and at reduced cost. The Sun Blade 6000 chassis does not require custom management tools or an investment in proprietary networking and I/O architectures, and it integrates easily with existing legacy infrastructure.

The chassis' modular architecture and hot-swappable components help ensure optimal availability and serviceability, as well as ease of deployment. Its management features streamline and simplify administration and maintenance, further reducing costs.

Unlike the simple design of the Sun Blade 6000 chassis, competing blade solutions utilize complex chassis management approaches. Because it supports key industry-standard interfaces and provides a Java-based remote console, the Sun Blade 6000 chassis rapidly can be integrated into your existing management infrastructure by use of several third-party tools. Eliminating unnecessary complexity, the Sun Blade 6000 chassis was designed to be managed easily within an existing multivendor, heterogeneous IT infrastructure — without requiring any special training or management tools. In addition, each chassis is shipped with a standard Chassis Monitoring Module (CMM) that provides even greater assurance of availability.

There are two separate front-to-rear airflows in the chassis — one is powered by its redundant front fan modules within the power supplies, while the other is powered by the rear fan modules that cool the server modules. The chassis' front-to-back cooling design and redundant power supplies further prevent downtime and protect your investments. The front fans cool the system's power supplies and PCIe EMs, NEMs, and CMM; the redundant inline back fans are used to pull air through the server modules and are N+1, hot swappable, with a handle through the back of the chassis.

Reduced costs and faster time to market are the guiding design principles behind the Sun Blade 6000 chassis — and it delivers. The highly efficient Sun Blade 6000 chassis also is easy to upgrade, with a power supply that provides headroom for future growth. The power supply unit requires less energy than in a comparable chassis. This, coupled with its small footprint and superior cooling design, means that the Sun Blade 6000 chassis reduces overall costs in the



*Sun Blade 6000 modular system — Sun Blade 6000 chassis with server modules.*

datacenter for space, cooling, and power. By consolidating the cooling and power infrastructure of multiple systems onto the chassis, it achieves better power efficiency, reducing both cooling and power costs.

The Sun Blade 6000 chassis has two hot-swappable, redundant power supplies, each with its own front fan module, although a single power supply can be used to power the entire chassis. Each chassis can deliver up to 5,600 W, with a power supply output of 12 V, and requires four power inlets. The system's actual power consumption depends on the type of blades installed. The power inlets are arranged in 1+1 redundant configurations, requiring connection to a 200–240 V, 16–20 A outlet, and have metal retainers to prevent the accidental removal of their power cords. The chassis' power supplies are more reliable, with no cable management arm and fewer cables required.

#### Learn More

To learn more about the Sun Blade 6000 chassis, go to: [sun.com/blades](http://sun.com/blades).

A basic Sun Blade 6000 chassis includes its enclosure, two power supplies, all fan modules, and a CMM. One to four chassis can fit into a 42U Sun™ Rack, which is sold separately.

The Sun Blade 6000 chassis is designed for superior I/O and RAS, scaling out easily and cost-effectively. It features an industry-standard PCIe 2.0 midplane and an integrated storage backplane. With all of its active components hot pluggable and hot swappable, the chassis leverages its innovative modular architecture to improve both availability and performance, enhancing your datacenter ROI right out of the box.

# Sun Blade 6000 Chassis Specifications

## Architecture

### Form factor

10 rack units high (10U), holding up to 10 server modules per chassis; up to four Sun Blade 6000 chassis are supported per 42U rack

### I/O interfaces

The Sun Blade 6000 chassis midplane supports the following protocols: PCIe 2.0, SAS 2.0, SATA 3.0, and Gigabit Ethernet (GbE); each server module has a direct connection to two PCIe EMs for discrete I/O connectivity and two QDR IB NEMs for aggregate I/O connectivity

### I/O modules

- Supported I/O module form factors:
    - PCIe EM
    - NEM
  - Up to two industry-standard (PCI-SIG), hot-pluggable PCIe EMs per server module
  - Up to two hot-pluggable NEMs per Sun Blade 6000 modular system
- For information on I/O module choices, please see [sun.com/servers/blades/iomodels](http://sun.com/servers/blades/iomodels).

## Manageability

### CMM

- Helps enable direct remote connection to the service processor on each blade server
- Reduces cabling by providing a single management connection to the chassis
- Helps ensure complete remote lights-out manageability of the whole chassis
- Provides an optional aggregate point for monitoring of chassis fans and power supplies with the CMM's own Integrated Lights Out Manager (iLOM) module

## Environment

Specification	Operating	Nonoperating
Temperature	5° C to 32° C (41° F to 90° F)	-40° C to 65° C (-40° F to 149° F)
Optimum ambient	22° C (71.6° F)	
Relative humidity	10–90%, non-condensing, 27° C max. wet bulb	5–93%, non-condensing, 38° C max. wet bulb
Altitude	Up to 3,048m (10,000 ft.), max. ambient temperature is derated by 1° C per 300m (984 ft.) above 900m (2,953 ft.)	Up to 12,000m (39,370 ft.)
Sine vibration	Z (vertical) axis: 0.15 G, X–Y axis: 0.10 G, 5–500 Hz sine	Z (vertical) axis: 0.50 G, X–Y axis: 0.25 G, 5–500 Hz sine
Shock	3 Gs, 11 msec, half sine (rackmounted enclosure)	
Acoustic noise	LwAd (1 B = 10 dB) 8.6 B at or below 25° C, 9.2 B at max. ambient	

## AC power

Power (1+1) high-efficiency, hot-swappable, load-sharing, load-balancing power supplies

AC input power	1+1 PSU rating, 6,272 W, or 6,400 VA each power supply module
Voltage	200–240 V AC
Frequency	50–60 Hz
Current	16 A per power supply input, total four AC inputs (two per power supply module)
AC input connection	Americas/domestic — NEMA L6-20P to IEC 320-C19  International — IEC 309, 250 V, 16 A, 3Pin to IEC 320-C19

## DC power

DC output power 1+1 PSU rating: 5,600 W each power supply module

## Regulations (meets or exceeds the following requirements)

Product safety	UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences, IEC 825-1, 2, CFR 21 part 1040, CNS 14336, GB 4943
RFI/EMI (Class A)	EN 55022, 47 CFR 15B, ICES-003, VCCI, AS/NZ 3548, CNS 13438, KSC 5858, GB 9254, EN 61000-3-2, GB 17625.1, EN 61000-3-3, EN 300 386: v1.3.3
Immunity	EN 55024, EN 300 386: v1.3.3

## Certifications

Product safety	cULus Mark, UL/Demko LVD, CE Mark (2006/95/EC), GOST-R, BSMI
RFI/EMI (Class A)	CE Mark (89/336/EEC), FCC, ICES-003, VCCI, C-Tick, MIC, GOST-R, BSMI
Immunity	CE Mark (89/336/EEC), MIC, GOST-R
Other	Labeled per WEEE (Waste Electrical and Electronic Equipment) Directive, China RoHS Mark

## Chassis and components

### physical specifications

Chassis height :	438.15mm (17.25 in.)
Chassis depth:	692.15mm (27.25 in.)
Chassis width:	444.50mm (17.50 in.)
Chassis weight of a fully configured system:	159 kg (350 lbs.)
Chassis weight of an empty system (no fillers):	35.7 kg (78.7 lbs.)

### Subassembly weights

Power supply module:	9.70 kg (21.38 lbs.)
NEM:	1.75 kg (3.85 lbs.)
PCIe EM:	0.41 kg (0.90 lb.)
Rear fan module:	1.04 kg (2.31 lbs.)
CMM:	0.52 kg (1.15 lbs.)
Front fan module:	0.88 kg (1.95 lbs.)
Front indicator module:	0.34 kg (0.75 lb.)

# Sun GlassFish™ Enterprise Server

Next-generation open-source applications and services



## Highlights

Sun GlassFish™ Enterprise Server provides:

- Significant cost savings with annual subscriptions
- Record-setting performance that maximizes your investment
- Easy-to-use administration console and command-line tool
- 99.999% high availability for uninterrupted service
- Microsoft .NET interoperability
- Improved monitoring and management with Enterprise Manager



Businesses are always looking for ways to reduce IT costs and complexity, and many are achieving these goals by embracing open source and open standards. The “one size fits all” approach to middleware is being replaced by a strategy that leverages enterprise-ready, open-source products.

Replacing proprietary application servers with open-source products can maximize cost savings and business flexibility by avoiding vendor lock in. By using open-source products for new projects, companies can realize cost savings and enable new business initiatives while reducing risk.

Built on the open-source Project GlassFish, the Sun GlassFish Enterprise Server delivers a cost-efficient, enterprise-class application server for demanding enterprise and Web 2.0 applications. It delivers best-in-class performance and enterprise features at a fraction of the cost of proprietary application servers.

### Java™ Platform, Enterprise Edition support

GlassFish Enterprise Server is the Java™ Platform, Enterprise Edition (Java EE platform) reference implementation and the first application server to support Java EE 5 technology, which delivers ready access to a secure, portable and scalable platform for enterprise applications. For developers, it makes coding simpler and more straightforward through annotations, Plain Old Java Objects (POJOs), and more.

### Enterprise features

With support for centralized administration and high-availability clustering, GlassFish Enterprise Server is built for business-critical environments where centralized management is key to lowering operations costs. Monitoring and management of clusters, standalone

instances, applications, load balancing agents, and Web services are handled from a centralized administration console or command line interface.

GlassFish Enterprise Server supports application clusters for scalability and high availability. Application clusters can be created dynamically and adjusted on the fly to meet user demand without service interruption.

For deployments that must handle application server failure without service interruption, in-memory session replication is a robust and easy-to-use solution. For deployments that require 99.999% availability with no loss of session data, GlassFish Enterprise Server leverages the High Availability Database (HADB), which helps ensure data integrity and availability.

### Full-featured Enterprise Manager

For GlassFish Enterprise Server deployments, Enterprise Manager offers improved monitoring and administration through three features:

- The SNMP Monitoring can be deployed to any GlassFish Enterprise Server instance or clustering, and integrated with widely available network management tools.
- The Performance Advisor optimizes performance by recommending GlassFish and Java Virtual Machine (JVM™) settings and highlighting issues that affect service availability, such as high CPU and memory utilization.

- The Performance Monitor identifies and trouble shoots potential performance bottlenecks.

### Fastest open-source application server

GlassFish Enterprise Server is the only open-source application server to post a SPECjAppServer 2004 result. (This industry-defined benchmark documents Java EE application server performance.) When compared to proprietary application servers, GlassFish Enterprise Server can offer up to a 7x price/performance advantage.<sup>1</sup>

### Designed for ease of use

In addition to centralized monitoring and management, GlassFish Enterprise Server's intuitive administration console makes common tasks and configuration wizards readily available, and advanced application server features are easily accessible.

All administration console features are also available through a command line interface (CLI) for use with customized shell scripts or provisioning tools. To simplify IT deployments, GlassFish Enterprise Server includes a lightweight developer profile, a cluster profile for typical production deployments, and an enterprise profile for 99.999% availability.

### Microsoft .NET interoperability

Sun and Microsoft work closely to ensure the Java EE and .NET platforms can interoperate easily. With Project Metro, Sun delivers secure, reliable, transactional, and high-performing interoperability with Microsoft .NET. Project

Metro supports many standards and Web services specifications, including the Java API for Web Services (JAX-WS 2.1), which reduces coding, and Java Architecture for XML Binding (JAXB 2.1), which specifies Java and XML binding.

### Foundation for Service-Oriented Architecture (SOA)

With strong support for Open ESB, an open source project created from Sun's award-winning Java Composite Application Suite (Java CAPS), which enables enterprises to build flexible SOA architectures; Project Metro; RESTful Web services; and Web services management, GlassFish Enterprise Server is an ideal platform for developing SOA applications.

GlassFish ESB, another product within the Sun GlassFish Portfolio, is based on Open ESB. GlassFish Enterprise Server supports GlassFish ESB for easy integration of Web services and existing enterprise resources to create loosely coupled, enterprise-class composite applications.

Web services are first-class manageable objects when deployed to GlassFish Enterprise Server; Web services can be automatically discovered, managed and monitored. If monitoring is enabled for a Web services endpoint, information about response time, throughput, requests, and faults is collected and viewed through the administration console, along with Simple Object Access Protocol (SOAP) message content. Also, Web services testing pages can be automatically generated, eliminating the need for explicit Web services client development.

#### Learn More

Additional information can be found on the following sites:

GlassFish Enterprise Server:  
[sun.com/appserver](http://sun.com/appserver)

GlassFish Portfolio:  
[sun.com/glassfish](http://sun.com/glassfish)

### Dynamic language support

Dynamic languages like JRuby and Groovy also run on GlassFish Enterprise Server and benefit from its manageability and performance. Beginning with GlassFish v3 Prelude, dynamic languages are first-class citizens. For example, JRuby runs directly on the GlassFish v3 Prelude microkernel without the need for a servlet container. This reduces runtime resource requirements and provides a more seamless development approach for JRuby developers.

### Why GlassFish Enterprise Server?

- Take advantage of enterprise features, best-in-class performance, and support through cost-efficient annual subscriptions
- Improve IT productivity with easy-to-use, centralized administration
- Enable scalability and high availability through clustering
- Improve administration and monitoring with Enterprise Manager

1. <http://www.spec.org/jAppServer2004/results/res2008q4/jAppServer2004-20081008-00118.html>

# ORACLE REAL APPLICATION CLUSTERS

## KEY FEATURES AND BENEFITS

FOUNDATION FOR ORACLE'S  
ENTERPRISE GRID  
ARCHITECTURE

### FEATURES

- Clustered Managed Services for Automatic Workload Management
- Datacenter High Availability
- Run any packaged or custom application unchanged
- Scale out to 100 nodes
- Single image installation and management
- Included with Oracle Database 11g Standard Edition

### BENEFITS

- **24/7 availability** - Provide continuous uptime for database applications
- **On-demand scalability** - Expand capacity by simply adding servers to your cluster
- **Lower computing costs** - Use low-cost commodity hardware and reduce cost of downtime
- **World-record performance** - Runs faster than the fastest mainframe
- Foundation for grid computing

*Oracle Real Application Clusters (RAC) provides unbeatable fault tolerance, performance, and scalability with no application changes necessary. Oracle RAC is a cluster database with a shared cache architecture that overcomes the limitations of traditional shared-nothing and shared-disk approaches to provide a highly scalable and available database solution for all your business applications.*

*Oracle RAC provides the foundation for enterprise grid computing.*

Oracle's Real Application Clusters (RAC) supports the transparent deployment of a single database across a cluster of servers, providing fault tolerance from hardware failures or planned outages. Oracle RAC provides Oracle's highest level of capability in terms of availability, scalability, and low-cost computing. Oracle RAC supports mainstream business applications of all kinds. This includes OLTP, DSS, and Oracle's unique ability to effectively support mixed OLTP/DSS environments. This also includes popular packaged products such as SAP, PeopleSoft, Siebel, and Oracle E\*Business Suite, as well as custom applications.

Oracle RAC provides a single image installation and management. The DBA has a single point of control to install and manage a RAC cluster from the GUI interface or command line. Oracle Database 11g streamlines the install with automatic checks and fixes for missed pre-requisites for both the grid infrastructure (Oracle Clusterware and Automatic Storage Management) and Oracle RAC.

### High Availability

Oracle RAC provides very high availability for applications by removing the single point of failure with a single server. If a node in the cluster fails, the Oracle Database continues running on the remaining nodes. Individual nodes can be shutdown for maintenance while application users continue to work.

Fast Application Notification (FAN), enables end-to-end, lights-out recovery of applications and load balancing when a cluster configuration changes.

### Flexible Scalability

Oracle Real Application Clusters provides flexibility for scaling applications. To keep costs low, clusters can be built from standardized, commodity-priced processing, storage, and network components. When you need more processing power, simply add another server without taking users offline servers to gain horizontal scalability. Oracle Clusterware and Oracle RAC support up to 100 nodes in the cluster.

Applications never have to modify their connections as you add or remove nodes in the cluster. Oracle RAC 11g Release 2 introduces the single client access name

**ORACLE REAL  
APPLICATION CLUSTERS**

Oracle Real Application Clusters 11g enables the transparent deployment of a single database across a cluster of servers and provides the highest levels of availability and scalability. Nodes, storage, CPUs, and memory can be dynamically provisioned while the system remains online. Services levels can be efficiently maintained while lowering the total cost of ownership. Oracle RAC provides dynamic distribution of workload and transparent protection against system failures.

**RELATED PRODUCTS**

Oracle RAC One Node  
Oracle Clusterware  
Oracle Data Guard  
Part of the Maximum Availability Architecture

**RELATED SERVICES**

The following services are available from Oracle Support Services:

- Update Subscription Services
- Product Support Services
- OnlineDBA
- OnlineDBA for Applications

(SCAN) to allow clients to connect to the Oracle RAC database with a single address which includes failover and load balancing.

**Automatic Workload Management**

With Oracle Database 11g, application workloads can be individually managed and controlled defined as Services. DBAs control which processing resources are allocated to each Service during both normal operations and in response to failures. Users connecting to a Service are load balanced across the cluster. Performance is tracked on a per Service basis by the Oracle Database 11g Automatic Workload Repository facility. Thresholds on performance metrics can be set to automatically generate alerts when hit. Services are integrated with the Database Resource Manager, Oracle Streams, and the Scheduler.

To provide the best possible throughput of application transactions, Oracle Database 11g Universal Connection Pool for Java (UCP), OCI Session Pools, and ODP.NET connection pools provide intelligent load balancing for applications called Runtime Connection Load Balancing.

**Oracle Clusterware**

Oracle Database 11g includes Oracle Clusterware, a complete, integrated clusterware management solution available on all Oracle Database 11g platforms. This clusterware functionality includes mechanisms for cluster messaging, locking, failure detection, and recovery. For most platforms, no 3rd party clusterware management software need be purchased. Oracle will, however, continue to support select 3rd party clusterware products on specified platforms.

Oracle Clusterware includes a High Availability API to make applications highly available. Oracle Clusterware can be used to monitor, relocate, and restart your applications. With Oracle Real Application Clusters, Oracle Clusterware automatically manages all Oracle processes.

**Enabling Enterprise Grids**

Oracle RAC enables enterprise Grids. Enterprise Grids are built from standardized, commodity-priced processing, storage, and network components. The enterprise Grid enables you to consolidate applications into a cluster with Oracle Clusterware allocating the resources to the server pools running the components of the application such as the application server and the Oracle RAC database. Oracle RAC enables the Oracle Database to run on this platform and provides the highest levels of capability in terms of availability and scalability. Nodes, storage, CPUs, and memory can all be dynamically provisioned while the system remains online. Grid Plug and Play makes it easier to dynamically replace nodes in a cluster. This allows service levels to be easily and efficiently maintained while lowering cost still further through improved utilization. Oracle Database 11g dramatically reduces operational costs and provides the flexibility to make systems more adaptive, proactive, and agile.

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# ORACLE ADVANCED SECURITY

## KEY FEATURES AND BENEFITS

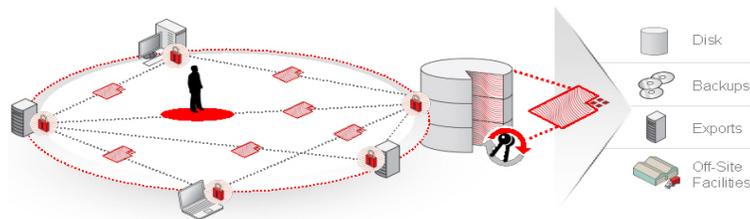
- Transparently encrypt data with no application changes
- Built-in key management
- Encrypt sensitive columns or entire tables with tablespace encryption
- Encrypt entire database exports and backups to disk
- Encrypt network traffic
- High performance
- Support for centralized key management using 3<sup>rd</sup> party hardware security modules (HSM)
- Industry standards – AES, 3DES, PKCS#11, X.509

*Oracle Advanced Security helps customers address regulatory compliance requirements by protecting sensitive data on the network, on backup media and within the database from unauthorized disclosure. Oracle Advanced Security transparent data encryption provides the industries most advanced encryption capabilities for protecting sensitive information without requiring any changes to the existing application.*

### Overview

Oracle Advanced Security, an option to Oracle Database 11g, helps address privacy and regulatory requirements including the Payment Card Industry Data Security Standard (PCI-DSS), Health Insurance Portability and Accountability Act (HIPAA), and numerous breach notification laws. Oracle Advanced Security provides data encryption and strong authentication services to the Oracle database, safeguarding sensitive data against unauthorized access at the network, operating system or through theft of hardware or backup media. Oracle Advanced Security benefits include:

- No application changes
- Built-in key management
- High performance



### Transparent Data Encryption

Oracle Advanced Security transparent data encryption (TDE) can be used to encrypt specific application data such as credit card numbers and social security numbers or entire application tables. TDE tablespace encryption provides an efficient solution for encrypting entire application tablespaces. TDE is completely transparent to existing applications, requiring no triggers, views or other application changes. TDE can be managed through Oracle Enterprise Manager.

### Key Management

Oracle Advanced Security provides built-in key management, eliminating the complex key management issues associated with traditional encryption solutions.

**RELATED PRODUCTS**

- Oracle Database Vault
- Oracle Audit Vault
- Oracle Label Security
- Oracle Secure Backup
- Oracle Data Masking

The TDE master encryption key is part of a two tier key architecture that protects the encryption keys used to encrypt the data. The TDE master key can be stored in an Oracle Wallet or an external hardware security module (HSM). The Oracle Wallet is a PKCS#12 formatted file that must be opened using a password before the Oracle Database can start decrypting data. For centralized, network based storage of master keys, Oracle has certified TDE with numerous industry-leading HSM devices and communicates with these devices using the PKCS#11 interface.

**Strong Protection For Data In Transit**

Oracle Advanced Security provides an easy-to-deploy and comprehensive solution for protecting all communication to and from the Oracle Database, providing both native and SSL network encryption. SSL encryption and authentication are available for businesses that have deployed Public Key Infrastructure. The Oracle Database can be configured to reject or optionally allow connections from clients with encryption turned off. No changes to existing applications are required, allowing businesses to easily deploy network encryption.

**Strong Authentication Replaces Password Based Authentication**

Oracle Advanced Security provides strong authentication for users authenticating to the database using Kerberos, PKI or RADIUS. Oracle Advanced Security interoperates with the Microsoft Kerberos and MIT Kerberos v5.

**Application Certification with Transparent Data Encryption**

Oracle Advanced Security is certified for Oracle E-Business Suite, Oracle PeopleSoft, Oracle Siebel, Oracle JD Edwards Enterprise One and SAP.

<b>Applications Certification</b>	
TDE tablespace encryption (11.1.0.7 and later)	
Oracle E-Business Suite 11.5.10 and 12.0.4	Oracle PeopleSoft Enterprise 8.48
Oracle Siebel CRM 8.0	Oracle JD Edwards EnterpriseOne
TDE column encryption (10.2.0.4 and later, 11.1.0.7 and later)	
Oracle E-Business Suite 11.5.9	Oracle PeopleSoft Enterprise 8.46
Oracle Siebel CRM 7.7+	SAP 6.40 and 7.00

**Contact Us**

For more information about Oracle Advanced Security, please visit [oracle.com](http://oracle.com) or call +1.800.ORACLE1 to speak to an Oracle representative.



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PRODUCTS & SERVICES

# COLOCATION SERVICES

Equinix is the preferred destination for companies who control the world's most valued information assets. Our International Business Exchange™ (IBX®) centers are built to protect and connect the most critical information-driven operations of businesses worldwide.



EQUINIX



# PEACE OF MIND, WHEN IT MATTERS.

Customers do business at Equinix as part of a vital ecosystem, where their most critical information assets are protected and connected. We safeguard mission-critical data with the highest levels of security and operational reliability while offering broad connectivity options where major networks, enterprises and business partners can interconnect to each other and the over 300 networks available at Equinix.

Global enterprises, financial institutions, the largest networks, and the Internet's foremost content companies trust us with what matters to them most--their information assets. It's what we at Equinix do everyday--without compromise.