

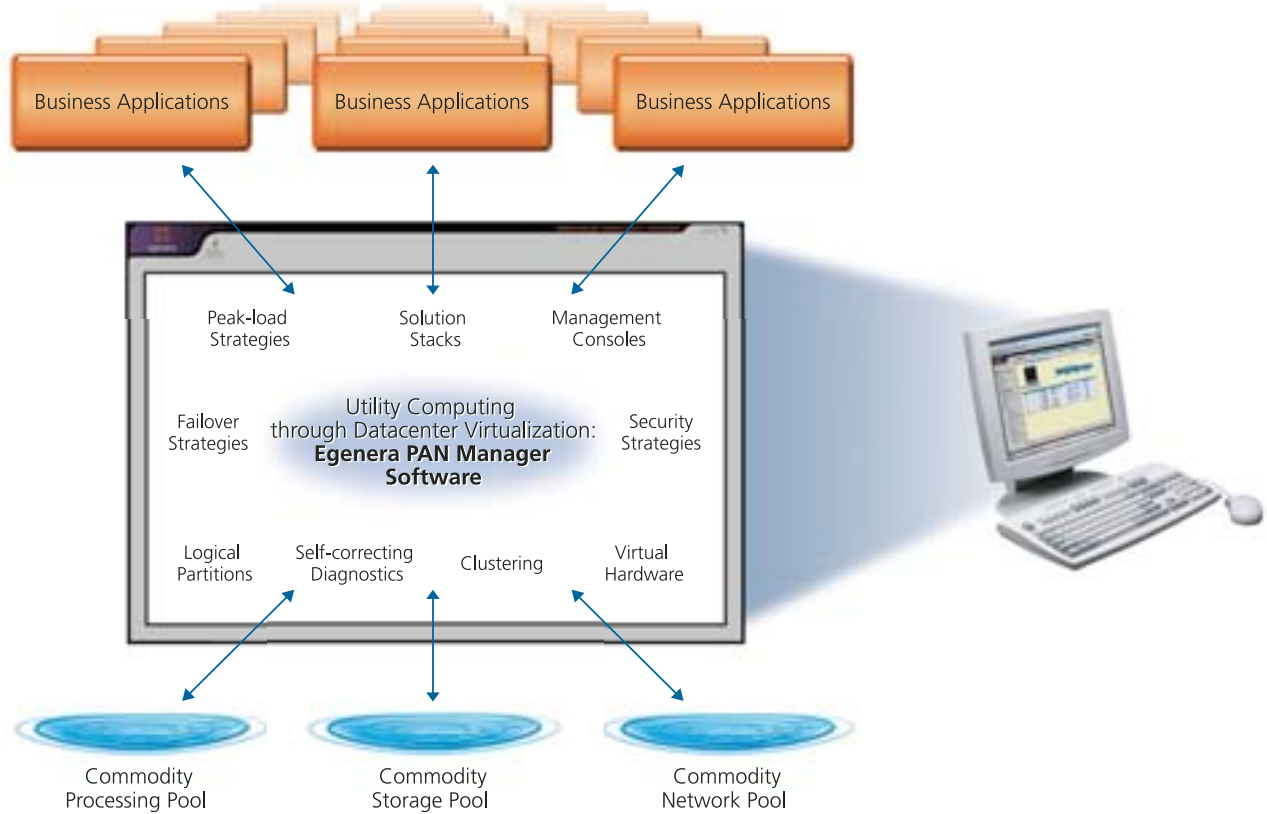


BladeFrame® ES



Simplifying the Datacenter through
Utility Computing

BladeFrame ES Value Proposition



Utility Computing through Datacenter Virtualization

As a technology leader in utility computing, Egenera enables datacenters to run any application, on any resource, at any time, automatically. The BladeFrame product line, with its Processing Area Network (PAN) architecture, completely disaggregates processing, storage and networking into asset pools that come together as needed to support a service, then disband. As a result, capacity is no longer dedicated to individual applications, and services are not tied to specific hardware or network paths. Instead, virtualization software automatically repurposes and reallocates resources based on business priorities and service-level agreements. Finally, a solution that enables IT to deliver what the business has always wanted: adaptable, high-quality services at lower cost.

The strategic implications of utility computing are two-fold: a dramatic reduction in total cost of ownership (TCO) for the datacenter and unprecedented agility for the business. Now, IT can allocate resources to business units faster than ever before and virtually eliminate downtime. Meanwhile, developers speed the delivery of new applications and routinely right-size services to improve performance and utilization simultaneously. All at half the cost of proprietary RISC systems.

The PAN architecture introduces unique virtualization technology that replaces physical elements traditionally housed in hardware with software equivalents. The results are profound. Server, network and storage resources are transformed from static to dynamic, while time-consuming, error-prone physical activities are replaced with automated, software-driven functions.

BladeFrame ES

By delivering the PAN architecture in a scaled-down form factor, BladeFrame ES enables IT organizations to leverage a common platform across the enterprise while bringing the benefits of utility computing to a wide range of applications and environments.

In addition to datacenter use, BladeFrame ES is ideally suited for:

- Branch offices, call centers, remote sites and business units that would benefit from Egenera's unique virtualization services, including automated deployment, built-in clustering and load balancing, dynamic utilization, secure partitioning, N+1 failover and disaster recovery, remote management and self-correcting diagnostics. The system's compact form factor enables rack mounting along with storage devices, networking switches, routers and other components.
- Application development teams, which can avoid resource gridlock and speed development-cycle time by procuring a dedicated BladeFrame ES. As needs dictate, processing, storage and network resources can easily be allocated and reallocated across development, QA, test and production.

Key features and benefits of BladeFrame ES include:

Egenera PAN Architecture

The benefits of utility computing cannot be achieved with today's server architecture, which hasn't changed in more than 20 years. Instead, creating a pool of processing resources that can run any application at any time requires a complete rethinking of server design. What's needed is the processing equivalent of a Storage Area Network (SAN). BladeFrame ES delivers all the capabilities of Egenera's PAN architecture in a form factor designed for rack mounting.

Rapid Deployment and Allocation

BladeFrame ES centralizes power, storage and networking connections, reducing cable count and simplifying deployment. Moreover, Egenera Processing Blade™ modules are diskless, anonymous and interchangeable—enabling automated allocation, repurposing and failover since any can immediately assume the identity of any other. When a new processing resource is required, it can be installed and deployed—including automated configuration of the software stack—in minutes, versus the weeks required to provision traditional hardware. This unique characteristic enables users to pool processing assets and associate configurations with the pool instead of assigning individual servers to specific applications.

Lower TCO

Through pooling, utility computing enables multiple applications to share resources for spikes and failover, making it possible to reduce excess capacity by 50 percent and double utilization. And it's all business-driven. Resources are automatically allocated through software based on application priorities and agreed-upon service levels. Virtualization also simplifies IT infrastructure by reducing the number of devices and failure points under management. This consolidation slashes TCO by lowering operational costs including software license fees, hardware maintenance fees and personnel requirements.

Sustainable Competitive Advantage

Utility computing means that new services can be launched faster than ever before to neutralize competitive threats and capitalize on market opportunities. For existing services, resources can be repurposed in minutes to scale applications and ensure uptime. Based on business priorities, the Egenera system can identify applications that are under-powered or over-powered, and reallocate capacity on-the-fly. Incremental resources can be accessed from asset pools or shifted from less critical services. The same model applies to hardware and software failover, ensuring that mission-critical services are always available and making HA cost-effective for every organization and application.

Automated, Lights-out Management

Once BladeFrame ES is installed, no physical interaction is required. Instead, the system is administered via Egenera PAN Manager™ software using the same interfaces provided with the BladeFrame. Functions can be performed remotely in a lights-out environment and may be centralized or decentralized based on user preferences.

Investment Protection

Egenera's server-class Processing Blade configurations are designed for use with both BladeFrame ES and the BladeFrame, creating a migration path to the larger system and protecting Processing Blade investments.

BladeFrame ES System Overview

BladeFrame ES combines six Processing Blades; redundant, integrated controllers; a redundant interconnect; and powerful virtualization software in a self-contained chassis.

Hardware

BladeFrame ES creates a pool of Processing Blades deployable entirely through software. The product is designed to easily mount in an industry-standard (EIA 310-D) 19-inch rack. The chassis contains up to six two-way and/or four-way processing resources (Processing Blade); redundant, integrated central controllers and switches (Control Blade™ ES); and redundant, high-speed interconnects (BladePlane™ ES).

Like the BladeFrame, BladeFrame ES was engineered to complement SAN or Network Attached Storage (NAS) technology. Thus, the diskless, anonymous Processing Blades—which function just like conventional servers once configured—contain only processors and memory and require no external connections. Instead, all Ethernet and disk I/O is routed via the BladePlane ES through the Control Blade ES modules, which interface to the IP network and external storage. The Processing Blades communicate among themselves and with the Control Blade ES resources via integrated switched-fabric connections.

Software

The PAN architecture establishes a distributed set of BladeFrame ES and non-BladeFrame ES resources—including processors, disks and network connections—that are dynamically configured into virtual servers through PAN Manager software. PAN Manager also provides comprehensive management functionality, including lights-out access and user-friendly console interfaces.

PAN Manager replaces hardware components with software equivalents by virtualizing 80 percent of the I/O devices found on legacy servers, including network and storage switch ports, network interface cards, host bus adapters and cables. As a result, users can allocate resources to business services without the physical restrictions of legacy hardware. Moreover, PAN Manager continuously monitors the health and performance of resources and optimizes system operation in a predictive manner, making BladeFrame ES self-monitoring, self-tuning and self-recovering.

Service

Recognizing that BladeFrame ES is often deployed at remote sites without access to IT professionals, Egenera designed the system for serviceability and remote management. Most blade components are easily customer-replaceable. What's more, the system features event-notification functionality and can be monitored by Egenera on a 24x365 basis for proactive support. Likewise, customers can remotely monitor BladeFrame ES status from a central operations center.



The BladeFrame ES chassis was designed for mounting in an industry-standard rack along with external storage devices and/or networking equipment such as hubs, routers and switches.



Egenera PAN Manager software provides a single point for configuring, managing and monitoring both the physical and virtual resources in the Processing Area Network.

BladeFrame ES

System Specifications

BladeFrame ES Physical Dimensions

Compatible with industry-standard rack	19 in. EIA 310-D, 36 in. deep
Height	22.75 in. / 57.8 cm.
Width	17.6 in. / 44.7 cm.
Depth	30 in. / 76 cm.
Weight	280 lbs. / 127 kg. maximum (fully configured)

Electrical Specifications

Input voltage	200/208/230
Input current	20 or 30 amperes per plug, single phase AC
Frequency	50/60 Hz, auto-ranging
Power consumption & cooling requirements	Configuration-dependent. Please contact your Egenera representative for information.

Environmental

Operating temperature range	41° F to 95° F (5° C to 35° C)
Maximum altitude	6,000 ft. / 1,828 m.
Humidity (non-condensing)	10–80%

Control Blade ES Architecture

Number of Control Blade ES	2 (redundant) per BladeFrame ES. In normal state, Control Blade ES modules share I/O.
I/O interfaces	Gigabit Ethernet, 4 ports, fiber or copper 2 Gigabits/sec. Fibre Channel, 4 ports
Console ports	Front- and rear-accessible: RS 232
Management interface port	10/100 Ethernet
DVD drive	40X (1 per Control Blade ES)
Power supply	Independent of other blades
Cooling mechanism	Self-contained front to back
Hot-pluggable	Yes

Processing Blade Architecture

For current Processing Blade configurations, please see www.egenera.com/prod_spec_pblades.php

BladePlane ES

Data transfer rate	2.5 Gigabits/sec. over redundant point-to-point switched-fabric interconnects
--------------------	---

Software/Management

Operating systems	Red Hat® Enterprise Linux® AS; SUSE LINUX Enterprise Server; Sun® Solaris™ Microsoft® Windows® Server 2003, Enterprise and Standard Editions
System management	Egenera PAN Manager software
Out-of-band system management	IPMI
Third-party management interfaces	BMC Patrol®, HP OpenView Network Node Manager, Tivoli Enterprise Console® SNMP-based management products



Corporate Headquarters
Egenera, Inc.
165 Forest Street
Marlboro, MA 01752
U.S.A.
Phone: 508-858-2600
Fax: 508-481-3114
www.egera.com

European Headquarters
Egenera Ltd.
Venture House
Arlington Square
Bracknell, Berkshire RG12 1WA
United Kingdom
Phone: +44 (0)1344 475237
Fax: +44 (0)8703 305946
www.egera.com

Asia Pacific Headquarters
Egenera K.K.
Shinjuku NS Bldg. 6F,
2-4-1 Nishishinjuku,
Shinjuku-ku
Tokyo 163-0806 Japan
Phone: +81-3-5321-7157
Fax: +81-3-5321-7158
www.egera.com

Copyright © 2003 Egenera, Inc. All rights reserved.

Egenera, Egenera stylized logos, BladeFrame, BladePlane, Control Blade, PAN Manager and Processing Blade are trademarks or registered trademarks of Egenera, Inc. in the United States and/or other countries. Linux is a registered trademark of Linus Torvalds. Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Patrol is a registered trademark of BMC Software, Inc. Red Hat is a registered trademark of Red Hat, Inc. Sun, Sun Microsystems and Solaris are trademarks or registered trademarks of Sun Microsystems Inc. in the United States and other countries. Tivoli and Tivoli Enterprise Console are registered trademarks of International Business Machines Corporation or Tivoli Systems, Inc. All other company and product names are trademarks or registered trademarks of their respective holders.

The information in this document is subject to change without notice.

Printed in the U.S.A.

BFESDS0106