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Virtualization | **SAP**insider

Dramatically Improve the Responsiveness of Your Data Center

Simplify Your IT Infrastructure with PAN Manager

For many companies, virtualization has become synonymous with hardware consolidation. But it's much more than that. Today's virtualization technologies have the potential to transform your data center from a technology service provider to the keystone of a nimble, competitive business strategy. For enterprises that depend on SAP applications and business solutions, making the most of virtualization can mean the difference between keeping pace with the competition and surpassing it.

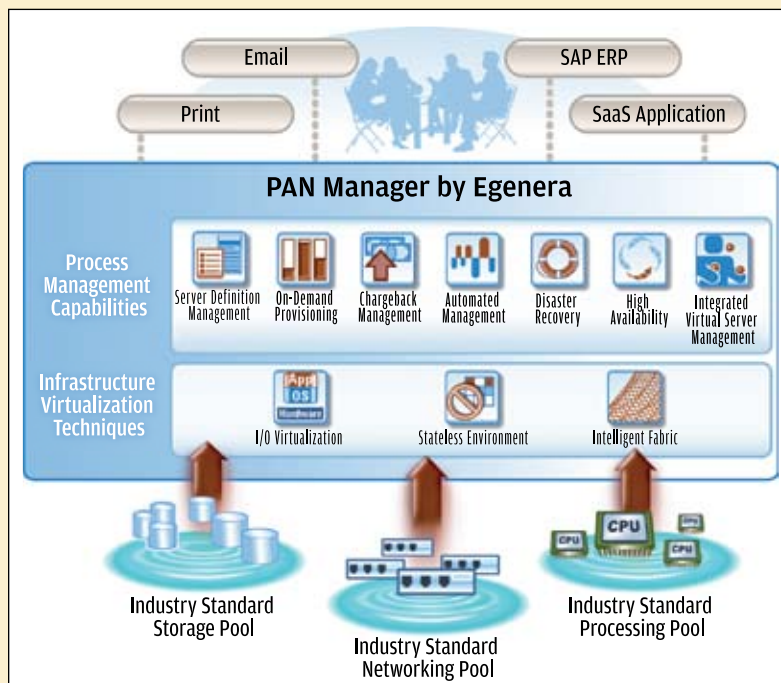
The data center infrastructure underlying a multi-tiered SAP landscape can be complex, especially for companies with extensive volumes of automated business data and processes. This infrastructure – made up of client and server hardware, operating systems, storage systems, and networks – provides the computing environment necessary for running SAP applications.

But companies can fall short of achieving the levels of performance, availability, and scalability they expect from

their infrastructures because they rely on costly, time-consuming practices, such as maintaining static server configurations, over-provisioning resources, and employing labor-intensive maintenance procedures. Consequently, data center infrastructures become segmented, brittle, and difficult to manage over time. And the budgetary and competitive costs of this strategy can only grow because of the need to support continuously changing business demands.

Enterprises that want to improve IT agility and resilience should treat their data center infrastructure not as a loosely connected set of computing silos, but as shared pools of virtualized resources that can instantly satisfy the performance and availability requirements of complex business applications. This approach is not about virtualization for the sake of virtualization, but rather an intelligent use of virtualization technologies combined with an intuitive management framework. The resulting infrastructure establishes the foundation for the *reliable, dynamic data center*.

FIGURE 1 ▼
PAN Manager
provides virtual
infrastructure
management



Enabling the Reliable, Dynamic Data Center

To help companies build a reliable, dynamic data center, Egenera offers several software-based capabilities (see **Figure 1**). PAN Manager Software by Egenera is an advanced management suite that aggregates servers into pools of processing resources – just as a *storage area network* (SAN) creates virtual pools of data storage. This approach provides IT administrators the flexibility to assign SAP components to servers based on processor and memory requirements, without having to worry about hardware or software configurations. PAN Manager automatically provisions servers with the appropriate software stacks, storage resources, and network identities.

Additionally, PAN Manager's processing pools can contain both physical and virtual servers, giving administrators the flexibility to manage a combined SAP infrastructure using a single set of tools. PAN Manager also enables applications to retain their bindings to network addresses and storage logical units, regardless of which server hosts the application.

PAN Manager is built on an integrated, two-tiered framework. The bottom tier combines three virtualization functions that together form an integrated, shared *processing area network* (PAN):

- The intelligent communication fabric is an intra-PAN communication path that transmits storage, network, and control data internally among system components and between servers and shared external interfaces. The fabric offers a higher throughput rate than is typically found in data center networks. SAP applications can achieve accelerated performance with this fabric because TCP/IP streams flow across it without leaving the PAN.
- All physical storage and data network interfaces accessed by the servers within a PAN reside in separate, redundant I/O controller nodes. The controllers, together with the fabric, provide PAN Manager's I/O virtualization capability. With this capability, all storage and network I/O is abstracted, thus ensuring secure, priority-based data flows between servers and their storage and network resources. I/O virtualization lets IT administrators treat physical servers as logical entities, without the need to cable, configure, and manage individual interface devices.
- PAN Manager does not utilize local storage or state information on the servers. Instead, each server operates in a stateless environment, which removes the static configuration information from the servers that would require cumbersome backup and restore operations, or servers to be manually configured. Operating system and application images, network names, and addresses are stored within the SAN and invoked when the server is booted.

A unique element of PAN Manager is an XML-based facility that lets IT administrators create logical server definitions. These definitions include all of the information needed to automatically assign an SAP application service to any available physical or virtual server without configuring the hardware or installing a software stack. This capability enables IT administrators to provision servers and allocate applications in minutes, ensuring optimal use of computing equipment and reducing the number of servers in the data center.

Manage Processes Within a Virtualized Infrastructure

In addition to its infrastructure virtualization technology, PAN Manager offers four component modules that both automate and simplify infrastructure management:

Egenera: Embracing the Strength of Partnership

Egenera has been an SAP global technology partner since 2005. In that time, SAP customers around the world have turned to PAN Manager to help them manage their data center infrastructures. Egenera has received certification for SAP solutions running on major operating systems, including Microsoft Windows, Linux, and Solaris.

Egenera also maintains SAP Customer Competence Centers (SAP CCCs) in North America, Europe, and Asia. In addition, Egenera has received the Adaptive Computing certificate of conformity for integration with SAP NetWeaver on the Microsoft Windows operating system.

For more information about Egenera's partnership with SAP, please visit www.sap.com/ecosystem/customers/directories/technology/egera.epx.

PAN Builder Software by Egenera provides foundation management functionality for configuring, monitoring, and controlling the PAN. With PAN Builder, IT administrators can assign pools of physical resources, virtual environments, and network and storage assets where and when needed.

PAN Server Portability Software by Egenera allows administrators to migrate software running on one server to an alternate server for both scheduled and unscheduled events. This can help companies recover from a server outage or scale an application in response to spikes in usage. In the case of failover, each server's identity, including network and storage mappings, is automatically preserved and reestablished without user intervention.

PAN Portability Software by Egenera helps enterprise operations reliably recover from data center outages. It enables administrators to bring the data center back online within minutes after a failure – without complex run book scripts or costly backup and restore operations. PAN Portability eliminates the need for one-to-one backup sites while enabling rapid recovery that is consistently correct.

PAN vmBuilder Software by Egenera seamlessly integrates virtual machine technology into PAN Manager, allowing administrators to fully manage a combined physical and virtual server environment without having to juggle separate management tools.

PAN Manager brings high availability and disaster recovery to all applications.

Is a Static Infrastructure Holding You Back?

Most companies rely on unnecessarily expensive and complex data center infrastructures to support their applications. The static nature of these infrastructures has several unfortunate side effects, including:

- Backup systems that are useful after a system or site outage, but unproductive the rest of the time
- The need to purchase costly, over-provisioned servers in anticipation of future increases in utilization
- Difficulty synchronizing test and development configurations with production configurations
- An inability to repurpose servers based on workload schedule
- Disaster recovery systems that are available for only a portion of the applications
- Lengthy downtime for hardware and operating system updates

The bottom line is that a static infrastructure inhibits a company's ability to add and modify automated business processes on demand. With PAN Manager, IT administrators can quickly add new SAP functionality, matching servers

to the processor and memory requirements of new components. And when spikes in user demand call for more resources, those components can be moved to higher-performing servers in minutes, either through manual intervention or in automatic response to utilization policies. There is no need for wasteful over-provisioning.

Of particular concern in a static infrastructure is the issue of managing a growing army of backup servers. High availability and a solid disaster recovery system are critical to maintaining user productivity and business continuance. But in a static infrastructure, backup servers require costly and time-consuming maintenance procedures to ensure they remain synchronized with production servers. This synchronization process is prone to error and likely to inhibit the rapid transition to the backup systems. Furthermore, backup servers cannot be used for other processing duties, leaving costly equipment sitting idle.

PAN Manager, however, brings high availability and disaster recovery to all applications. PAN Server Portability provides an N+1 high availability feature that lets IT administrators designate one server to back up any component that may fail. PAN Server Portability uses this same technology to provide N+1 disaster recovery. A single disaster recovery site, for instance, can function as backup for multiple production sites. PAN Manager automatically archives and synchronizes the logical server definitions, ensuring that the failover operation will replicate the production configuration exactly. And these backup servers need not sit unused. Egenera customers typically use disaster recovery systems for production or development workloads until they are called upon for recovery operations.

Additionally, many IT departments run their back-end SAP databases on physical servers while placing application services on virtualized servers. To support this mixed configuration, PAN Manager works with leading server virtualization software products, enabling IT administrators to manage both physical and virtual servers using the same tools and procedures and sharing the same pools of network and storage resources.

Conclusion

PAN Manager establishes the dynamic foundation that is necessary to sustain a resilient SAP application environment. The result is a data center that responds to changing business needs while lowering costs and easing management complexity. To learn more about Egenera's PAN Manager, visit www.egenera.com. ■

Maintaining a Resilient SAP Environment: PAN Manager Use Cases

Upgrading Hardware

Task: Move an SAP component from a dual-core to a quad-core processor.

Operations: Insert a quad-core server into the chassis. Use PAN Manager to automatically move an entire software stack to a new server.

Benefits: The server is automatically connected to storage and network resources. PAN Manager installs new hardware drivers and ensures that the identical software stack is moved to the new server.

Cloning an SAP System

Task: Create a duplicate SAP production system for training or for determining problems.

Operations: Create a copy of the SAP databases. Copy SAP software configuration profiles using PAN Manager. Adapt the configuration profiles as necessary for the new environment and databases. Identify and allocate physical servers. Start the configuration using PAN Manager.

Benefits: Clones the entire SAP system in minimal time without requiring physical configuration. Duplicates the production environment and maintains all network associations among SAP components. Servers can be rapidly repurposed once the clone system is no longer needed.

Adding New SAP Applications

Task: Add a financial application to the SAP landscape.

Operations: Create logical server definitions for the application, including operating, network identities, and storage resources.

Benefits: The server definition need only be specified once and then used to migrate the new application into production.