



**Hewlett Packard
Enterprise**

Brochure

Optimize Critical Workloads

HPE Virtualization Continuum for HP-UX



With growing business demands and challenges, you want to get the most utilization out of the servers you have. You also want the flexibility to move your resources and workloads around as needed, to meet your fluctuating business requirements.

Consolidating your IT resources from smaller, dedicated servers to a streamlined environment of fewer, larger servers—each capable of hosting multiple applications and workloads—can help you: save money, increase service levels, and reduce complexity.

Which vendor can best help you achieve your utilization and consolidation goals? Which company brings a technological advantage to the table that can turn a great idea into a real difference to your bottom line? Before consolidating your IT resources, you need to consider a lot of factors. Without an expert to help you, consolidation can become a complex task.

HPE expertise and experience, proven by its own IT consolidation, can help you achieve your goals. Let's look at one of the basic enablers of consolidation: server virtualization. The right combination of isolation and flexibility, along with a solid understanding of how virtualization can impact server utilization, is critical to success.

HP-UX virtualization background

The HP-UX operating system enables two different types of virtualization depending on your workload needs:

- Partitioning solutions such as Virtual Partitions (vPars), which have a higher degree of isolation and less resource sharing.
- Integrity Virtual Machines (VMs), commonly referred to as shared guests, which have a higher degree of resource sharing but less physical isolation.

Briefly, a Virtual Partition is an instance of an HP-UX 11i v3 operating system having its own dedicated physical CPU cores and dedicated memory. The storage and network I/O is in shared-mode inside the vPar. Each instance of HP-UX running in a partition is isolated from all other instances, providing application and OS fault isolation.

In contrast, Integrity VM instances are abstractions of physical machines. The environment of the VM is virtualized and managed by the Virtual Machine Monitor (VMM) subsystem, which allocates a certain number of virtual CPUs and virtualized memory to each VM. Each VM runs an instance of HP-UX.

Both vPars and VMs can reside on the same physical platform, referred to as the Virtualization Services Platform (VSP). The VSP is a specialized HP-UX host that includes a hypervisor to provide maximum system performance for vPars and Integrity VM guest instances. While the hypervisor is used for managing the VMs, it does not play any role in managing vPars after the vPar kernel is booted.

“The HPE Matrix Operating Environment¹ lets us stretch our resources and tailor them to the computing workloads we have at a specific time.”

– Margarida Machado, information system manager, Sociedade Central de Cervejas

¹ Formerly HP Virtual Server Environment.



Value delivered straight to your server

With HP-UX 11i v3, simplify and unify IT, and deliver the always-on, dynamic and enduring capabilities needed to meet your mission-critical computing requirements. Increase flexibility, while reducing risk and delivering compelling value, within the industry's first mission-critical converged infrastructure, ideal for mission-critical applications such as application and database servers.

Pre-test configurations with a broad range of ISV applications, presented in various reference architectures. And, enable your investments to evolve with your business with the module system design of HPE Integrity servers and open standards.

Management tools made easy

Enable your enterprise to achieve a greater return on IT investments. Create virtual servers that can automatically expand and shrink, based on the service-level objectives for the workloads hosted. Create virtual servers that can automatically expand and shrink, based on the service-level objectives for the workloads hosted. Dynamically enhance IT infrastructure with the integrated virtualization and infrastructure management tools included in HPE Matrix Operating Environment (OE) for HP-UX¹, (and the greater HP-UX 11i v3 Virtual Server Environment Operating Environment, VSE-OE).

Maintain service levels in the event of unexpected downtime with tight integration of HP-UX virtualization and infrastructure management with HPE Serviceguard Solutions for high availability and disaster recovery. Reduce costs by dynamically allocating reserve capacity when needed, with HPE Utility Pricing Solutions. Together, the powerfully integrated HPE Virtualization Continuum for HP-UX and the Matrix OE infrastructure management solutions dynamically align server resources to your business requirements, helping your organization to reduce costs and increase service levels.

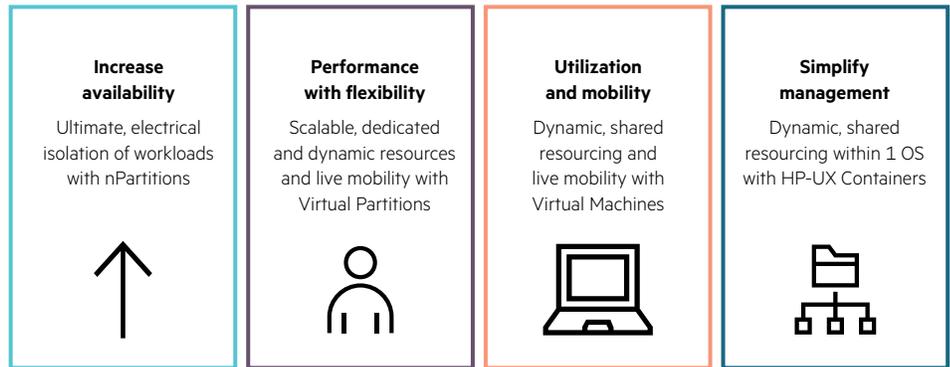


Figure 1: HPE Virtualization Continuum for HP-UX

Virtual solutions for virtually everything

With HPE’s complete and comprehensive line of virtualization capabilities, known as HPE Virtualization Continuum for HP-UX, get the most from your HPE Integrity servers, and consequently, superior results from your IT consolidation efforts.

Do more with less

With the HPE Virtualization Continuum solutions, overcome one of the major challenges of the enterprise—consolidating diverse workloads to most effectively optimize your computing resources and workload management, while improving Return on IT investment. Flexibly isolate your operational environments and applications to provide data center flexibility, security, and availability.

With HPE Matrix OE for HP-UX, your server environment can balance supply and demand based on your business requirements effortlessly, helping your organization reduce costs and increase service levels.

**Increase availability**

Electrically isolate your most critical workloads, by confining issues to particular hard partitions (nPartitions). This keeps IT processes running to support your business—the key to a mission-critical converged infrastructure. Each nPartition acts as a separate physical server, with its own operating system, applications and resources. Reboots and most hardware upgrades require only the affected nPartition(s) to be brought down. nPartitions are available on both Superdome 2 servers and the latest Integrity blades. For flexibility on Superdome 2 servers, dynamically migrate processor core and memory usage rights between nPartitions.

Performance with flexibility

Enable high performance workloads with scalable, dedicated resources that can be dynamically adjusted—with the soft partitioning technology, HP-UX Virtual Partitions (vPars), that works on all current HPE Integrity servers. Isolate workloads into separate virtual partitions, within an nPartition or server, each with its own: operating system, applications and resources. Assign processor core and memory resources to different vPars, and with vPars v6, share I/O resources. Deploy this simple methodology for high performance, high scalability, and predictable resourcing.



Utilization and mobility

Create multiple virtual servers, with dynamic, shared resourcing and mobility on HPE Integrity servers or nPartitions—with Integrity VM, a software virtualization technology. Isolate workloads within a VM, each with its own: operating system, applications and virtual resources. Increase flexibility by dynamically sharing processor cores and I/O between virtual machines. Utilize dynamic memory reallocation to easily increase/decrease VM memory, especially useful for disaster recovery scenarios. Connect multiple VMs through a single physical network connection with the virtual network switch. Provide a high level of software and security isolation between the VM Host and the virtual machines by assigning different Integrity privilege levels for the VM Host and guests. And enjoy online mobility with Online VM Migration, which moves a running Integrity VM/vPar, its guest OS, and applications to a different server or hard partition, without an OS reboot or application restart.

The online migration capability enables an administrator to move a running vPar, its OS, and its applications to an identical host system without service interruption. While the vPar is moved from one host to another, the guest OS and all its applications remain active, without requiring an OS reboot or application restart. There is a minimal amount of time (depending on size of guest and other parameters) in which I/O activity is frozen for the vPar, but it is never shutdown during the migration process.



The capability to perform online migration has been available for Integrity VMs (shared guests) since the release of Integrity VM v4.1; however, the physical and isolated nature of vPars has imposed restrictions on vPar migration capabilities. With the HP-UX 11i v3 March 2016 update, modifications to the OS kernel and hypervisor will pre-enable online migration of a vPar, later planned patches to HP-UX 11i v3 will enable the online migration feature. This will allow customers to have the same benefits of flexibility and availability that has been available with Integrity VMs.

Simplify management and licensing

Consolidate multiple workloads within a single HP-UX 11i v3 operating system image with the dynamic, shared resourcing of HP-UX Containers. Dedicate or share processor core and memory resources. Configure this type of shared O/S virtualization with highly granular security properties. Choose the type of container required workload containers (for easiest ongoing manageability), system containers (for easiest setup and sharing of system resources), or HPE 9000 Containers (to consolidate older HPE 9000 workloads onto HPE Integrity servers.)

Choose the HP-UX virtualization technologies that best meet your workload requirements.

And then, combine them with the HPE Matrix OE infrastructure management solutions to dynamically align server resources to your business requirements, helping your organization to reduce costs and increase service levels.



Getting started with IT consolidation

Is your organization considering virtualization as part of an IT consolidation project? An IT consolidation initiative is an ambitious undertaking—one that is best approached with a sound vision, detailed planning, and a team with extensive experience relevant to the project.

Leverage HPE's proven expertise, collaborative partnering, and flexible approach to help you successfully consolidate your IT resources, to do more with less.

Learn more at
hpe.com/info/vse



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