



Microsoft® Hyper-V combined with LiquidIQ deliver the Dynamic Data Center

Virtualization of the data center is providing greater service agility, higher asset utilization and lower management costs.

Liquid Computing's LiquidIQ is a converged system that combines standard physical data center resources with sophisticated management and control software that allows for unique capabilities within Hyper-V environments. Hyper-V gives data center managers the ability to tailor the utilization of their server resources and provide much more IT flexibility through the use of Virtual Machines (VM). However, these capabilities are constrained by the inherent limitations of rack mount servers and their associated I/O architectures.

On-Demand Hyper-V Deployment

Traditional rack mount servers provide a static set of processor, memory and networking capabilities. Hyper-V is a slave to those static rack mount server characteristics.

The LiquidIQ system is fully software defined: users can change the physical components of a LiquidIQ Logical Server by simply editing its software attributes. Processor, memory and networking characteristics of the LiquidIQ Logical Server can be altered through simple software commands or driven via policy. LiquidIQ allows the user to simply alter the physical characteristics of the hardware underlying a Windows Server® 2008 Hyper-V instance.

Hyper-V's higher-level features like Quick Migrate provide the ability to adjust the VM mix across Hyper-V servers according to business and workload needs. LiquidIQ offers the ability to dynamically and programmatically add or remove Hyper-V servers to resource pools on demand to achieve a completely automatic and scalable data center. This integration provides the ability to match and adjust server resources directly to workload needs, throughout the day, week, or business cycle.

Hyper-V/System Center Virtual Machine Manager (VMM) and FabricBoss™ Integration

Microsoft Hyper-V virtualization can be tightly integrated with the LiquidIQ FabricBoss distributed control and management software to achieve total control over your Hyper-V server assets and complete IT infrastructure. As Hyper-V resource utilization decreases, VMs can be collected among fewer hosts thus freeing the remaining hosts to either be powered off or completely repurposed. As workloads increase among existing servers in a particular resource pool, System Center VMM can direct LiquidIQ FabricBoss to allocate and boot available hardware from spare pools leveraging the configuration retained in templates that describe all aspects of the Windows Server 2008 Hyper-V host: internal and external networking, storage, OS variables, MAC and IP address. This provides dynamically adjustable server resource pools that match workload needs and minimize under-utilized assets.

NetApp™ and FabricBoss Integration

The LiquidIQ FabricBoss distributed control and management software integrates and encompasses the NetApp software APIs to extend the LiquidIQ simplified and centralized IT infrastructure management operations to include storage operations such as LUN creation, scaling, cloning and template operations. In addition to these benefits, this tight integration also delivers rapid VM image provisioning and cloning.

LiquidIQ provides the compute, networking and I/O resource flexibility that complements Hyper-V and System Center VMM to deliver all the benefits of complete dynamic data center virtualization.



When integrated with LiquidIQ, Hyper-V and System Center VMM are able to manage and control the complete IT infrastructure from external storage, access switches, server OS and networking configuration, and VMs.

System Center VMM Gains Control of Servers, Networking and I/O

System Center VMM can dynamically balance VM loads across multiple Hyper-V servers. However, rack mount servers are statically defined by their manufacturer and their components cannot be changed except for PCI card changes.

System Center VMM and the Hyper-V hosts it is managing are limited by the subnets and/or VLANs that are defined on the Ethernet switching networks in the data center. Rack mount servers are subordinate to the connectivity zones defined on the Ethernet switches. This architecture complicates and increases the cost of load-balancing, disaster recovery resource allocation, or other VM-related activities.

LiquidIQ delivers software defined networking in addition to servers. Subnets, VLANs and I/O routes are simply software definitions under the LiquidIQ system, and can be easily redefined. This allows System Center VMM to create new Hyper-V servers inside the appropriate subnets/VLANs and configure the I/O routes on the fly. This eliminates the costly and time consuming processes that typically involve coordination of server and networking groups when using rack mount servers.

Network Capacity Control

VM consolidation has been possible due to increasing server CPU speeds and memory capacity. This has led to an increased burden on networking bandwidth and throughput. In the traditional server and switch configurations, increasing the networking capacity is costly with respect to acquisition and management aspects. LiquidIQ provides the ability to scale networking available to Hyper-V servers through simple module insertion and software provisioning commands, greatly reducing both the acquisition and management burden for such IT operations.

Linear Cost Over Scale

LiquidIQ is designed to scale linearly with respect to performance, management and cost. Hyper-V is a powerful mechanism for reducing data center costs and increasing resource allocation, flexibility, and asset utilization. IT is constrained by inflexible and costly traditional rack mount server and switch infrastructure. LiquidIQ provides the compute, networking and I/O resource flexibility that complements Hyper-V and System Center VMM to deliver all the benefits of complete dynamic data center virtualization.

About Liquid Computing

Liquid Computing makes data centers easy to manage by delivering an integrated solution, LiquidIQ, that makes complicated infrastructure changes dynamic and effortless. LiquidIQ allows the entire data center to be defined and managed in software, enabling new service offerings, an order of magnitude reduction in time to deployment of applications and dramatically reduced data center operating costs. To learn more about Liquid Computing, LiquidIQ, and the latest advances in virtualization and convergence, please visit www.liquidcomputing.com, email info@liquidcomputing.com or call 1-877-592-2666.