Intalio and Mellanox bring InfiniBand Solutions to Enterprise Cloud Computing

Reduces hardware acquisition costs dramatically while improving cloud services delivery through significantly higher application scalability and performance

Problem/Challenge

Cloud computing is changing the way IT is managed and delivered. The cloud offers a platform for agile and cost-effective business applications and IT infrastructure and represents a fundamental shift in enterprise computing.

However, leveraging the cloud has proven to be a challenge for many organizations. While large Web service providers such as Amazon or Google can afford to dedicate the resources necessary to build a cloud stack, the average IT department of even the largest companies often cannot.

Public clouds can take control of the data from the hands of the user; enterprises adopting a public cloud must also address concerns over the privacy and safety of their data.

A private cloud offers a number of benefits for the enterprise. Drawing from a centralized, shared pool of resources can facilitate greater flexibility and enable IT managers to provide much better services to their business users at a lower cost. However, the private cloud can deliver poor results, unless it is optimized for performance, efficiency, scalability and quality of service.

Solution

Global 2000 companies and government customers which are eager to adopt private cloud solutions should consider Intalio, which through Intalio|Cloud offers the first cloud computing platform truly designed for the needs of large enterprises. Intalio offers all the same benefits of a software-as-a-service (SaaS) provider, while allowing users to maintain compliance and data security in their own data centers.

Utilizing HP BladeSystem blade servers and enclosures, solid-state drives (SSD) for all database storage, and Mellanox InfiniBand 40Gb/s interconnect technology, the Intalio|Cloud Appliance puts into a single rack all the hardware and software required for building a true enterprise-class private cloud computing platform. The Intalio|Cloud Appliance is used for powering Intalio|Cloud On-Demand and Intalio|Cloud Managed-On-Premises. With the later option, all hardware and systems administration services are provided on-premises by Intalio, while customers only pay for a monthly user fee.

InfiniBand plays a key role because it delivers the speed, performance and computing power that are essential for enterprises that want to take full advantage of the cloud. InfiniBand offers customers record bandwidth (40Gbps) and unrivaled low latency (1.2 microseconds). By meeting the needs of the most demanding customer and applications, the Intalio|Cloud Appliance is ideally suited for a broad array of cloud services while meeting the highest SLAs.

Results

Using Mellanox end-to-end InfiniBand solutions, the Intalio|Cloud Appliance benefits from a unified networking fabric that eliminates the need to deploy and manage multiple and low-performing networking technologies such as Ethernet and Fibre Channel. It reduces networking hardware acquisition costs by up to 50 percent and network management costs by up to 30 percent. The InfiniBand-based converged fabric dramatically simplifies the architecture and therefore reduces costs by as much as 20 percent in administration and 25 percent or more overall.

InfiniBand equips the Intalio|Cloud Appliance with high bandwidth and low latency for the server and storage connectivity. It reduces the I/O overhead incurred by hardware virtualization to implement a truly scalable multi-tenancy architecture. By offering up to four times as much bandwidth as 10 Gigabit Ethernet, InfiniBand dramatically reduces the performance impact of real-time Virtual Machine replication for fail-over purposes. And thanks to its very low latency, Mellanox InfiniBand makes it possible to create a unified memory space across multiple blade servers, allowing applications and databases to be scaled up without having to use dedicated systems. This architecture reduces hardware acquisition costs by up to 75% for Intalio.

Intalio|Cloud Ecosystem

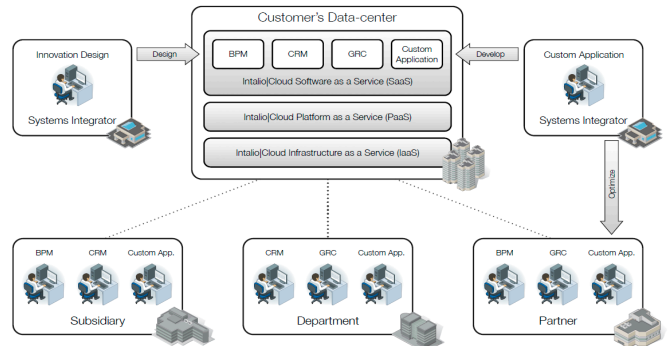Use case: Mitsubishi Corporation (400,000 employees, 1,500 subsidiaries)

Figure 1: Deployment Scenario for a Large Trading Company

Compute Blade: 16 x HP ProLiant BL490c G6
2 x Quad Core Intel Xeon X5570 2.93GHz (8 cores total)
144GB (18 x 8GB) 1333MHz PC3-10600 DDR3 Registered DIMMs
No embedded storage

Database Storage: 16 x HP StorageWorks SB40c Storage Blade
6 x OCZ Vertex Series SATA II 2.5" SSD 250GB in RAID 0 configuration (stripping)
20,000 IO/s, 1.5GB/s read, 1GB/s write, 100 microseconds latency
Used for database storage

File Storage: 4 x HP StorageWorks 600 Modular Disk System
70 LFF SAS or SATA Drives, 3Gb/s SAS connectivity
140TB in RAID 6 configuration (stipped set with dual distributed parity)
Used for file storage and database backup

Network Switch: 2 x HP 4X DDR InfiniBand Switch Module
20Gbps per port, 1.3 microseconds latency
16 Internal 4X DDR downlinks, 16 external 4X DDR QSFP uplinks
16 Internal 4X DDR downlinks, 8 external 4X DDR CX4 uplinks

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System Requirements:	Configuration Overview:
Customer Accounts: 2,304	32 CPUs
Number of Users: 62,208 (27 per Account)	128 CPU Cores
Memory per Account: 1GB	2.3TB Memory
Database Storage per Account: 25GB	24TB SSD Database Storage
File Storage per Account: 250GB	528TB HDD File Storage

Figure 2: System Configuration Overview

Mellanox TECHNOLOGIES

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