

Amdocs® Real-Time Charging, Powered by VMware



For Amdocs, it's important that our customers enjoy a flexible, scalable, high performance experience that can rapidly adjust to change in a real-time environment. In order to ensure this result, the Amdocs Convergent Charging solution is being powered by the VMware vSphere® virtualization and cloud computing platform.

KEY HIGHLIGHTS

Challenge

To enable providers to run the Amdocs Convergent Charging solution, a real-time charging system, in a centrally-managed, virtualized environment.

Solution

The Amdocs Convergent Charging solution is powered by the VMware vSphere® virtualization and cloud computing platform.

Results

- Delivers a highly flexible, virtual software solution, with carrier-grade performance and low latency.
- Scales quickly and efficiently to support massive real-time operations.
- Reduces the total cost of ownership (TCO) with significant savings from reduced hardware, and third-party software.
- Increases the return on investment (ROI) due to operational efficiencies, and increased flexibility through virtualization.
- Reduces the time-to-market for new services and offerings.
- As a foundation technology, VMware virtualization enables next gen solutions and network function virtualization.
- VMware virtualization technology is cloud-ready and it provides the prerequisite for creating private cloud solutions.

Amdocs Delivers Flexible, Scalable, High Performance Virtualized Real-Time Charging, Powered by VMware

“The industry is evolving towards network function virtualization as a way to help service providers decouple software workloads from hardware, to considerably improve cost-efficiencies and business agility. To ensure our customers can benefit from the latest advancements in this area, we certified our CES 9 product portfolio on VMware vSphere® and introduced the industry's first, virtualized network control, and now, real-time charging systems.”

— Rebecca Prudhomme, Vice President, Product and Solutions Marketing, Amdocs

With mobile technologies advancing at a furious pace, service providers need to have the flexibility to rapidly launch and monetize new services and offerings, while managing current operations efficiently. That is why Amdocs intends to deliver their Amdocs Convergent Charging solution, a real-time charging system, in a highly flexible, high performance, centrally-managed VMware® virtualization environment. This success story describes how Amdocs initially deployed their Convergent Charging solution with VMware vSphere®, and the excellent results they achieved.

Introduction

For more than 30 years, Amdocs (<http://www.amdocs.com/>) has been a leading global provider of customer experience systems. Service providers rely on Amdocs to simplify the customer experience, harness the explosion in data, stay ahead with new services, and improve operational efficiency. Amdocs uniquely combines a market leading Business Support System (BSS), Operational Support System (OSS), and network control product portfolio, with value-driven professional services and managed services operations. With revenue of \$3.2 billion in fiscal 2012, Amdocs and its 20,000 employees serve customers in more than 60 countries.

Amdocs Convergent Charging

Amdocs Convergent Charging is Amdocs' flagship product for delivering scalable, high performance, cost efficient, real-time charging in a single, integrated carrier-grade solution. It lays the foundation for an end-to-end, real-time event processing architecture for all types of charging, including prepaid, postpaid, online, and offline, with different lines of business, in a single convergent system.

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"We are proud to be involved in cutting-edge, communications industry advancements in carrier-grade virtualization and cloud computing with key players like Amdocs. Virtualized BSS capabilities that can be scaled up and down 'on demand' can help service providers dramatically reduce hardware requirements."

— Parag Patel, Vice President, Global Strategic Alliances, VMware

PROFILE

Industry

Customer experience systems and services

Corporate Headquarters

Chesterfield, Missouri, U.S.A.

Software

Amdocs Convergent Charging, a real-time charging system

VMWARE AT WORK

VMware vSphere 5.1 / ESXi 5.1

- VMware vSphere® 5.1 Enterprise Edition™
- ESXi® 5

VMware vCenter

- VMware® vCenter Server™ 5

DEPLOYMENT ENVIRONMENT

Primary Application

Amdocs BSS and OSS software

Everything – high-growth prepaid, postpaid, and convergent services – needs to be delivered in real-time, across all lines of business. Amdocs' charging technology innovations, including its run-time environment, deliver a manifold increase in operational efficiency and performance by eliminating complexity in its real-time architecture, thereby enhancing business agility and accelerating the time-to-revenue.

Amdocs Convergent Charging, Powered by VMware

In order to accelerate decoupling software workloads from hardware, Amdocs planned to run their Convergent Charging solution in a flexible, high performance, highly available virtual environment. Amdocs chose VMware, a key partner, to power this solution. Amdocs decided that the VMware vSphere virtualization and cloud computing platform would provide a preferred, optimal environment to enable this solution.

VMware vSphere increases the consolidation of physical servers, infrastructure, and the associated resources. Powering the Amdocs Convergent Charging solution using the VMware platform enabled rapid integration, the rapid allocation of computing resources, rapid access to those resources on demand, and increased utilization. By using VMware, Amdocs wanted to use less hardware and infrastructure, and increase energy efficiency, thereby lowering the total cost of ownership (TCO).

The VMware platform facilitates operational efficiencies, including faster response times, immediate access to datacenter resources, extensive security (to safeguard virtual servers and protect personal information and data), and simplified management.

Optimal, Agile Environment, Powered by VMware

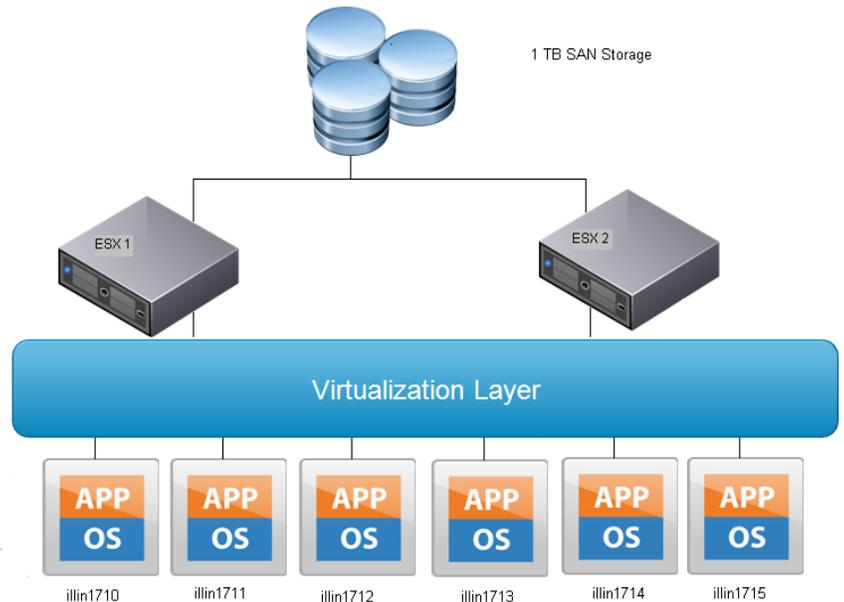
Amdocs wanted to test its Convergent Charging solution using the VMware vSphere 5.1 (ESXi) platform. Amdocs and VMware worked together at the Amdocs and VMware labs to develop the testing methodology and testing scenarios that would ensure the delivery of carrier-grade, virtualized real-time charging. The Amdocs Convergent Charging solution used the x86 Linux Redhat Enterprise operating system for this solution.

The purpose of the testing initially was to prove the solution's performance and high availability with the VMware vSphere virtualization platform as certification of Amdocs' Convergent Charging 9.0 (as part of testing the entire Amdocs suite). The test objective was to prove the performance (online and offline) and stability of the Amdocs Convergent Charging solution, including the performance of Amdocs high availability mechanisms, under VMware management.

The testing involved the Event Server, the heart of Amdocs Convergent Charging solution, and a key component of the event processing flow. Its in-house Amdocs InMemory Object Store (AIMOS) significantly reduces calls to the database and file-system, resulting in faster data access.

The testing was conducted in a production-like environment, as shown below.

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Flexible, Scalable, and Cost Efficient

The testing results demonstrate that the Amdocs Convergent Charging solution running on the VMware platform delivers real-time, carrier-grade performance that can support millions of subscribers. All of the testing results passed well within the acceptable limits for the system size and load:

- Online event processing stability was within the target latency KPI.
- Offline load testing using Amdocs Convergent Charging and Acquisition, and formatting applications, showed offline throughput gained 10,000 charges per second without rerunning events.
- The high availability target KPI was reached with a five millisecond latency and sub-second failover (switching between servers).

The results showed no significant differences as compared to bare metal.

Using VMware virtualization enables Amdocs to provide better scaling within high-end blade servers for improved utilization and growth with fewer limitations. By using the VMware virtualization infrastructure, the underlying hardware resources are separated from the application. There is minimal overhead for the hypervisor as compared to bare metal.

VMware virtualization improves performance with scaling that delivers the appropriate resources where they are needed most. In addition, it gives Amdocs customers the ability to scale out quickly. It provides for greater flexibility and elasticity to extend and increase resources such as on-demand memory, and to expand resource capabilities.

In addition, Amdocs Convergent Charging uses manual VMware vSphere® vMotion® for host maintenance. When a host needs to be put in maintenance mode, manual vMotion enables all virtual machines from that host to be migrated in an active state to an alternate host. This reduces the maintenance downtime from days to minutes.

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Amdocs Convergent Charging uses the VMware vSphere® Distributed Resource Scheduler™ (DRS) in manual and semi-automatic mode only. This avoids enabling the automatic vMotion of virtual machines in an active state. Amdocs Convergent Charging is a latency-sensitive application that requires a real-time response. An automatic vMotion on the Active Event server can result in adverse application response times.

Based on the test results, Amdocs and VMware recommend using vMotion in automatic mode only when the transaction load is not latency sensitive in order to avoid timeouts. Amdocs non real-time applications can be configured with automatic vMotion and achieve the required performance. VMware is working to enhance the hypervisor to address low-latency vMotion use cases.

By using VMware, a cluster can be easily replicated or moved from one environment to another. This includes use cases, such as moving virtual machines from staging to production, from one cluster to another within a data center, or deploying instances for scale out.

This solution uses VMware® vCenter Server™ to provide centralized monitoring including aggregating all resident virtual machines and hosts. vCenter uses patented analytics and an integrated approach to dramatically simplify management tasks and to give the intelligence and visibility needed to proactively ensure health, efficiency, and compliance with IT policies.

Moreover, the VMware platform allows service providers to enable a multi-tenant environment. Providers can improve the Quality of Service (QoS) and offer service level agreements (SLAs) to tenants through instance isolation and VMware resource pools. In a virtualized environment, service providers can run mixed workloads on the same physical cluster.

A VMware virtualized environment provides organizational boundaries to secure the data and isolate it in a multi-tenant environment. A cluster can be run in an isolated group of virtual machines, providing full data isolation and security, while sharing the same underlying physical hardware.

Conclusion

With the addition of virtualization to Amdocs Convergent Charging, Amdocs now offers the most advanced event-processing, real-time charging system available. Amdocs real-time charging provides the best-in-class charging performance on Linux-based software – and it enables the dynamic allocation of resources using an elastic, highly available cloud topology.

As a foundation technology, Amdocs intends to use VMware virtualization to enable next gen solutions and network function virtualization. In addition, VMware virtualization technology is cloud-ready, and it is the prerequisite for moving to a private cloud or hosted managed services roadmap.