



Enabling ADC Services

on VMware's vCloud Solution with Radware's
VADI™ and vDirect™ Plug-in for vCD – Solution Guide



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The Three-Step Customer's Journey to the Cloud

As business dynamics require organizations to be more agile, organizations need to address the constant demand to deploy and maintain an increasing array of IT services and applications. Cloud computing offers a new model, which simplifies data center infrastructure and operational processes for rolling-out new applications and maintaining them. The result is higher business agility, more efficient utilization of data center resources and significant IT cost saving.

VMware's vision allows the data center to transition into a cloud model through a 3 phase evolution journey safely and efficiently. Sharing the same vision, Radware's solution portfolio natively interoperates with VMware's three step journey and specifically with VMware's cloud solution. It optimizes the investment in each of the three phases of the journey towards an end-to-end cloud infrastructure.

Increasing IT Infrastructure Efficiency with Server Virtualization and ADC

The increasing number of applications and services required by organizations to execute day-to-day operations directly increases data center infrastructure complexity. This introduces the following challenges:

- **Increased IT costs:** Including higher expenses on new server and network infrastructure hardware, space, power and cooling, server administration, service and maintenance.
- **Reduced efficiency:** The traditional practice of a dedicated single server machine per application has led to underutilized server infrastructure and to server sprawl increase. As a result, IT departments have to spend more time on tasks such as server provisioning, configuration and maintenance. In fact, 70% of current IT investments remain focused on maintenance¹, instead of investing in proactive and innovative projects to improve IT services and service levels.

Server consolidation solutions, implemented with VMware infrastructure (e.g. VMware vSphere® and vCenter® product lines), enable organizations to meet the challenges of servers sprawl and underutilization, by consolidating numerous applications onto a single physical server, reducing the number of servers required and the associated costs significantly. This virtualized server infrastructure simplifies the deployment of new servers and applications and enables automation of computing resource management which increases IT infrastructure utilization and reduces management complexity.

While the benefits of virtualizing and consolidating the server infrastructure are significant, they can be further amplified through the addition of application delivery controllers (ADC). By combining VMware's virtualization infrastructure with Radware's ADC solution, customers can further improve server consolidation ratios through offloading CPU intensive tasks to a hardware optimized ADC appliance².

Furthermore, in order to extend the coverage of server virtualization to mission critical applications, the virtualized infrastructure on which they are deployed must ensure a higher SLA, which often means 24x7 availability, sustained high performance and tighter application server security.

VMware's solution addresses those SLA requirements through tools such as vCenter Site Recovery Manager (SRM). Radware's ADC solution enhances the SLA and efficiency of the virtualized infrastructure, through its inherent functionality set which includes:

¹ source <http://www.vmware.com/solutions/cloud-computing/index.html>

² Examples for virtualized server performance optimization can be found in various performance reports such as this one.

Additional performance reports can be found in [Radware's application page](#) – all tests are using VMware virtual server infrastructure

- a. **Enhanced high availability:** through application level health checks, and smart load balancing techniques – redirecting user sessions to the most available virtual application server resource and through global server load balancing – for full disaster recovery (DR) support
- b. **Advanced application acceleration:** functionality which offloads CPU intensive tasks such as **SSL offloading, TCP multi-plexing and TCP optimization**, freeing computing resources from the server infrastructure, resulting in higher server consolidation ratios, and improved application quality of experience (QoE)
- c. **Enhanced security:** protecting the application from denial of service (DoS) attacks, safeguarding the data, and ensuring service availability even when under attack

Moving into the Cloud: Physical to Virtual Application Silos

In order to complete the journey to the cloud, the virtualized infrastructure requires another layer of services that can represent all of the virtualized infrastructure elements as a shared pool of resources and group them into a catalog of virtual applications (vApp) and services that the user can easily provision and decommission with the click of a button.

VMware's vCloud Solution with vCloud Director®

VMware's vCloud Director builds upon the VMware vSphere foundation to enable virtual clouds that consist of a set of resource pools such as virtualized servers, storage, and network. It delivers the resources to users as fully automated catalog-based services that are made up of vApps. This concept enables the conversion of physical application silos to vApp stacks, built on a virtualized datacenter infrastructure.

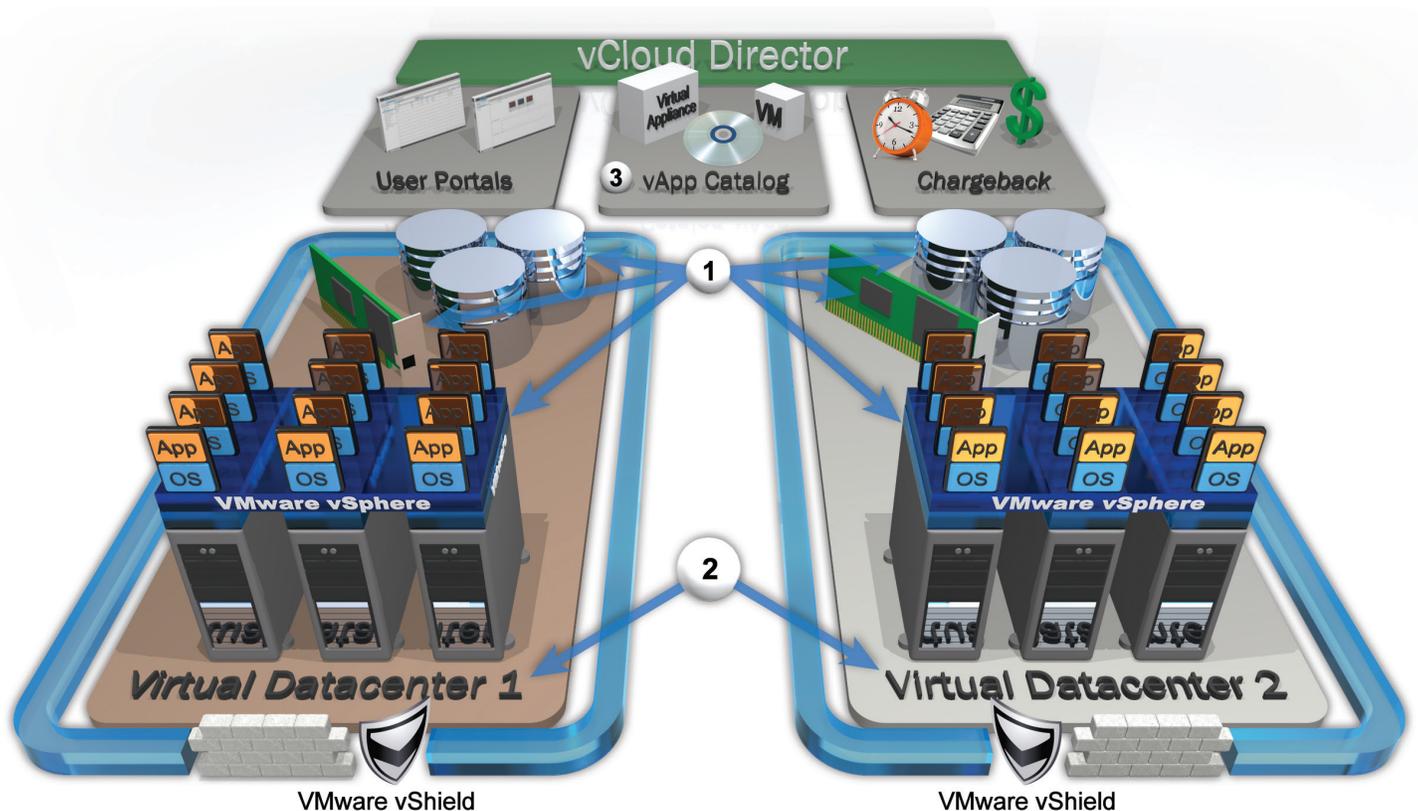


Figure 1 - The cloud model based on VMware's vCloud Director

Each virtual data center provides a different class of SLA (e.g. silver, gold, platinum) that can be differentiated by the amount of computing resources available, the type of storage, and high availability (e.g. redundancy) supported.

The services delivered by VMware's vCD solution accelerate end user time-to-market and enable rapid distribution and intelligent deployment of virtual application images. As a result, end users experience unprecedented responsiveness and agility, while IT reduces costs through increased consolidation, task automation and simplified management.

The ADC Challenge in the Cloud Environment

Physical application silos consist of physical server, storage devices, and physical ADCs. Virtual application silos on the other hand exist in the vCD solution, build on and leverage the virtualization of the application infrastructure. However, while servers, storage and other elements are virtualized to fit the new virtualized application (vApp) model, ADCs remained either physical or soft appliances (each with limitations), standing in the way of completing the transition from a physical to a fully virtualized application deployment. With physical or soft ADC appliances, provisioning a vApp requiring ADC services still involves manual configuration of corresponding ADC services.

The transition to a cloud model must ensure the application's SLA is not compromised, especially when it involves mission critical applications. The application's SLA relies on the functionality delivered by the ADC. It guarantees application availability, accelerates performance and increases efficiency.

Although soft ADCs can also be provisioned as a virtual appliance built as a part of the vApp, they still lack the ability to receive a dynamic configuration according to the actual deployment scenario (the same limitations also apply to physical ADC appliances). Furthermore, soft ADCs will only provide a basic SLA, and can't meet all application's SLAs, nor effectively offload CPU intensive tasks to another ADC virtual appliance. This is the reason that the majority of ADC deployments are relying on physical ADC appliances – to meet the strict SLAs of mission critical applications.

In order to fully leverage the benefits of the vCD solution and enable a fully virtualized application deployment, without compromising an application's SLA and the benefits delivered by the ADC, the ADC solution must adapt to the vCD cloud model:

1. ADC infrastructure (consisting of both specialized ADC appliances and soft ADCs) must be virtualized and provide a consistent functionality set, in order to fit into the cloud model.
2. The ADC solution must support and interoperate with the services and automated processes forming the vCD solution.

Radware's ADC Solution: Tailored to the vCD Environment

Radware's Virtual Application Delivery Infrastructure (VADI) solutions complement VMware's vCloud Director's offering transformation of computing resources, ADC services and virtualization services into an end-to-end integrated, agile and scalable cloud infrastructure. Radware's VADI solution enables the consolidation and virtualization of application delivery services and transforms them into an integral part of VMware's virtual data center architecture.

One of VADI's cornerstones is the virtual ADC (vADC) instance – a service providing a consistent, complete set of application delivery features such as load balancing, global SLB, application acceleration, integrated security, bandwidth management and more. vADC has the same performance predictability as a physical ADC and provides complete isolation between different vADC instances. Radware's vADCs can run on top of three different form factors (computing resources):

1. [Alteon VA](#) – a soft ADC running as a virtual machine on top of VMware's virtual server infrastructure
2. [ADC-VX](#) – Radware's ADC hypervisor that runs multiple virtual ADC instances on a dedicated ADC hardware
3. [Alteon](#) – a dedicated, physical ADC appliance, running a single vADC instance

VADI's vADC building blocks natively fit into VMware's vCD solution by providing a fully virtualized ADC infrastructure solution, which supports a wide range of SLAs. To ensure a vApp will maintain proper functionality, regardless of the SLA it requires and the corresponding type of vADC it receives.

Linking Radware's VADI with VMware vCD with vDirect

At the heart of the Radware and VMware joint solution is Radware's vDirect plug-in for vCD, designed specifically to manage, configure and monitor a Radware ADC instance for VMware's cloud infrastructure and ecosystem. vDirect plug-in for vCD seamlessly integrates with VMware's vCloud Director via open APIs, and provides all the building blocks and management interfaces required by vCD to provision, decommission, migrate, configure and monitor Radware's VADI vADCs and its computing resources within a virtual data center and private cloud.

ADC Service as an Integral Part of vApp

By using vDirect together with Radware's virtual ADC infrastructure, the vCD vApps can now be built to include ADC services as part of the package. Through the vDirect plug-in, vCD can automatically configure and manage the ADC services included in the vApp package, the same way vCD provisions all the other vApp components such as VMs, storage etc.



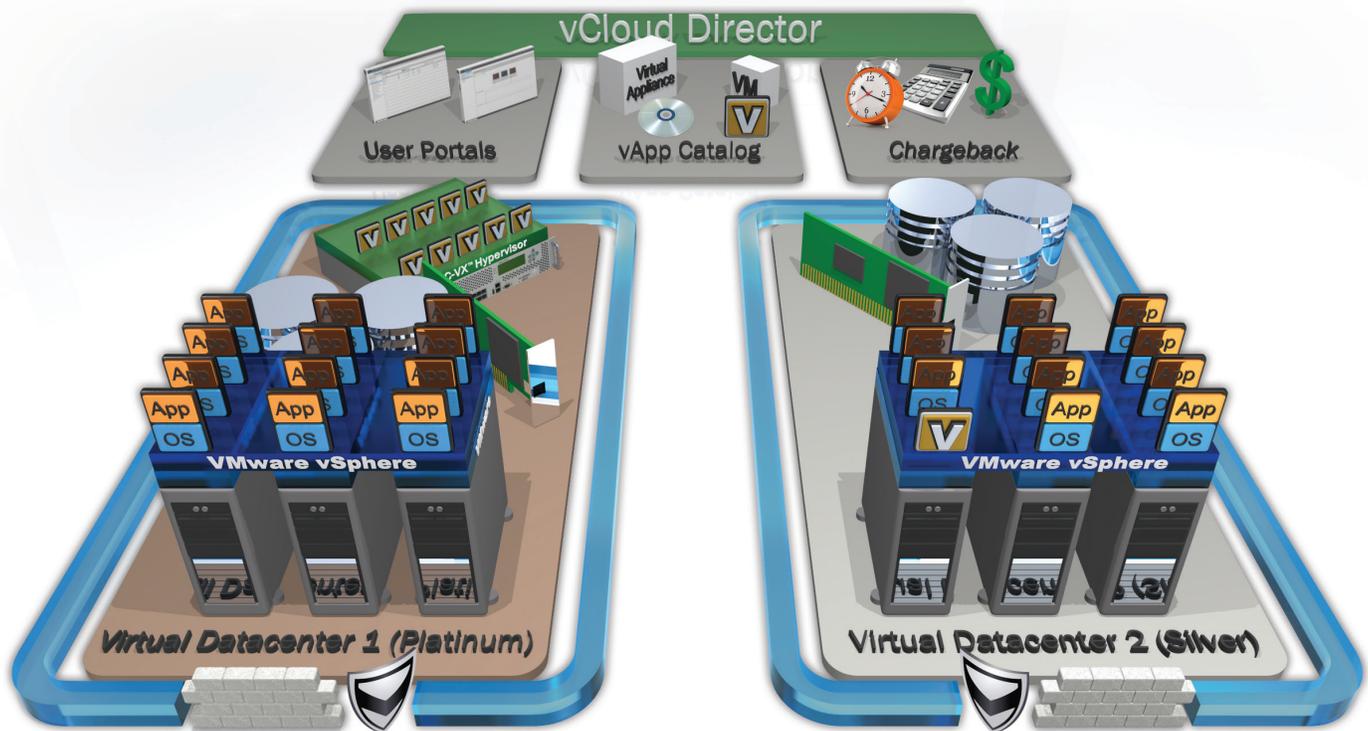


Figure 2 - supporting tiered cloud services with VMware & Radware Joint solution

Supporting Dynamic ADC Services SLAs

By providing three different form factors to host vADC instances, Radware's VADI solution enables differentiated and optimized ADC service SLAs, which are aligned with the virtual datacenter's SLA.

- vApps deployed in the silver SLA datacenter will receive ADC services with silver SLA, based on Radware's Alteon VA – soft ADC
- vApps deployed in the gold SLA datacenter will receive ADC services with platinum SLA, based on a vADC instance running on top of Radware's ADC-VX hardware based appliance
- vApps deployed in the platinum SLA datacenter will receive the same type of ADC services as with gold SLA, but with higher capacity per ADC service instance

The combination of VADI's vADCs and vDirect plug-in enables vCD to complete the virtual application deployment. The VADI solution provides the virtualization of the ADC infrastructure as well as the management and automation tools required to provision the corresponding ADC service within a vApp. Furthermore, to ensure consistency of the ADC service with various vCD services, VADI also offers a similar set of services, seamlessly accessible to the vCD provisioning system through the vDirect plug-in.

Extending VMware's vCD Benefits with Radware's VADI Solution

By allowing users to include ADC services in vApp templates and automate the provisioning of the corresponding ADC services of a vApp, Radware's VADI with its vDirect plug-in extends the benefits of VMware's vCD even further:

- **Streamlined provisioning of application delivery services** – IT managers save time, have fewer steps and simplify the way they interoperate and define new applications, which also includes an application delivery service. As a result, new services are introduced at lower risk with faster time to market
- **Faster vApp's ADC services provisioning and duplication** – through fully automated ADC resource provisioning processes – eliminating the need to expose ADC configuration and management to the end-user
- **Enhanced tiered services model** – Radware's vADCs are available in a variety of form factors and deployment models to fit any vCloud Director organization SLA. This allows users to provision the same vApp in different organizations, and automatically assign the correct vADC to the vApp according to the organization's SLA
- **Maximum agility, efficiency, and business continuity** – packaging a vADC as part of a vApp simplifies and speeds up the introduction of new applications, while ensuring automatic vADC configuration and capacity alignment with the application's configuration changes, and migration across virtual datacenters
- **Easy to scale virtual ADC infrastructure** – relying on various ADC-optimized computing resources, with the highest density of cost-effective vADCs
- **Service elasticity** – enabling automatic alignment of the vADC configuration with VM capacity changes (adding/removing VMs) of a vApp, eliminating the need of manual user intervention in vADC configuration
- **Reduced CAPEX and OPEX** - Radware VADI enables the consolidation and virtualization of application delivery services as an integral part of VMware orchestration and provisioning systems, resulting in savings in reduced operation and capital expenses

VMware and Radware Partnership Overview

Radware is a global leader in integrated application delivery and security solutions. Its solutions ensure maximum agility, full resilience, and highest efficiency of business-critical applications for over 10,000 customers worldwide in more than 40 countries, serving 50% of Fortune 500 companies including eBay, Boeing, Morgan Stanley, Fannie Mae, Verizon, AT&T and Lockheed Martin.

Radware possesses an innovative track record which includes being first to market with global ADC, security-integrated ADC and WAN link load balancing, as well as patents in multi-homing, behavioral security, global load balancing and more.

Radware has partnered with VMware in order to deliver superior cloud computing solutions that provide resiliency, agility, efficiency and security. As part of this partnership, Radware invested intensive efforts to integrate and certify its various ADC and security solutions with VMware solutions including:

- Radware's application delivery controller (ADC) solution for VMware View – validated integration with detailed deployment guide

- Radware's soft ADC, Alteon VA, running on VMware virtual server infrastructure, earned VMware ready certification Radware's soft Web Application Firewall (WAF), AppWall VA, running on VMware virtual server infrastructure.
- vDirect – a plug-in for vCenter Orchestrator and vCloud Director – enabling process automation for Radware's ADC
- vAdapter – a plug-in for VMware vCenter enabling alignment of Radware's ADC configuration with the changes in the virtual infrastructure.
- Radware's ADC is certified and provides increased performance for various applications, such as SAP NetWeaver, Microsoft, Oracle, PeopleSoft, and IBM WebSphere, all tested while running on VMware vSphere virtual machines, demonstrating the value of Radware's and VMware's joint solution (performance reports can be found on Radware's site)

This partnership results in significant business benefits to VMware customers, including higher business agility, increased efficiency, data center operations simplicity and cost reduction, as discussed in-depth in this document.

Summary

Radware's joint solution with VMware, based on Radware's VADI and an enhanced version of its vDirect plug-in for VMware's vCloud Director, allows vCD users to provision both application resources and a fully configured Radware vADC, as well as allocate capacity on demand according to the vCloud Director organization service level agreements (SLAs). As a result, vCloud Director users can align vADC provisioning with tiered SLAs seamlessly and without any manual adjustment to the vApp through a simplified and more agile end-to-end solution. Another result of the joint solution is increased utilization and operational efficiency which leads to reduced total cost of ownership.