Cisco Application Control Engine in the Virtual Data Center

At-A-Glance

Overview

Cisco® Application Control Engine (ACE) in the Virtual Data Center (AVDC) is part of Cisco's Data Center 3.0 solution, further simplifying virtual machine provisioning and operation.

Cisco ACE is the industry's only virtualized load-balancing and application delivery solution designed to meet the requirements of today's application delivery. Cisco ACE is a state-of-the-art virtualized load balancer and an application delivery solution that includes server load balancing, content switching, server offloading, and application optimization. Server load balancing, the primary capability of the Cisco ACE, is a mechanism for distributing traffic across multiple servers, offering high application availability and server resource utilization.

The Cisco ACE product family addresses many of the core challenges facing the virtual data center. These products provide an application delivery solution that improves application scale and availability while enabling better utilization of infrastructure resources through offload and compression technologies. The Cisco ACE products are evolving to include the following capabilities that integrate into a virtual data center:

- Virtual machine intelligence: Improved visibility into the state of virtual machines, applications, and the underlying support infrastructure
- Automation: Improved coordination and integration with third-party products (such as VMware vCenter), allowing Cisco ACE to respond dynamically to changes in the network and share network events
- Performance and scale: Hardware enhancements that address the increased scale requirements demanded by large enterprise and service provider customers
- Simplification: Streamlined deployment and ongoing maintenance, including simplified provisioning through guided setup, simplified deployment through the virtualization capabilities of the Cisco ACE, and simplified upgrades through the Cisco ACE licensing model

What Does Cisco AVDC Do?

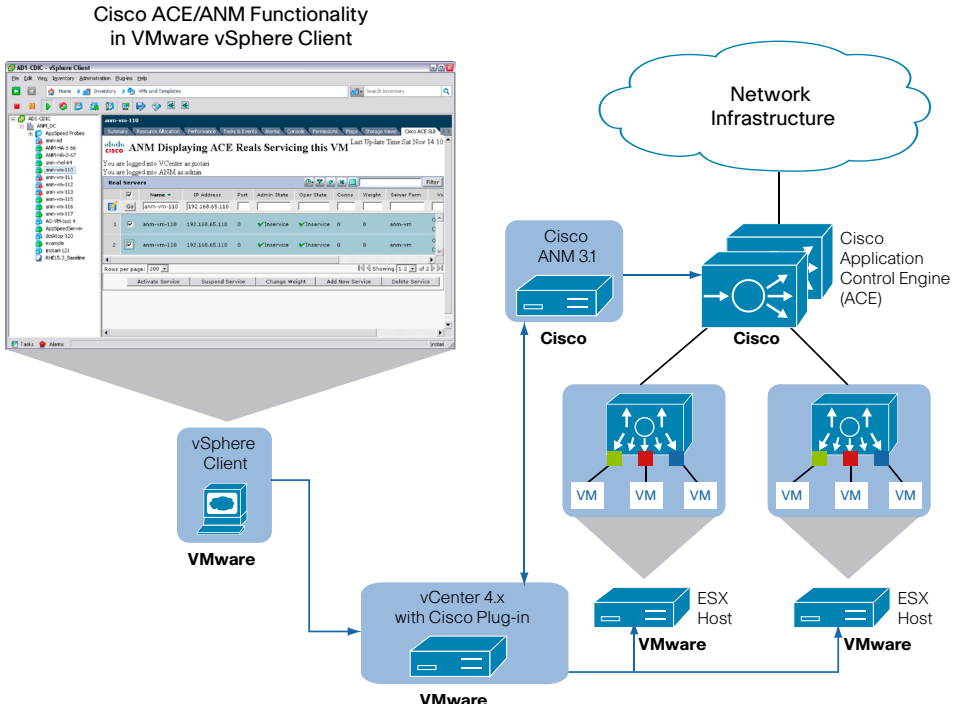
The first phase of Cisco AVDC addresses application deployment in a VMware environment (Figure 1). It delivers simplified provisioning of application delivery services by integrating Cisco ACE with VMware vCenter through the implementation of a VMware vCenter plug-in that securely communicates with Cisco Application Networking Manager (ANM) 3.1.

From within VMware vCenter, using the functions integrated by the plug-in, the user can:

- Deploy virtual machines as real servers into an existing server farm
- Monitor application traffic flow for virtual machines through the Cisco ACE
- Securely activate and suspend application traffic flows through the Cisco ACE for the associated real servers

This single-pane provisioning, application traffic monitoring, and operations management streamlines the deployment of services and the maintenance operations for applications and virtual machines. Organizations do not need to undertake a separate integration or management application development project to gain these functions; they are all part of the Cisco ANM 3.1 offering.

Figure 1 Phase 1 of Cisco AVDC



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Customer Challenges Addressed by Cisco AVDC

By far the most common activities related to the administration of application servers are the initial creation of the servers and applications, the provisioning of traffic flows to the servers and applications, and the ongoing timely maintenance of applications running on the servers.

While widespread use of virtual machines based on VMware as the application servers brings many significant and valuable advantages, it also introduces an additional layer of management and thus additional complexity to provisioning tasks. Application owners and server administrators are now one step farther from a single end-to-end view of application services.

As a result, application owners and server administrators have to look through the server virtualization layer of management, resulting in reduced visibility of application traffic flow because of additional segmentation and complexity. For even for the most common maintenance tasks, change control is further complicated by another layer of administration.

Enabling application owners and server administrators to securely perform these tasks only on their own assigned resources introduces the need for additional secure access controls. Otherwise, these tasks cannot be securely delegated to those who are actually responsible for them, resulting in suboptimal use of the virtual data center. Cisco AVDC addresses these challenges:

Complexity in provisioning tasks: The integrated capability within VMware vCenter to add a newly created virtual machine to an existing server farm simplifies the end-to-end provisioning of application servers, decreasing deployment time.

Low visibility: Application owners and server administrators can see the traffic flow going through the Cisco ACE to their servers, saving them from having to open other tools to use in the administration and troubleshooting of their applications and services.

Change control complexity: With the Cisco ACE VMware vCenter plug-in installed, virtual machine maintenance and traffic management maintenance tasks can both be performed from a single pane. The normal tasks of removing the target servers from the traffic flow (suspension) and managing the servers can be performed from one location instead of two, and by one process instead of two separate processes. These tasks can be performed from within the user's preferred domain manager, be it VMware vCenter or Cisco ANM 3.1.

Control of securely delegated access: Since the Cisco ACE VMware vCenter plug-in provides a transparent interface to the Cisco ACE environment through Cisco ANM, the full strength and security of Cisco ANM role-based access control (RBAC) can be used. As a result, individual users can be restricted to see those only servers that they have rights to manage and allowed to perform only those Cisco ACE tasks for which they are authorized.

Business Reasons for Deploying Cisco AVDC

Faster application rollout: Simplified provisioning using Cisco AVDC reduces the number of steps involved in provisioning, which saves some actual processing time. More important, the simplified provisioning, along with securely delegated change control for the most commonly performed server administration load-balancing tasks, reduces the overall time required to complete application deployment and tear-down.

Data center transition to virtualization: In phase 1 of Cisco AVDC, Cisco directly supports the transition from physical to virtual servers with the industry's only virtualized load-balancing and application delivery solution. Later phases will be based on this offering, extending Cisco AVDC intelligence to achieve greater virtual data center resilience, performance, and capability.

Troubleshooting of virtual server environments: The VMware vCenter plug-in enables an operator to have a view of application traffic flow at the point of the application delivery controller (the Cisco ACE). This capability makes routine operations and troubleshooting tasks much easier to perform quickly and effectively.

Scaling: As data centers evolve from a physical-device model based on dedicated hardware to support a given application or customer to a model that uses virtualization to abstract the underlying data center hardware, Cisco AVDC enables greater scaling without increasing the costs and resources needed for administration and management.

Risk reduction: By making the relevant portions of the virtualized load-balancing and application delivery services available to authorized application owners and server administrators, Cisco AVDC reduces risk in provisioning and maintenance change control.

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