

## Cisco Application Control Engine in the Virtual Data Center

### **Q. What is Cisco® Application Control Engine (ACE) in the Virtual Data Center (AVDC)?**

- A.** The Cisco ACE products are evolving to include the following capabilities that enable customers to simplify virtual data center management:
- **Virtual Machine (VM) intelligence:** Improved visibility into the state of virtual machines, applications, and the underlying support infrastructure
  - **Automation:** Improved coordination and integration with third-party products (for example, VMware vCenter), which allows Cisco ACE to respond dynamically to changes in the network and share network events
  - **Performance and scale:** Hardware enhancements to the Cisco ACE Module to address the increased scale requirements that large enterprise and service provider customers are demanding
  - **Simplification:** Streamlined deployment and ongoing maintenance of the Cisco ACE solution, including simplified provisioning through guided setup, simplified deployment through the virtualization capabilities of Cisco ACE, and simplified upgrades through the Cisco ACE licensing model

### **Q. What is the purpose of Cisco AVDC?**

- A.** Cisco is further enhancing its existing portfolio of Data Center 3.0 solutions, enabling customers to deploy a virtual data center. Cisco AVDC is part of Cisco's Data Center 3.0 solution, further simplifying virtual machine provisioning and operation.

### **Q. What customer challenges does the Cisco AVDC solution solve?**

- A.** While widespread use of virtual machines based on VMware bring many significant and valuable advantages, this proliferation also introduces an additional layer of management, and thus, additional complexity to the provisioning and troubleshooting of application servers, reduced visibility and monitoring of application traffic flows, and multiple management tools and processes.

### **Q. What customer benefits does the Cisco AVDC solution offer?**

- A.** Cisco AVDC resolves some of the management complexity challenges introduced by server virtualization and offers the following benefits:
- **Speeds application rollout:** Simplified provisioning using Cisco AVDC helps reduce the steps needed for provisioning, which saves some actual processing time. More important, this simplified provisioning in combination 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 teardown from start to finish.
  - **Facilitates data center transition to virtualization:** In phase 1 of Cisco AVDC, Cisco directly supports the transition from physical to virtual servers. Later phases will use this offering, extending Cisco AVDC intelligence for greater virtual data center resilience, performance, and capability.
  - **Eases troubleshooting of virtual server environments:** Use the VMware vCenter plug-in provided by the Cisco AVDC solution enables an operator's view of application traffic flow at the point of the application delivery controller (the Cisco ACE device). This view makes routine operations and troubleshooting tasks much easier to perform quickly and effectively.

- **Sustains scaling:** As data centers evolve from a physical device model that uses 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 greater costs or addition of resources for administration and management.
- **Reduces risk:** By making those 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.

**Q. What are the core features of the Cisco AVDC solution?**

**A.** The first phase of Cisco AVDC addresses application deployment in a VMware environment. It delivers simplified provisioning and monitoring of application delivery services by integrating Cisco ACE with VMware vCenter through the implementation of a vCenter plug-in. The Cisco ACE VMware vCenter plug-in securely communicates with Cisco Application Networking Manager (ANM) 3.1 and provides delegated access to authorized application owners and server administrators. Cisco AVDC phase I gives VMware vCenter users, such as system and application administrators, direct access to selected performance data and configuration options of Cisco ACE, accelerating their work without making them learn how to use a comprehensive Cisco ACE management product.

**Q. What are the advantages of these core Cisco AVDC features?**

**A.** From within VMware vCenter, using the integrated plug-in, the administrator can:

- Deploy virtual machines as real servers in 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

**Q. What types of customers can benefit from Cisco AVDC?**

**A.** Customers who use or plan to use VMware server virtualization will greatly benefit from the Cisco AVDC solution.

**Q. How is the Cisco AVDC solution deployed?**

**A.** Customers do not have to undertake a separate integration or management application development project to deploy Cisco AVDC. They simply have to deploy or use Cisco ANM 3.1 software and provide VMware vCenter administrator log-in credentials. The Cisco ANM software will securely install the VMware vCenter plug-in, and server administrators can immediately gain access to Cisco AVDC features based on their access levels.

**Q. What are the primary uses of the Cisco AVDC solution?**

**A.** The main value proposition of Cisco AVDC phase I is reduced need for coordination among multiple IT groups to perform routine operational tasks. With the VMware vCenter plug-in, server and application administrators can perform delegated operational tasks without putting a burden on network administrators, either formally with a ticket or informally with a phone call.

- **Debugging a performance problem:** When application performance problems are detected, it can be difficult to diagnose the cause or test a solution, especially when administrators do not have visibility into or control of the flow of application traffic during the diagnosis. With Cisco AVDC, administrators can determine base facts quickly: Do all virtual machines in a server farm have the problem? When did the problem start? What is the current state of the virtual machines? Administrators can learn the current state and traffic flow for each virtual machine by viewing the VMware vCenter plug-in performance tab and comparing the results to the VMware vCenter performance displays. Coincident spikes in traffic and CPU uses and differences between instances are quickly visible. The virtual IP configuration information on each virtual machine shows which services are active and how many connections they support to further help diagnose the problem.

- **Testing and staging:** Network administrators typically set up Cisco ACE virtual contexts and devices for a development or preproduction application staging environment. Then application developers or quality assurance (QA) engineers can do the following:
  - Rapidly add and remove virtual machines in a server farm: Add and remove virtual machines in a server farm on the Cisco ACE during testing as fast as they can bring them up, without burdening network administrators.
  - Rapidly remove a virtual machine instance from the virtual IP rotation: When a problem is found, remove the virtual machine instance from the virtual IP rotation and suspend the virtual machine and then continue testing with the remaining instances. Debuggers can later resume execution of the buggy virtual machine for debugging without touching the Cisco ACE.
- **Routine manual load management:** In phase I of Cisco AVDC, system and application administrators can manually adjust load for surges. In subsequent phases, the Cisco AVDC solution will provide correct on-demand capacity for applications.
  - Prepare for surges: Before traffic volume for an application is expected to be high, for example, during month-end processing, add more virtual machine instances to a server farm on the Cisco ACE using the VMware vCenter plug-in and then remove them after the surge.
  - Respond quickly to surges in the production environment: Even though the administrator has provisioned the required number of virtual machines to handle the expected peak load, changing patterns in end-user behavior and sudden increases in user traffic may temporarily require additional virtual machines. Unlike physical machines, which require considerable time to provision for an application that temporarily needs additional capacity, virtual machines can be easily created from a template. After virtual machines are created, server or application administrators can immediately add them to the server farm to maintain service-level agreements (SLAs) and the user experience without the need for coordination with network administrators.
- **Routine software upgrades:** In the past, administrators have needed to log on to multiple management interfaces such as VMware vCenter and Cisco ANM to perform routine software upgrades on virtual machines.
  - Gracefully suspend or power off virtual machines without affecting service: With traditional load balancers, administrators have to log on to a load balancer to remove a virtual machine from rotation so that new connections are not sent to the virtual machine, wait for existing connections to conclude, and then suspend or power off the virtual machine using VMware vCenter. With the Cisco AVDC solution, server administrators can perform the same tasks using the VMware vCenter plug-in without ever leaving the VMware vCenter management interface.
  - Test upgrade before final commit: Bring up instances with new software. Add to the server farm for a short time for a small number of transactions by adjusting the weight of each virtual machine on the Cisco ACE and then remove the added machines from the pool. Let application administrators study the logs to help ensure that behavior is as expected.
  - Perform rotation: Bring up new virtual machine instances and rotate them into the server farm, replacing the old ones gradually rather than simply shutting down virtual machines.
  - Provide rapid cutover: Bring up a new set of instances. Add all new virtual machines to the server farm and remove all old versions from the server farm in quick succession to rapidly cut over to the new software.

**Q. Can I use the Cisco AVDC solution with Microsoft Hyper-V?**

- A.** Cisco AVDC in phase I supports VMware server virtualization. Cisco is currently investigating support for Microsoft Hyper-V in subsequent Cisco AVDC phases.

**Q. Which products are included in the Cisco AVDC solution?**

**A.** The Cisco AVDC solution includes the Cisco ACE (module or appliance form factor) and Cisco ANM 3.1 software.

**Q. Can I use Cisco AVDC with the Cisco ACE Module?**

**A.** Yes. The Cisco AVDC solution supports both the Cisco ACE Module and Cisco ACE appliances.

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**Q. Do I have to upgrade my current Cisco application delivery solution to take advantage of the Cisco AVDC solution?**

**A.** Customers do not have to upgrade the Cisco ACE Module or appliance software, but they will have to deploy Cisco ANM 3.1 for the Cisco VMware vCenter plug-in.

**Q. Are professional services generally required with the Cisco AVDC solution?**

**A.** No. In phase I of the Cisco AVDC solution, Cisco offers a simple well-known process for installing the VMware vCenter plug-in.

**Q. Who can provide support for a Cisco AVDC solution?**

**A.** Cisco provides numerous support options for customers. The Cisco Technical Assistance Center (TAC) offers several levels of support. Your local Cisco account team can assist you as well.

**Q. How do I get more information?**

**A.** For more information about Cisco ACE, visit <http://www.cisco.com/go/ace> or contact your local account representative.



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