

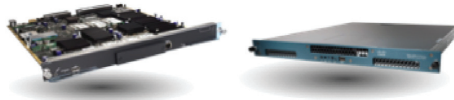
## Overview

Cisco® ACE (Application Control Engine) the Virtual Data Center (AVDC) integrates primary data center components, such as switches, routers, and computing platforms, with applications to offer a cost-effective and streamlined application delivery infrastructure. The products that enable the unification of applications with the underlying computing and networking infrastructure are the Cisco ACE appliances and Cisco ACE module (Figure 1).

Cisco ACE is an important component of Cisco Unified Network Services, an architecture that delivers network services such as security, application delivery, and WAN optimization using an approach that is targeted at virtualized and cloud-based environments.

Cisco ACE is the industry's only virtualized load-balancing and application delivery solution designed to meet today's requirements for application delivery. Cisco ACE is a virtualized application delivery controller that enables deployment of network services including server load balancing, content switching, compression, server offloading, and application optimization.

Figure 1 Cisco ACE Module and Appliance



The Cisco ACE product family addresses many of the main challenges facing the virtual data center. These products provide an application delivery solution that improves application scalability and availability while enabling better utilization of infrastructure resources through offloading and compression technologies. Cisco ACE capabilities include:

- **Virtual machine intelligence:** Greater visibility into the state of virtual machines, applications, and the underlying infrastructure
- **Automation:** Enhanced coordination and integration with Cisco and third-party products, such as Cisco Overlay Transport Virtualization (OTV) and VMware vCenter, allowing Cisco ACE to respond dynamically to changes in the network and share network events
- **Performance and scalability:** Improved performance to address the increased demands of large enterprises and service providers
- **Simplification:** Streamlined deployment and ongoing maintenance, including simplified end-to-end provisioning of application servers, simplified deployment through the virtualization capabilities of the Cisco ACE, and simplified licensing
- **Flexibility:** Deployment and management of application services at the correct points in the network by the appropriate individuals

## What Does Cisco AVDC Do?

Cisco AVDC addresses application deployment in a virtualized data center (Figure 2). It simplifies provisioning and management of application delivery services by integrating Cisco ACE with server virtualization products from VMware, Cisco Nexus® 7000 Series Switches, and automation tools from industry-leading third-party vendors.

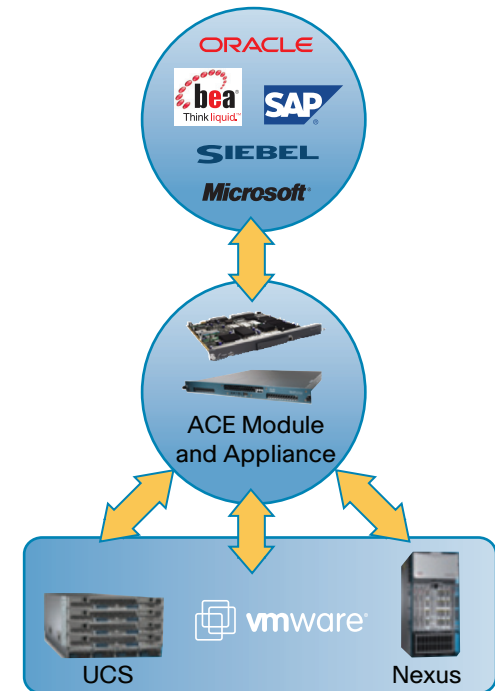
For VMware integration, Cisco ACE has a VMware vCenter plug-in that enables organizations to:

- Deploy newly discovered virtual machines as real servers in a new server farm
- Dynamically monitor application traffic flow for virtual machines through Cisco ACE
- View virtual machine details

- Extract historical data for trend and capacity analysis
- Securely activate and suspend application traffic flows through the Cisco ACE for the associated real servers

This integrated provisioning, application traffic monitoring, and operations management streamlines the deployment of services and the maintenance operations for applications and virtual machines.

Figure 2 Cisco AVDC Unifies Computing and Switching with Applications





Cisco ACE Dynamic Workload Scaling (DWS) delivers integration between the Cisco Nexus 7000 Series, VMware vCenter, and Cisco ACE. This integration allows Cisco ACE to obtain virtual machine locality information and actively monitor the resource utilization of the local virtual machines. When Cisco ACE determines that local computing resources have become scarce, it dynamically distributes the workload to a remote data center, thus providing flexible workload mobility in distributed environments.

The Cisco ACE Web Services API provides a programmable interface for system developers to integrate Cisco Application Networking Manager (ANM) with customized or third-party management applications such as VMware Orchestrator and Cisco Tidal software. This feature enables application and server administrators to develop their own automation solutions or to use third-party management systems to automate Cisco ACE provisioning.

## Customer Challenges Addressed by Cisco AVDC

Although widespread use of virtual machines with VMware-based application servers brings many significant advantages, it also introduces multiple challenges for IT departments, including:

- **High operating expenses (OpEx):** The dynamic nature of virtual data centers introduces a large volume of high-OpEx manual and repetitive changes. The Cisco ACE VMware vCenter plug-in addresses this challenge by reducing the number of tools that are required to provision and monitor the application delivery infrastructure and virtualized servers. In addition, the Cisco ACE Web Services API enables customers to automate common, repetitive tasks.

- **Limited virtual machine visibility:** Visibility into the status and operation of applications and the underlying virtual infrastructure is limited. The Cisco ACE VMware vCenter plug-in gives Cisco ACE and VMware vCenter users access to the Cisco ACE and virtual machine status and historical statistics, which can be used to make intelligent design decisions.
- **Slow and complex application rollouts:** The existence of multiple touch points leads to increased lead times and greater risk of errors for application and service deployments. The Cisco ACE Web Services API allows customers to automate common real-server tasks. The Cisco ACE VMware vCenter plug-in reduces the number of tools that are needed to provision end-to-end application delivery services by allowing administrators to use a single management tool for common provisioning and monitoring operations.
- **Limited performance:** Applications and infrastructure are difficult to scale to meet customer and user demands. Cisco ACE DWS allows data centers to automatically scale their virtual machines to use spare capacity that is present in a remote data center.

## Business Reasons for Deploying Cisco AVDC

- **Faster application rollout:** 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 teardown.
- **Easier troubleshooting of virtual server environments:** The VMware vCenter plug-in enables an operator to dynamically view application traffic flow at the point of the application delivery controller (the Cisco ACE) within Cisco ANM and VMware vCenter. This capability makes routine operations and troubleshooting tasks much easier to perform quickly and effectively.
- **Automation:** Integration with Cisco and third-party products enables Cisco ACE to respond dynamically to changes in the network.
- **Flexibility:** Virtual machine intelligence and enhanced coordination with Cisco products enable Cisco ACE to simplify end-to-end provisioning of applications, optimize resource utilization, and deliver flexible workload mobility.

For more information about the Cisco ACE the Virtual Data Center solution, visit [www.cisco.com/go/ace](http://www.cisco.com/go/ace).