Cisco Unified Computing System for SAP Landscapes

Improve IT Responsiveness and Agility for Rapidly Changing Business Demands by Using the Cisco Unified Computing System

White Paper

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Introduction

The Cisco Unified Computing System provides the compute, network, and storage access components, deployed as a single cohesive system. The result is an implementation that addresses many of the challenges that system administrators and their IT departments face today, including needs for a simplified deployment and operation model, high performance for systems, and lower total cost of ownership (TCO).

This next-generation data center platform accelerates the delivery of SAP solutions simply, reliably, and securely through end-to-end provisioning and integration support.

SAP NetWeaver—an open integration and application platform, core for all SAP solutions, enables Enterprise Services Architecture, a blueprint for services-oriented, enterprise-scale business solutions delivering greater adaptability, flexibility and closer integration.

By implementing SAP, the Cisco Unified Computing System complements and uses the SAP NetWeaver architecture by implementing the five fundamental design principles: radical simplification, high performance, scalability, technology and comprehensive management.

Cisco UCS Benefits for SAP

- Radical Simplification

  The Cisco Unified Computing System represents a radical simplification compared to the way that servers and networks are deployed today. It reduces network access-layer fragmentation by eliminating switching inside the blade server chassis. It integrates compute resources on a unified I/O fabric that supports standard IP protocols as well as Fibre Channel through FCoE encapsulation. The system eliminates the limitations of fixed I/O configurations with an I/O architecture that can be changed through software on a per-server basis to provide needed connectivity using a just-in-time deployment model. The result of this radical simplification is fewer switches, cables, adapters, and management points, helping reduce cost, complexity, power needs, and cooling overhead.

- High Performance

  The system's blade servers are based on the fastest Intel Xeon 5600 series processors. These processors adapt performance to application demands, increasing the clock rate on specific processor cores as workload and thermal conditions permit. These processors, combined with patented Cisco Extended Memory Technology, deliver application performance along with the memory footprint needed to support memory intensive applications. The system is integrated within a 10 Gigabit Ethernet–based unified fabric that delivers the throughput and low-latency characteristics needed to support the demands of the cluster's public network, storage traffic, and high-volume cluster messaging traffic.

- Scalability Decoupled From Complexity

  The system used to create the sample configuration is designed to be highly scalable, with up to 40 blade chassis and 320 blade servers connected by a single pair of low-latency, lossless fabric interconnects. New compute resources can be put into service quickly, enabling SAP systems configurations to be scaled on demand, and with the compute resources they require.

- Ready for the Future

  The system gives SAP systems room to scale while anticipating future technology investments. The blade server chassis, power supplies, and midplane are capable of handling future servers with even greater processing capacity. Likewise, the chassis is built to support future 40 Gigabit Ethernet standards when they become available.

- Comprehensive Management

  The system uses an embedded, end-to-end management system that uses a high-availability active-standby configuration. Cisco UCS Manager uses role and policy-based management that allows IT departments to continue to use subject-matter experts to define server, network, and storage access policy. After a server and its identity, firmware, configuration, and connectivity are defined, the server, or a number of servers like it, can be deployed in minutes, rather than the hours or days that it typically takes to move a server from the loading dock to production use. This capability relieves SAP Basis administrators from tedious, manual assembly of individual components and makes scaling an SAP system configuration a straightforward process

Software and Storage Interoperability

Cisco Unified Computing System is certified as a platform for leading enterprise applications, virtualization, and operating systems. It if fully optimized for virtual as well as heterogeneous SAP environments.

Operating systems that are certified for specific installation type; physical and virtual are as follows:

- Physical implementations
  - Linux RedHat EL 4.8, 5.3 or higher and Linux SUSE SLES 10 SP3 and Linux SUSE SLES 11 or higher
  - Windows Server 2003 and Windows Server 2008
- Virtual implementations
  - Linux RedHatEL 4/5, Linux SUSE SLES 10 and higher, Windows Server 2003 and Windows Server 2008 in a Virtual Machine on VMware ESX 3.5 and 4.0 and higher
  - Windows Server 2003, Windows Server 2008 in a Virtual Machine on Window 2008 Hyper-V
  - Linux SUSE SLES 10 SP1 or higher in a Virtual Machine on Linux SUSE SLES 10 SP1 or higher embedded Xen Hypervisor
  - Linux RedHatEL 5 or higher in a Virtual Machine on Linux RedHatEL 5 or higher embedded Xen Hypervisor

Database compatibility is as follows:

- Microsoft
  - Microsoft SQL Server 2005, 2008, 2008 R2
- Oracle
  - Oracle 10gR2 Database (Single Instance and RAC) for Linux RedHat EL 4/5, Linux SUSE SLES 10 and Windows Server 2003 /2008
  - Oracle 11gR1 Database (Single Instance and RAC) for Linux RedHat 4/5, Linux SUSE SLES 10 and higher and Windows

All other Oracle Applications are certified for Cisco UCS running on the operating systems that Cisco UCS is certified upon.

Cisco Unified Computing System supports a wide range of storage adapters including the Cisco UCS VIC, Emulex UCS HBA/CNA, and QLogic UCS HBA/CNA. EMC CLARiiON and Symetrix V-Max, NetApp FAS, Hitachi Data Systems UPS and AMS attached through Fiber Channel, Fiber Channel over Ethernet (FCoE) or Network File System (NFS) for Linux RedHat EL 4/5 and Linux SUSE SLES. Also, Cisco UCS

Manager is fully interoperable with the major systems management tools commonly found in heterogeneous data centers.

Cisco Unified Computing System brings in qualitative benefits for SAP implementations with unified management capabilities, Unified Fabric usage, virtualization optimization, and seamless system lifecycle management by virtue of statelessness. It eases the work of SAP administrators in many ways as detailed below:

- Hassle-free SAP Lifecycle management
  - Unified management

    Infrastructure management of the SAP landscape is simplified to a great extent. SAP administrator can start, stop or restart server based on the Cisco UCS Manager role.
  - Aids change management related activities

    Cisco UCS brings in the concept of statelessness which makes the personality settings of one sever to be applied to another automatically at failover. This aids SAP administrators in executing change management activities like hardware upgrades.

    It makes use of Service Profiles' which capture the configuration settings for servers and LAN / SAN network access they require and all those low-level device configuration tasks that are needed to have the system up and running. Service Profile, in turn has a link to the storage parameters like host, storage group for the server in question.
  - Simplified SAP Upgrades and SP update, backup mechanism and fallback strategy

    With Cisco UCS, the preparation for SAP Upgrades and Support Package update gets reduced to creating a mirror copy or snapshot at the storage level and using this information while creating a service profile. This clone can be used as a fallback productive copy in case, the Upgrade/SP update was to fail.

    It would then just be a matter of switching the service profiles for that blade in question to have the system functional again.
  - Disaster recovery from hardware failure

    In case of server hardware crash, it's just a matter of associating the service profile to a new blade. With this the entire set of components, end-to-end is configured automatically without any further follow-up tasks or post processing.
  - Effortless system refresh and cloning tasks for system preparation

    The service profile association with storage parameters could be used for rapid system deployments. Clones of the LUNs belonging to the system in question could be created. The same could be mapped to service profiles which in turn could be associated to different server hardware and booted independently. SAP system build post processing tasks could be performing the native SAP tools (SAPINST) or custom build tools like Tidal Software's Intelligent Automation for SAP.
- Enables SAP customers to use virtualization optimization with extended memory
  - Run memory intensive applications on the same platform that of all other SAP application
  - Run more SAP systems in virtual machines
  - Every blade can be used as bare-metal or for virtualization, driven by the server profile

Cisco Unified Computing System provides an agile platform for businesses to deploy and manage their SAP landscapes reliably and securely through end-to-end provisioning while reducing the TCO at platform, site & organization levels and increasing the IT staff productivity and business agility.

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