

With the Intel Xeon Processor E7-8890 v3 Family

Highlights

Integration with Your Existing Data Center

- We integrate SAP HANA into your data center infrastructure using SAP HANA Tailored Datacenter Integration (TDI) so that you can use your existing management processes as well as network and storage resources.
- Our architectural approach is based on proven industry standards that avoid proprietary file systems and storage subsystems.

Scalable and Predictable Performance

- You can scale our blade servers up from 128 GB in a single server to a cluster supporting tens of gigabytes of memory capacity.
- Only Cisco lets you mix and match both blade and rack servers in a single clustered solution.

Integration with Enterprise Applications

- The integrated architecture of the Cisco Unified Computing System™ (Cisco UCS®) lets you host SAP HANA and other SAP applications in the same infrastructure as non-SAP business solutions. This capability radically simplifies management, data center services, and data movement between applications.

Reduced Risk

- The pretested and validated solution accelerates the time to value for customers and reduces risk and deployment challenges.

You need to deploy and scale SAP HANA environments quickly and easily. Now you can with SAP HANA Tailored Datacenter Integration (TDI) and Cisco UCS® B260 and B460 M4 Blade Servers with the latest Intel® Xeon® processors.



Solutions That Work with the Data Center You Have Today

Cisco® solutions for SAP HANA are certified and designed to interoperate with the data center you have today. Using industry-standard architecture and recognized best practices, no special IT processes are needed to incorporate or maintain Cisco solutions in your data center. Cisco solutions are designed to support data center readiness requirements, including high availability, reliability, and business continuance. We integrate your blade-server-based SAP HANA solutions into your existing data center networking and storage architecture using the SAP HANA Tailored Datacenter Integration (TDI) model. Our approach helps you get the multiple SAP HANA environments you need up and running quickly, easily, and with little risk.

High-Performance Blade Solution

This document describes solutions based on Cisco UCS B260 and B460 M4 Blade Servers powered by the new Intel Xeon processor E7-8890 v3 family. (Figure 1). These solutions allow you to start with a Cisco UCS B260 M4 with a memory footprint as small as 128 GB and scale to up to a footprint of 1.5 terabytes (TB).

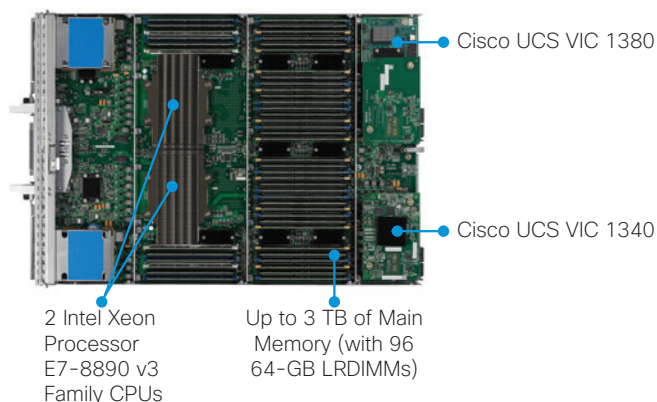


Figure 1. Cisco UCS B260 M4 Provides Scalability to Support Memory Capacities Up to 1.5 TB (When Two Are Combined to Create a Cisco UCS B460 M4)

Scalable SAP HANA Solutions Based on
Cisco UCS B260 and B460 M4 Blade Servers

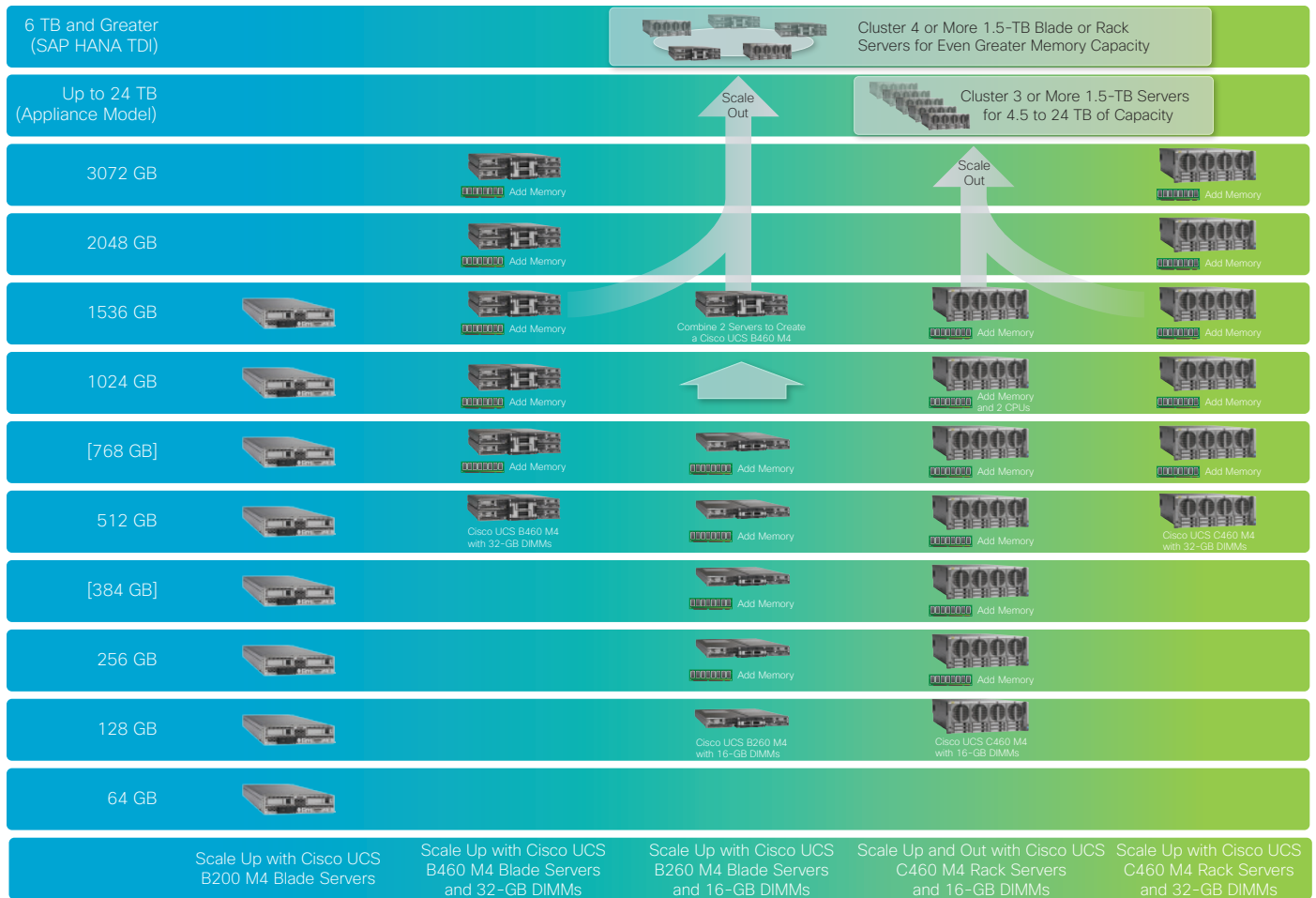


Figure 2. You Can Scale Up and Out with Blade or Rack Servers and Mix and Match Servers in a Single Cluster

You can start with a Cisco UCS B460 M4 and scale from 512 GB to 3 TB in a single server. And you can configure from four to tens of 1.5-TB Cisco UCS B460 M4 servers in a cluster to support an even greater memory capacity.

Having claimed more than 100 world records on industry-standard benchmarks, the Cisco Unified

Computing System™ (Cisco UCS) offers more than flexibility, efficiency, scalability, and low total cost of ownership (TCO): it also delivers the performance you need. With Cisco’s building-block approach, you can easily start small and scale your SAP HANA deployments as your business needs change.

Start Small and Grow as Business Needs Change

Cisco solutions for SAP HANA based on Cisco UCS B260 and B460 M4 Blade Servers are designed to be deployed using SAP HANA TDI. Both blade and rack server solutions have the same scalability characteristics (Figure 2).

- If you don't expect to need more than 1.5 TB of memory per server, start small and scale from 128 GB to 1.5 TB using low-cost 16-GB DIMMs. Following SAP configuration rules, you need four processors for a 1.5-TB solution, so after you've scaled up a Cisco UCS B260 M4 with 768 GB, you can combine two servers using a scalability connector to create a Cisco UCS B460 M4 server with 1.5 TB of memory.
- If you expect to need 512 MB to 3 TB of memory, use our configurations based on high-density 32-GB DIMMs. With this approach the Cisco UCS B460 M4 can support up to 3 TB of memory in an SAP certified configuration.
- If you want to create an analytical solution, use either memory configuration, and we can help you certify multiple 1.5-TB servers in a cluster to support your largest SAP HANA requirements. Only Cisco supports the mixing and matching of blade and rack servers in the same centrally managed cluster, increasing the value of your investment.

Cisco solutions for SAP HANA are part of Cisco UCS. With Cisco UCS, you can maintain all your applications on the same unified fabric with high-speed, low-latency, deterministic networking to accelerate the flow of intelligence to business applications and meet SAP's networking requirements.

Cisco UCS

Cisco UCS is a single unified system that includes computing, networking,

and storage access. Its model-based management is integrated into the system. With Cisco UCS Manager, you can apply predefined Cisco UCS service profiles to any server and bring the server into immediate compliance with the configuration required to optimally run your SAP applications.

Cisco SingleConnect Technology

Cisco SingleConnect technology provides an exceptionally easy, intelligent, and efficient way to connect and manage computing resources in the data center. With Cisco UCS fabric interconnects and virtual interface cards (VICs), you can have three networks—IP, storage, and management—running on a single set of cables and a single set of I/O adapters. Because Cisco UCS is form factor independent, you can run both blade and rack servers in the same system.

Programmable Infrastructure

Cisco UCS programmability provides an outstanding, stateless, foundational platform for your SAP and your other data center applications.

Built Using Cisco UCS Blade Servers

Our solutions based on the Cisco UCS B260 and B460 M4 Blade Servers are built with the following components (Table 1):

- **Cisco UCS B260 M4 Blade Servers** are based on the Intel Xeon processor E7-8890 v3 family. These high-performance servers are designed for enterprise and mission-critical workloads, large-scale virtualization, and database

applications. In this solution, the Cisco UCS 260 M4 can scale from 128 to 768 GB of memory using low-cost 16-GB DIMMs. It can scale from 128 GB to 1.5 TB of memory using 32-GB DIMMs.

If your needs expand beyond the 768-GB solution size, you can add a second 768-GB Cisco UCS B260 M4 with a scalability connector to create a four-processor 1.5-TB Cisco UCS B460 M4 Blade Server with the capability of up to four Intel Xeon processor E7-8890 v3 family CPUs. These servers can be configured in a cluster of four or more servers for tens of gigabytes of memory capacity.

- **Cisco UCS B460 M4 Blade Servers** can meet the needs of solution sizes ranging from 512 GB to 3 TB using 32-GB DIMMs. Powered by four Intel Xeon processor E7-8890 v3 family CPUs, these servers can be configured in a cluster of four or more servers for tens of gigabytes of memory capacity.
- **Cisco UCS VICs** are converged network adapters (CNAs) that support up to 256 PCI Express (PCIe) devices, with the number and type of devices programmable on demand. By supporting IP, management, and storage networks with one adapter, the solution reduces both capital expenditures (CapEx) and operating expenses (OpEx) because you have fewer interfaces, cables, and upstream switch ports to purchase, configure, manage, maintain, power, and cool.

Cisco UCS B-Series Blade Servers can access massive amounts of bandwidth to support data-intensive SAP HANA workloads. The Cisco UCS B260 M4 can access up to 160 Gbps of bandwidth, and the Cisco UCS B460 M4 can access up to 320 Gbps of bandwidth. Cisco VICs provide access to this capacity. The Cisco UCS VIC 1340 supports up to 40 Gbps of network bandwidth. The Cisco UCS VIC 1380 supports 80 Gbps of bandwidth.

Bare-Metal or Virtualized Deployment

Cisco Solutions for SAP HANA support your choice of operating system: Red Hat Enterprise Linux for SAP (RHEL4SAP) or SUSE Linux Enterprise Server for SAP (SLES4SAP).

The solutions are designed to run on a bare-metal server or in a virtualized environment on VMware vSphere 5 (and vSphere 6 when supported by SAP) or SAP HANA multiple-container systems. These options give you the flexibility to run production environments on bare-metal servers while supporting your test and development environments as virtual machines.

Flexible Scaling with Investment Protection

Regardless of which Cisco Solution for SAP HANA you start with, you have a range of choices for expanding your solution, all of which protect your initial investment by never requiring you to

Table 1. Scale Up and Out Solutions with Cisco UCS B260 and B460 M4 Blade Servers

Solution Options		Scale Up and Scale-Out Solutions Using 16-GB DIMMs for Capacity of 128 GB to 1.5 TB	Scale Up and Scale-Out Solutions Using 32-GB DIMMs for Capacity of 1 to 3 TB
Workload		<ul style="list-style-type: none"> All SAP HANA workloads, analytics, or transactional processing, with data set sizes up to 1.5 TB 	<ul style="list-style-type: none"> Suite for SAP HANA data set sizes of 512 GB to 3 TB
Computing		Cisco UCS B260 M4 Blade Server with: <ul style="list-style-type: none"> 2 Intel Xeon processor E7-8880 v3 CPUs at 2.3 GHz (default), or E7-8890 v3 CPUs at 2.5 GHz, or E7-8880L v3 CPUs at 2.0 GHz Cisco UCS VIC 1340 CNAs Cisco UCS VIC 1380 CNAs 1 additional server plus scalability connector required to support a 1.5-TB solution size 	Cisco UCS B460 M4 Blade Server with: <ul style="list-style-type: none"> 4 Intel Xeon processor E7-8880 v3 CPUs at 2.3 GHz (default), or E7-8890 v3 CPUs at 2.5 GHz, or E7-8880L v3 CPUs at 2.0 GHz 2 Cisco UCS VIC 1240 CNAs 2 Cisco UCS VIC 1380 CNAs
Memory capacity	128 GB	<ul style="list-style-type: none"> 8 x 16-GB DIMMs 	
	256 GB	<ul style="list-style-type: none"> 16 x 16-GB DIMMs 	
	384 GB	<ul style="list-style-type: none"> [24 x 16-GB DIMMs] 	
	512 GB	<ul style="list-style-type: none"> 32 x 16-GB DIMMs 	<ul style="list-style-type: none"> 16 x 32-GB DIMMs
	768 GB	<ul style="list-style-type: none"> [48 x 16-GB DIMMs] 	<ul style="list-style-type: none"> [24 x 32-GB DIMMs]
	1 TB		<ul style="list-style-type: none"> 32 x 32-GB DIMMs
	1.5 TB	<ul style="list-style-type: none"> 48 x 16-GB DIMMs in 2 servers connected by scalability connector 	<ul style="list-style-type: none"> 48 x 32-GB DIMMs
	2 TB		<ul style="list-style-type: none"> 64 x 32-GB DIMMs
	3 TB		<ul style="list-style-type: none"> 96 x 32-GB DIMMs
Storage		<ul style="list-style-type: none"> Use Cisco UCS Integrated Infrastructure or existing enterprise networking and storage systems 	

remove an existing server or throw away memory. After you have scaled up a single-server solution to support 1.5

TB of memory, you can scale out four or more servers in a cluster to support larger memory requirements—and only

Cisco lets you mix and match blade and rack servers in a single, centrally managed cluster, so you can repurpose both kinds of servers and put them to work with your SAP HANA workloads.

Customize with SAP HANA TDI

SAP HANA TDI allows you to complete your solution using our certified server configurations with your own enterprise storage and networking components that have been certified by SAP. TDI also allows you to scale beyond the 16-server certification level for appliances to accommodate even more servers in a single scale-out solution using TDI.

Cisco Support

The Cisco hardware is supported by your choice of nonproduction, production, and business-critical levels of Cisco SMARTnet™ Service.

Additional Cisco Solution Support helps you quickly resolve problems by adding a solution-level perspective to the underlying device-level service contracts. Solution Support gives you a single point of contact to help you manage, troubleshoot, and resolve the problems that may arise in complex, multivendor systems across a variety of Cisco and third-party products.

Easy Ordering

Cisco partners make purchasing a Cisco Solution for SAP HANA easy, with simplified ordering and onsite installation services available.

The program enables you to easily and quickly deploy a small but powerful, SAP HANA environment in your enterprise and to scale it quickly without the expense or risk entailed in designing and building your own custom solution

For More Information

Learn more about Cisco Solutions for SAP HANA at <http://www.cisco.com/go/sap>.

For more information about Cisco UCS, visit <http://www.cisco.com/go/ucs>.

Note: Solution power consumption varies with the specific server and storage configurations ordered. Please contact your sales representative or your product solutions specialist to determine the exact power requirements for your configuration.



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