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## VBLOCK™ POWERED SOLUTION FOR SAP: SIMPLIFIED PROVISIONING FOR OPERATIONAL EFFICIENCY

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# Introduction

The provisioning of SAP instances on a server or blade can be greatly simplified by leveraging Vblock™ Infrastructure Packages (hereafter referred to in this document as Vblock). The Vblock solution enables SAP administrators to manage their environment and take advantage of the benefits of virtualization technology provided by three world-class corporations – Cisco®, EMC®, and VMware®.

Provisioning SAP instances on blades and servers is simplified through the use of service profile templates and an automation engine specifically designed for the Vblock. This allows administrators to focus on provisioning new SAP instances instead of infrastructure deployment. After deploying SAP in a virtual environment, administrators can focus more of their time re-architecting and redesigning the SAP landscape and directing more fire-power at increasing availability, performance, and SAP landscape capabilities, while enabling administrators to find better and more creative solutions to drive the business.

This document provides:

- an introduction to Vblock technology
- an overview of the steps required to provision a new SAP instance using an automation engine designed for the Vblock.

## Purpose

Simplified provisioning enables administrators to rapidly provision new SAP instances on blades and servers. Using the solutions developed by the Virtual Computing Environment coalition (VCE) that are described in this paper, administrators can manage their SAP landscapes in a virtualized environment and perform recovery and restore operations in case of a failure.

## Audience

This paper is intended for SAP architects, Basis administrators, or other individuals tasked with evaluating, acquiring, managing, operating, or deploying SAP in a virtualized data center environment.

## Scope

Based on this provisioning use case developed specifically for SAP, this document provides an overview of how a server or sandbox can be quickly provisioned using the automation engine developed specifically for the Vblock.

## Vblock Introduction

IT's transition to a private cloud infrastructure will allow IT organizations to provide a more service-based consumption model and more easily meet their service level agreements. Previous models hindered IT's capability to respond to the business, and created a perception of IT as a cost center rather than as a valuable services provider.

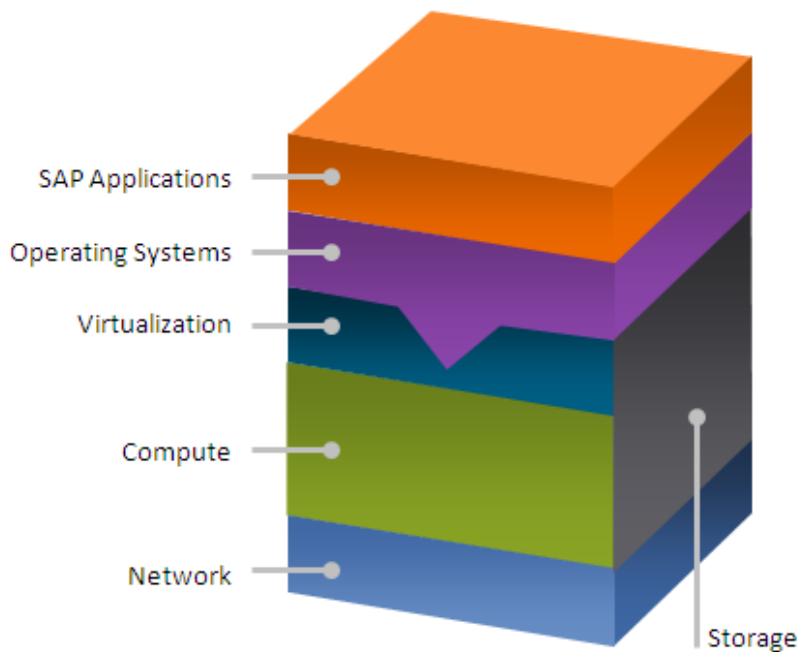
Many IT environments that have outdated technologies are planning incremental approaches towards virtualization and private cloud computing, exposing themselves to risk at each incremental change. Vblock Infrastructure Packages are now available to accelerate data center virtualization and private cloud adoption by implementing the coalition's state of the art technologies together, at one time.

Deploying your SAP applications on Vblock technology creates minimum risk because the Vblock is:

- Production-ready, pre-engineered, integrated and tested units of virtualized infrastructure
- Best of breed virtualization, network, compute, storage, security and management products
- SLA driven, providing predictable performance capabilities and operational characteristics

### What is a Vblock?

Vblocks provide pre-engineered, production-ready (fully tested) virtualized infrastructure components, including the best of breed private cloud offerings from Cisco, EMC, and VMware. At a high level, Figure 1 illustrates the various levels, or "layers" that make up a Vblock Infrastructure Package. Note that SAP applications sit above the other layers (OS, Virtualization, Compute, Storage, and Network).



**Figure 1. Vblock Infrastructure Packages**

## Vblock components

As shown in Figure 1, the operating system and application layers sit on top of the Vblock hardware and software component layers. These scalable, pre-tested components include:

- Virtualization with VMware vSphere 4
- Compute with Cisco UCS Blade Servers
- Network with the Cisco networking stack
- Storage with EMC Celerra NS-960, EMC CLARiiON CX4, or EMC Symmetrix VMAX
- Management with one or more of the following management tools:
  - EMC Ionix Unified Infrastructure Manager (UIM)
  - VMware vCenter
  - EMC Navisphere or Symmetrix Management Console (SMC)
  - Cisco UCS Manager
  - VMware Site Recovery Manager

Figure 2 provides additional information about the components that make up the Vblock architecture.

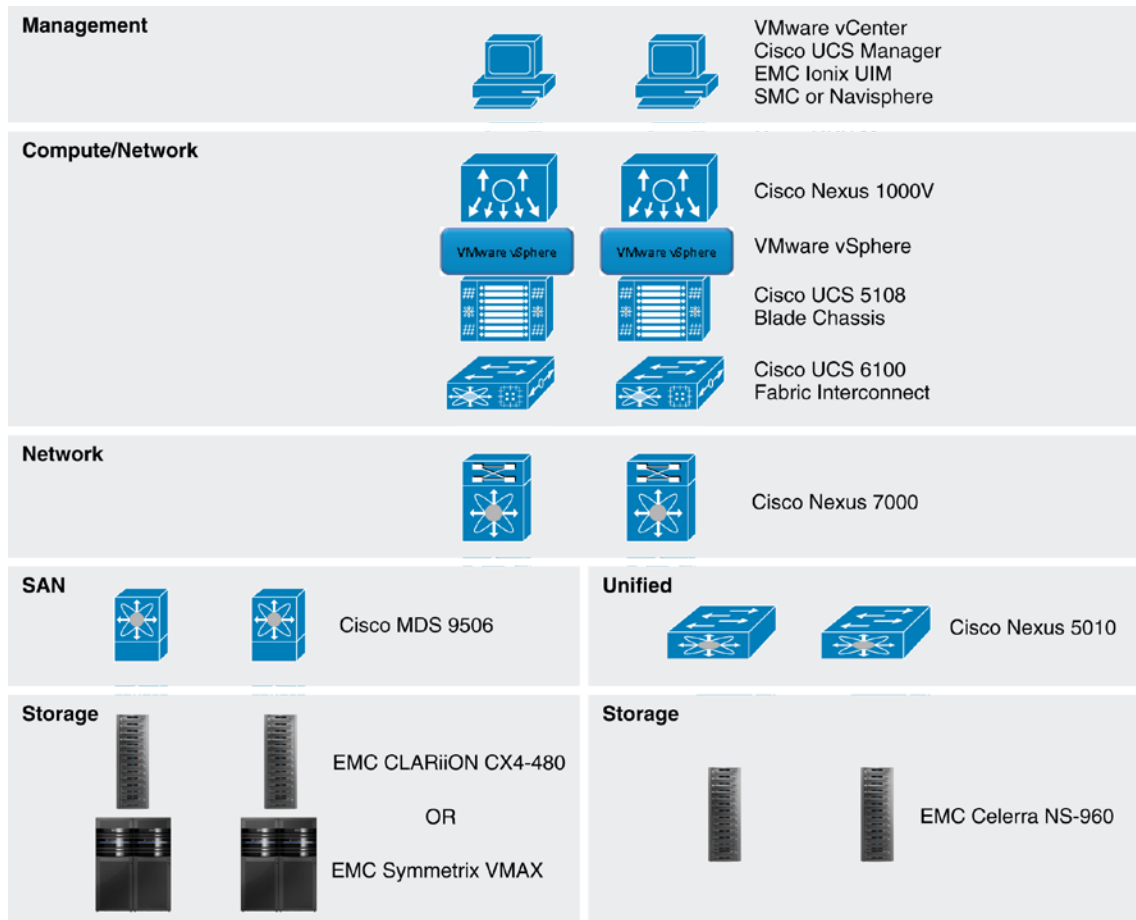


Figure 2. Vblock architecture components

## Vblock benefits

Enabled by the best players in IT product delivery, each with industry-leading enterprise-level credibility, Vblock provides SAP customers with several benefits from its integrated hardware stack including:

- Fewer unplanned downtimes and reduced planned downtimes for maintenance activities
- Reduced complexity due to preconfigured and centralized IT resources leading to standardized IT services
- Predictable performance and operational characteristics
- Tested and validated solutions with unified support and end-to-end vendor accountability
- Graceful scaling of a Vblock environment by:
  - Adding capacity to an existing Vblock
  - Or by adding more Vblocks
- Virtualized efficiency with predictable scaling for a given footprint

## Vblock automation

Automation on the Vblock uses element managers, which drives standardization, agility, and operational efficiency, allowing agile business process definitions. These element managers (storage, network, and compute) provide automation and virtualization of individual elements without requiring a specific end-to-end business solution.

Using APIs for each of these element managers (like “wrappers” around each API); the automation engine can perform a number of end-to-end provisioning steps on the Vblock allowing you to aggregate and simplify complex tasks, including:

- selection of self-service portal choices (service offering, cost/capacity usage)
- allocation of compute resources (service profiles, policies)
- allocation of storage resources (devices, capacity)
- configuration of network resources (VLAN, SAN)
- configuration of ESX Server and cluster (ESX installation, cluster configuration)
- allocation of Virtual Machines (template cloning, Operating System and SAP configuration)

## Service profiles

Service profiles are instances of a template (also known as a “personality”) used to specify attributes for a server, providing a flexible, repeatable, and compliant process for the rapid deployment of a service profile to a blade and specify what settings are applied to a server. Some of the server attributes that can be specified in a service profile are:

- UUID
- vNIC and vHBA
- MAC address
- VLAN
- WWNN and WWPN
- Policies
- Server assignment

Service profiles are then associated with a blade to set the attributes for the server. From the service profiles, service profile templates can be created so you can deploy similar service profiles across multiple blades in your environment.

## Service profile templates

Service profile templates enable the rapid deployment of multiple service profiles using the same policies, pool attributes, number of vNICs and vHBAs, and other settings from the initial template. When a service profile template is created for the first time, default values for all policies in the pools are displayed. Using a wizard, you can modify values and settings for the service profile template to associate it with a blade.

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**Note:** When a service profile template is created, only a server pool can be chosen.

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The relationship between a service profile and a service profile template is very important to understand before configuring these elements. Service profile templates can be classified into two categories: initial and updating. Depending on which type of service profile template is being used sets the conditions for how changes are distributed to the service profile connected to that service profile template.

- If you create a service profile from an initial template, that profile inherits all properties of the service profile template. If you make changes in the service profile template, you must also change the service profile since it is not connected to the template.
- If you create a service profile from an updating template, it inherits all properties from the service profile template. If you make changes to the service profile template, these changes are automatically updated in the service profile.

## Zoning

In a storage area network (SAN), zoning is the allocation of resources for device load balancing and for selectively allowing access to data only to certain users. Essentially, zoning allows an administrator to control who can see what in a SAN. This is especially important when provisioning SAP servers because administrators will want to limit access to SAP resources on the Vblock.

## Learn more about Vblock

For more details on Vblock Infrastructure Packages, refer to the *Infrastructure Packages Reference Architecture* and for more information on the Cisco, EMC, VMware coalition, visit [www.emc.com/powerof3](http://www.emc.com/powerof3).

# Provisioning a New SAP Server Using Vblock Automation

Provisioning new SAP servers on a Vblock can be simplified through the use of an orchestration engine as the Vblock offers many management interfaces to simplify task to respond to business needs. Using this orchestration automation, you can easily manage and provision SAP servers without significant manual configuration and setup steps, which can be particularly useful for SAP customers that require a rapid, error-free, and standardized approach.

The orchestrator, named automation engine in this document, is designed for the Vblock and consists of the following components:

- Web Frontend Application – collects necessary server and configuration information
- Orchestration Engine – streamlines and orchestrates the necessary configuration changes on the shared infrastructure. In particular, this includes carving out storage, compute, and network resources from the Vblock

The following steps illustrate how simplified provisioning can be achieved using a Vblock automation engine.

## Create a test SAP system

To rapidly create a test SAP system, perform the following two steps:

1. Using the automation engine, enter information about the computer, network and storage resources needed for the SAP system, including:
  - Customer ID
  - Project name
  - Disk size
  - Number of servers
  - Network being used to instantiate the SAP server
  - Schedule date/time

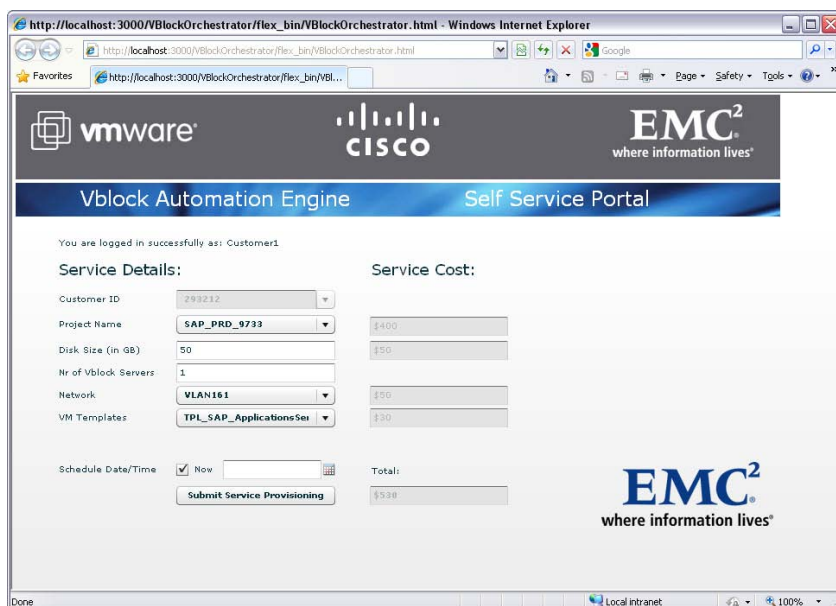


Figure 3. Vblock Automation Engine – Front End View

2. Once automation completes and the number of requested servers are allocated in the Vblock environment, then the end user gets access to his newly created resources.

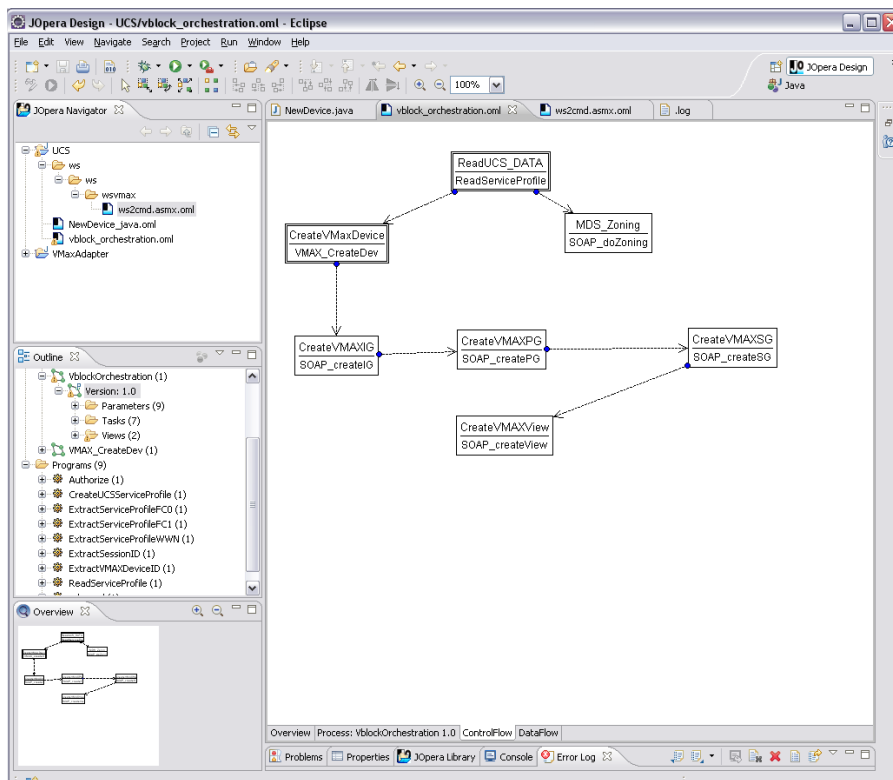
An Administrator or hoster can verify storage configuration and zoning the following ways:

- Launch UCS Manager and view the newly created service profiles.
- Open a Storage Array Administration Interface (for example, Symmetrix Management Console) and view the newly created storage groups, initiator groups, and the SAN switch where the zone configuration is managed.

## Backend operation – orchestration engine

After service profiles are created on the UCS, there are a number of important values displayed to the user that are used for zoning and creating storage devices on the Vblock storage platform. Some of these values are:

- World Wide Name (WWN)
- Media Access Control (MAC)
- Universally Unique ID (UUID)



**Figure 4. Orchestration Engine shows a drill-down view into one of the core processes of Vblock automation.**



## Provisioning a Sandbox

Provisioning a complete SAP landscape using the automation engine is a simplified process that helps create a copy of a complete SAP production landscape rapidly, which can then be used to run tests, streamline and accelerate projects, perform planned maintenance, and enable full integration testing without impacting a “live” production environment.

To provision a SAP sandbox environment using an orchestration engine a user would perform the following steps:

1. Repeat the steps listed in section 3: *Provisioning a New SAP Server Using Vblock Automation* for creating a test SAP system.
2. As the SAN administrator, create the number of SNAPs needed for the sandbox environment from the existing SAP volumes.
3. Zone these newly created volumes to the SAP servers.
4. After adding the correct disks, the SAP servers can then be brought online.

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**Note:** No additional configuration is necessary if the servers are on isolated networks.

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## Summary

Understanding the components that make up a Vblock, and the concepts of service profiles and service profile templates, is critical for users prior to provisioning a new server or blade in a Vblock environment. Although this paper discusses the specifics on how to provision new SAP instances on a server, any component that uses Vblock will also follow this same model of using service profile templates and automation engines to rapidly provision new application instances on a Vblock.

For this use case, using service profile templates and the automation engine designed for the Vblock dramatically simplifies the provisioning process for new SAP instances on blades and servers. Where the time it takes to provision a new SAP instance is normally measured in hours, this is now reduced to minutes; thus eliminating the need to repeat steps. These templates allow administrators to quickly respond to changing business needs and requirements, while also maintaining operational efficiency and agility.



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