Virtualization of an SAP Environment
Under Our Third-Party Support Delivery Model

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1.1   Introduction

When you think about virtualization, one often associates it with a cloud solution. To be exact, virtualization is the key factor in the Cloud. Virtualization can be used to logically divide a single physical server into multiple virtual machines, or to virtualize multiple physical servers and to create a single connection.

In this document, we look at the first approach: virtualization, which divides a single server into one or more logical servers on SAP environment.

1.2   Virtualization

The standard SAP environment consists of three layers: Hardware, Operation System, and applications. In a typical system, this architecture is dedicated to single physical system environment for each application and database level.
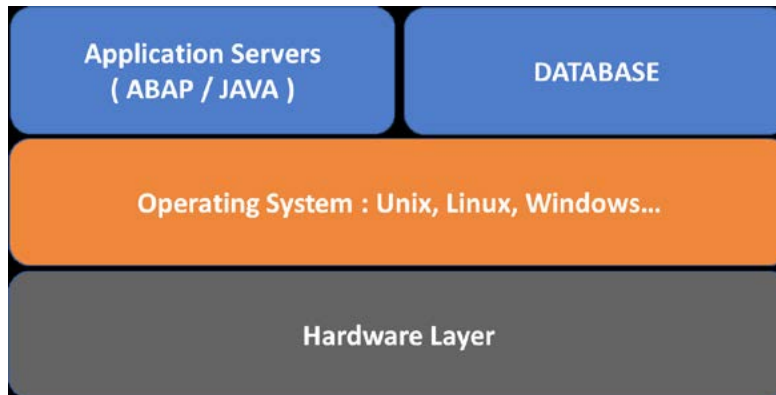

Fig. 1. Classic SAP on-premise Architecture

Like SAP, most other applications can be implemented under virtual environment architecture as well.
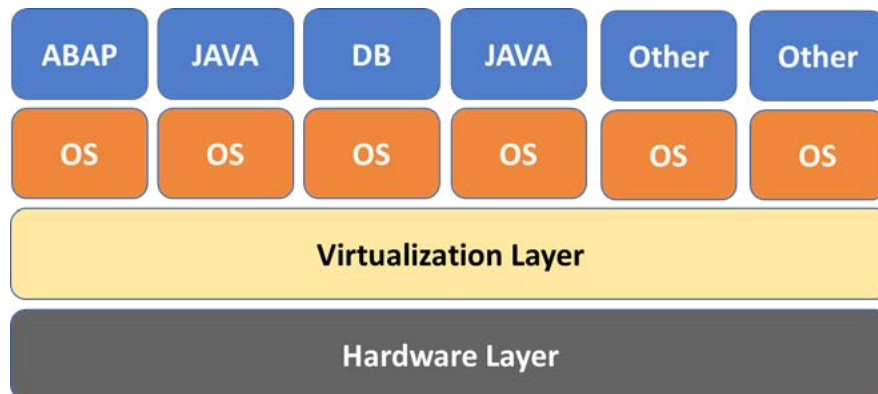
Fig. 2. SAP Virtualization Architecture

SAP provides a landscape administration tool called 'SAP Landscape Management (SAP LaMa)'- formerly named SAP Landscape Virtualization Management (SAP LVM), which enables the SAP basis administrator to automate SAP system operations (e.g., end-to-end SAP system copy/refresh operations).

- Automation of repetitive, time-consuming system administration tasks
- Centralized landscape management, operations, and visibility
- Acceleration of fundamental business application lifecycle operations
- Advanced operations specifically for SAP systems powered by SAP HANA

Fig. 3. SAP Virtualization Architecture with SAP Landscape Management

For further information, please refer to the below links:

Landscape Management

WIKI Landscape Management

SAP Landscape Management FAQ

1.3   SAP Virtualization

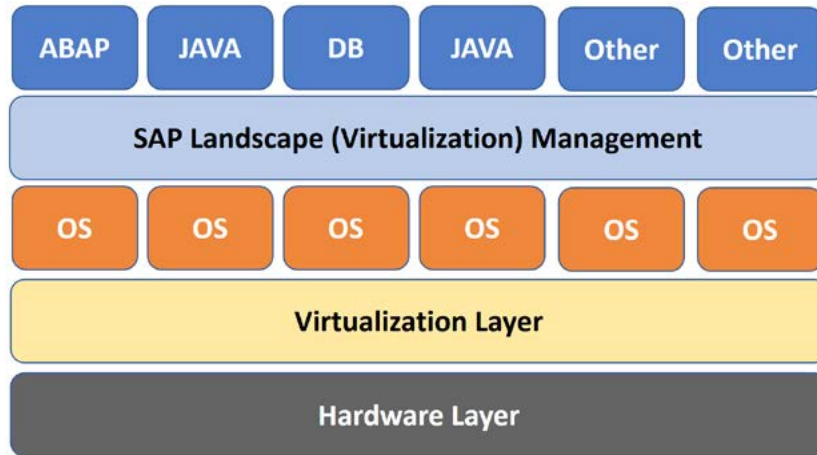The virtualization solutions that support SAP are as follows, dependent upon the operating system.

Operating System	Virtualization Solutions and Technologies Supported by SAP
AIX http://scn.sap.com/community/aix	PowerVM WPAR Active Memory Expansion (AME)
HP-UX	HP-UX Containers Integrity VM nPars vPars
IBM i http://scn.sap.com/community/ibm-i	PowerVM Subsystems
Linux (SAP Notes)	KVM (RHEL, RHEV, SLES, IBM INxHY) VMware vSphere XEN (RHEL5, SLES, Citrix XenServer, Oracle VM, Huawei) Unisys s-Par Hitachi HVM LPAR
Linux on IBM Power	PowerKVM PowerVM
Linux on IBM z Systems http://scn.sap.com/docs/DOC-8430	KVM LPAR z/VM
Solaris http://scn.sap.com/community/oracle-solaris	Oracle Solaris Containers Oracle VM Server for SPARC Oracle VM Server for x86

Operating System	Virtualization Solutions and Technologies Supported by SAP
Windows http://scn.sap.com/community/it-management/virtualization/windows	Microsoft Hyper-V VMware vSphere IBM INxHY
z/OS	LPAR z/VM

The above table is referenced from: https://archive.sap.com/documents/docs/DOC-28742

If you are considering a virtualization solution, here are a summary of simple matrixes for choosing a virtualization solution that supports the OS, DB, and other systems you are currently running.

SAP on VMware vSphere

Supported Guest Operating Systems by SAP

Hypervisor Guest OS	VMware v Sphere 5.x, 6.0, 6.5
Red Hat Enterprise Linux 5, 6, 7	supported
SUSE Linux Enterprise Server 8, 9, 10, 11, 12	supported
Windows Server 2003, 2008 (R2), 2012 (R2), 2016	supported

For a detailed list of supported guest operating systems by VMware vSphere: Partner Web VMware

Supported Databases

Supported SAP Application Database	VMware v Sphere 5.x, 6.0, 6.5
IBM DB2	supported (only for specified DB) http://www.ibm.com/developerworks/wikis/display/im/DB2+Virtualization+Support
MaxDB, LiveCache	supported (SAP provide notes for LiveCache versions)
Microsoft SQL Server	supported
Oracle Database	supported (Restricted Oracle support, only for specified DB. SAP provide notes - VMware and guest OS versions list)
SAP ASE	supported (released as of SAP ASE 15.7)
SAP IQ	supported (released as of SAP IQ version 15.4) https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/techpaper/vmware-sap-sybase-iq-deployment-guide-white-paper.pdf
SAP HANA	supported (SAP provide notes for HANA support)

SAP on Microsoft Hyper-V

Supported Guest Operating Systems by SAP

Hypervisor Guest OS	Hyper-V Windows Server 2008 (R2)	Hyper-V Windows Server 2012	Hyper-V Windows Server 2012 R2	Hyper-V Windows Server 2016
Windows Server 2003	supported	not supported	not supported	not supported
Windows Server 2008	supported	supported	supported	supported
Windows Server 2008 R2	supported	supported	supported	supported
Windows Server 2012	supported	supported	supported	supported
Windows Server 2012 R2	not supported	supported	supported	supported
Windows Server 2016	not supported	not supported	supported	supported
Red Hat Enterprise Linux (RHEL)	not supported	not supported	not supported	not supported
SUSE Linux Enterprise Server (SLES)	not supported	not supported	not supported	not supported

Supported Databases

Supported SAP Application Database	Hyper-V Windows Server 2008 (R2)	Hyper-V Windows Server 2012 (R2) and 2016
IBM DB2	supported (only for specified DB, SAP provide notes - Hyper-V and guest OS versions list)	
MaxDB, LiveCache	supported (SAP provide notes)	
Microsoft SQL Server	supported	
Oracle Database	not supported	supported cond (only for specified DB, SAP provide notes - Hyper-V and guest OS versions list)
SAP ASE	supported (released as of SAP ASE 15.7)	
SAP HANA	not supported	

SAP on Amazon Web Services (AWS)

Supported SAP Applications

Supported SAP Applications
Applications running on WebAS ABAP and/or Java as part of SAP NetWeaver
SAP BusinessObjects Planning and Consolidation on NetWeaver (BPCNW)
SAP SCM Optimizer
TREX
SAP liveCache
SAP BusinessObjects Business Intelligence (SAP BI)
SAP Afaria
SAP IQ
SAP Business One

Supported Guest Operating Systems by SAP

SAP Application Guest OS	Application based on SAP Netweaver AS	SAP SCM Optimizer	SAP BI	SAP AFARIA
Windows Server 2003, 2008	not supported	not supported	not supported	not supported
Windows Server 2008 R2, 2012 (R2), 2016	supported	supported	supported	supported
Red Hat Enterprise Linux (RHEL)	Supported (released as of RHEL 6 or higher)	Supported (released as of RHEL 7 or higher)	supported (released on all SLES and RHEL versions that are listed in the Product Availability Matrix (PAM) for SAP BI.)	not supported
SUSE Linux Enterprise Server (SLES)	Supported (released as of SLES 11 or higher)	Supported (released as of SLES 12 or higher)		not supported
Oracle Linux	Supported (only for Oracle DB)	not supported	not supported	not supported

Supported Databases

Supported SAP Application Database	Applications based on SAP Netweaver AS, BPCNW, TREX
IBM DB2	supported (released as of IBM DB2 LUW 9.7 or higher)
MaxDB, LiveCache	supported (released as of MaxDB version 7.8 or higher, SAP provide notes for Livecache versions)
Microsoft SQL Server	supported (released as of MS SQL Server 2008 R2 or higher)
Oracle Database	supported (only on Oracle Linux 6.4 or higher; no support on Windows)
SAP ASE	supported (released as of SAP ASE 15.7.0.051 or higher)
SAP HANA	supported (SAP provide notes for HANA support)

SAP on Microsoft Azure

Supported SAP Applications

Supported SAP Applications	on Guest OS
Applications running on WebAS ABAP and/or Java as part of SAP NetWeaver	Windows, Linux
SAP BusinessObjects Planning and Consolidation on NetWeaver (BPCNW)	Windows
TREX	Windows
SAP Content Server	Windows
SAP BusinessObjects Business Intelligence (SAP BI)	Windows, Linux
SAP Financial Consolidation	Windows

Supported Guest Operating Systems by SAP

Hypervisor Guest OS	Applications based on SAP Netweaver AS, BPCNW, TREX	SAP BI
Windows Server 2003	not supported	not supported
Windows Server 2008	not supported	not supported
Windows Server 2008 R2	supported	supported (SAP provide notes for versions and constraints)
Windows Server 2012	supported	
Windows Server 2012 R2	supported	
Windows Server 2016	supported	not supported
Red Hat Enterprise Linux (RHEL)	supported (released as of RHEL 7 or higher)	not supported
SUSE Linux Enterprise Server (SLES)	Supported (released as of SLES 12 or higher)	not supported
Oracle Linux 7	Supported (only for Oracle DB)	not supported

Supported Databases

Supported SAP Application Database	Applications based on SAP Netweaver AS, BPCNW, TREX
IBM DB2	supported (only for specified IBM DB2 for Linux, SAP provide notes for versions and constraints for Unix and Windows versions)
MaxDB, LiveCache	supported (only for specified MaxDB and liveCache versions)
Microsoft SQL Server	supported (released as of MS SQL Server 2008 R2 or higher)
Oracle Database	supported (only for specified Oracle Database on Windows guest)
SAP ASE	supported (released as of SAP ASE 16.0 SP02 or higher)
SAP HANA	supported (SAP provide notes for HANA support with Microsoft Azure)

1.4 Features and Benefits of Virtual Environments

Although functionality differs depending on the virtualization solution, most typically have the following features and benefits:

- Improve system availability at lower cost
- Build an efficient disaster recovery system
- Easily provision new SAP solution environments for development and testing
- Resource optimization reduce costs such as space, energy, air conditioning systems, and hardware in SAP data centers
- Improve utilization, flexibility, availability, and speed of SAP data centers
- Improve SAP application-based development at lower cost
- Improve uptime with minimal downtime, even with scheduled maintenance

1.5   Reference sites

SAP Community - Virtualization and Cloud Infrastructure Community

https://www.sap.com/community/topic/virtualization.html

SAP Wiki - Virtualization and Cloud Infrastructure

https://wiki.scn.sap.com/wiki/display/VIRTUALIZATION

1.6   About Spinnaker Support

Spinnaker Support is the leading global provider of third-party support and managed services for enterprises that run SAP. Spinnaker Support clients gain more comprehensive and responsive service, save an average of 62% on their support fees, and can remain on their current software releases indefinitely. They trust Spinnaker Support to keep their enterprise applications running at peak performance and to help them navigate from on-premise to hybrid to cloud.

Spinnaker Support operates from nine regional operations centers located in Denver, London, Moscow, Mumbai, Paris, Singapore, Seoul, Tel Aviv, and Tokyo. Our award-winning blend of services span SAP, BusinessObjects, Oracle E-Business Suite, JD Edwards, Siebel, Oracle Database, Oracle Fusion Middleware products, Hyperion, Agile PLM, ATG/Endeca, and more.

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