



Partner Enterprise Architect Team (PEAT)

### How to set up SAP HANA and SUSE Linux on Microsoft Azure

Partner Enterprise Architect Team Microsoft

## Disclaimer

- Current target : <u>Non-production</u> HANA-Enterprise workloads (= Dev, Test, Demo, Training, Sandbox)
- 2. This setup guidance is "AS-IS" and for information sharing purposes as of today and will be updated without notice
- 3. Recommended to work with your HANA/SAP experts and Linux experts
- 4. Recommended to check how to escalate possible Azure issues to Microsoft Premier Support
- 5. Check the latest version of this document @ <u>https://onedrive.live.com/redir?resid=BE0DC33ADD24BDCD!102243&authke</u> <u>y=!APBcvdyVVW0h7bA&ithint=file%2cpptx</u>
- 6. SAP NetWeaver setup procedure is in our separate guidance @ <u>https://onedrive.live.com/redir?resid=BE0DC33ADD24BDCD!102244&authke</u> <u>y=!ACE5Lf2fpXkk\_34&ithint=file%2cpptx</u>



### Setting Up SAP HANA Enterprise Edition on Azure VM

Check out :

### https://onedrive.live.com/redir?resid=BE0DC33ADD24BDCD!102243&authkey=!APBcvdyVVW0h7bA&ithint=file%2cpptx



- Software : SAP HANA Platform Edition 1.0 SPS09
- OS : SUSE Linux Enterprise Server 11 SP4 or 12 SP1
- Local Host Name : vm-hanatest10
- OS user : azureuser
- Location : US West
- VM size : Standard\_DS14\_v2 (16 core, 112GB RAM)
- Storage account : strhanatest10, Premium Storage
- Storage : 4 x P20 disks for HANA database (/database) and 1 x P20 disks for HANA database log (/log)
- Resource Group : rsg-hanatest10
- Installation Path :/hana/shared
- SAP HANA System ID: TST
- Instance Number : 00
- Database Mode : single\_container
- Location of Data Volumes : /database/TST
- Location of Log Volumes : /log/TST
- System Administrator Home Directory: /usr/sap/TST/home
- System Administrator Login Shell: /bin/sh
- System Administrator User ID: 1001
- ID of User Group (sapsys): 79



## SUSE Linux disk layout before installing HANA Database



## SAP HANA Learning Materials

- Cookbook Business Suite on HANA
  - <u>https://proddps.hana.ondemand.com/dps/d/preview/6932132d32b54f58a961a755e043e21e/1.0/en-US/index.html#url=e25e8322ed6a44b097afd7d08adcc59d.html</u>
- SAP HANA Server Installation Guide
  - <a href="http://help.sap.com/hana/SAP\_HANA\_Installation\_Guide\_en.pdf">http://help.sap.com/hana/SAP\_HANA\_Installation\_Guide\_en.pdf</a>
- Getting Started with SAP NetWeaver Application Server for ABAP and SAP Business Warehouse 7.4 SP8 on SAP HANA 1.0 SP8
  - <u>https://caldocs.hana.ondemand.com/caldocs/help/Getting\_Started\_Guide\_ABAP\_74\_SP8\_HANA\_SP8\_DevEdition.pdf</u>
- SAP HANA Academy
  - <u>https://www.youtube.com/playlist?list=PLkzo92owKnVwADqaEp2-YhXFRKDVoUQNL</u>
- SAP HANA Academy SAP HANA Installation: Install or Update Components [SPS 09]
  - <u>https://www.youtube.com/watch?v=Ebp84m3UoJY&list=PLkzo92owKnVwADqaEp2-YhXFRKDVoUQNL&index=11</u>
- SAP HANA Academy SAP HANA Installation: SAP HANA server [SPS 09]
  - <u>https://www.youtube.com/watch?v=pU37eY-srBo&list=PLkzo92owKnVwADqaEp2-YhXFRKDVoUQNL&index=12</u>
- SAP HANA Academy SAP HANA Installation: SAP HANA Studio [SPS 09]
  - https://www.youtube.com/watch?v=yDAy4ufldtk&list=PLkzo92owKnVwADqaEp2-YhXFRKDVoUQNL&index=13
- Linux and Open-Source Computing on Azure
  - <u>https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-opensource/</u>



## SAP HANA Learning Materials

- How to Attach a Data Disk to a Linux Virtual Machine
  - <u>https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-how-to-attach-disk/</u>
- Configure Software RAID on Linux
  - <u>https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-configure-raid/</u>
- Premium Storage: High-Performance Storage for Azure Virtual Machine Workloads
  - <u>https://azure.microsoft.com/en-us/documentation/articles/storage-premium-storage-preview-portal/#using-linux-vms-with-premium-storage</u>
- SUSE Linux Enterprise and HANA
  - http://scn.sap.com/docs/DOC-49204
- SUSE Linux Enterprise for SAP applications
  - <u>https://www.suse.com/products/sles-for-sap/</u>



## SAP Note

- 1954788 SAP HANA DB : Recommended OS settings for SLES 11 / SLES for SAP applications SP3
- 1944799 SAP HANA Guidelines for SLES Operating System Installation
- 2001528 Linux : SAP HANA Database SPS 08 revision 80 or higher on RHEL 6 or SLES 11
- 1275776 Linux : Preparing SLES for SAP environments
- 2004651 SAP HANA Platform SPS 08 Release Note
- 1310037 SUSE Linux Enterprise Server 11 : Installation Notes



## HANA Enterprise Edition Setup Sequence

- 1. Download HANA installation components from SAP Marketplace to your desktop (SAP)
- 2. Deploy SUSE Linux 11 SP4 VM from Azure Marketplace to your Azure subscription (Azure)
- 3. Connect to SUSE Linux VM from PUTTY (Linux)
- 4. Configure underneath disks on SUSE Linux VM (Linux)
- 5. Upload HANA installation components from your desktop to SUSE Linux VM (Linux)
- 6. Install HANA Database on SUSE Linux VM (SAP)
- 7. Install Java runtime and HANA Administration Console to connect to HANA (SAP)





Download HANA installation media	Deploy SUSE Linux 11 SP4 VM	Connect to SUSE Linux VM	Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Install HANA Database	Install HANA Admin Console and connect to HANA

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Help	<ul> <li>specific version of a product.</li> <li>A subset of Analytics product</li> </ul>	patches is available without the need for	an S-user logon.	Customer Validation     lists all products if you     are participating in the     Customer Validation

Go to <u>https://support.sap.com/swdc</u> using your SAP S user account (permission required)

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Support Portal	Keys, Systems & Installations	> Support Programs & Services	> Remote Su	ipport
	Users & Authorizations	> Documentation	> SAP Soluti	on Manager
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SAP Business One for Partners Download Manager	the Support Packages and	Patches section.		description on eac







- SAP HANA Live for Reinsurance Management
- <u>SAP HANA ANALY. F. CMM</u>
   SAP HANA Live for Commodity Management
- <u>SAP HANA ANALY. FOR CPM</u>
   SAP HANA Live for SAP Commercial Project Management
- <u>SAP HANA ANALYTICS FOR CRM</u>
   SAP HANA Live for SAP CRM
- SAP HANA ANALY, F. CRM-IU
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   SAP HANA Live for Extended Warehouse Management
- <u>SAP HANA ANALYTICS FOR FCC</u>
   SAP HANA Live for Financial Close
- <u>SAP HANA ANALY. F. FND</u>
   SAP HANA Live for SAP Business Suite foundation component
- SAP HANA ANALYTICS FOR GBT
- SAP HANA Live for SAP Global Batch Traceability
  SAP HANA ANALYTICS FOR GRC
- SAP HANA Live for SAP solutions for GRC
- SAP HANA ANALY. F. GRC10.1
   SAP HANA Live for SAP solutions for GRC 10.1
- <u>SAP HANA ANALYTICS FOR GTS</u>
   SAP HANA Live for SAP GTS

- SAP HANA Live for SAP Simple Finance, on-premise edition
- <u>SAP HANA ANALYTICS FOR TM</u> SAP HANA Live for Transportation Management
- <u>SAP HANA CLOUD INTEGRATION(DS)</u>
   SAP HANA Cloud Integration for data services
- SAP HANA CONTENT TOOLS
- SAP HANA Live tools
  SAP HANA CRM IC INBOX ACC
- SAP HANA, add-on for accelerated inbox search for SAP CRM interaction center

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- <u>SAP HANA DW FOUNDATION</u>
  SAP HANA data warehousing foundation
- <u>SAP HANA DYNAMIC TIERING</u>
   SAP HANA dynamic tiering
- <u>SAP HANA ON POWER
   SAP HANA, VEISION OF 10M POWER
   </u>
- SAP HANA PLATFORM EDITION SAP HANA, platform edition
- SAP HANA REMOTE DATA SY
- SAP HANA remote data sync
- SAP HANA RULES FRAMEWORK SAP HANA rules framework
- <u>SAP HANA SDI</u>
   SAP HANA smart data integration
- SAP HANA SMART DATA STREAMING SAP HANA smart data streaming
- <u>SAP HR-CEE</u>
- HR renewal, localization for CEE countries SAP HX-CEE
- SAP ERP Human Capital Management extensions, localization for CEE countries
  SAP HYBRIS MARKETING
- SAP hybris Marketing

Choose SAP HANA Platform Edition

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### Run 51049967\_part1.exe to extract media kit files

Download two HANA 1.0 SPS09 Installation media kit files

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51049967 2

(51049967\_part1.exe & 51049967\_part2.rar)



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#### Media kit extracted







Go to Azure Portal : https://ms.portal.azure.com

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Download HANA installation media	Deploy SUSE Linux 11 SP4 VM	Connect to SUSE Linux VM	Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Install HANA Database	Install HANA Admin Console and connect to HANA

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Select <u>"DS14\_v2"</u>





Give a name for Premium Storage Account





Give a name for Virtual Network

Give a name for Public IP Address





Give a name for Network Security Group

Open Port 30015 to allow access from HANA Studio



Download HANA installation media	SUSE SP4 Cor SUSE	nnect to Linux VM	Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Install HANA Database	Install HA Admin Cor and conne HANA
SLES 11 SP4	– 🗖 X Create virtual machine	_ t Settings	- ×	_ □ × Create virtual machine	Summary	
SUSE Linux Enterprise Server 11 Service Pack 4 Confidently run your production workloads on SUSE Linux Enterprise Server on Microsoft Azure, knowing that your service levels are guaranteed, and that help from SUSE and Microsoft engineers, if you need it, is just a phone call away. SUSE Linux Enterprise Server is the <i>only</i> supported Enterprise Linux distribution available on Microsoft Azure, and the only one supported with tools like SUSE Studio for quick and easy image creation, and SUSE Manager for monitoring and managing your Linux virtual machines using Microsoft Systems Center. Legal Terms	1 Basics ✓ 2 Size ✓ 3 Settings →	Disk type  Standard Premain (Stb) Standard (new) strhaatest10 Network 'Virtual network  (new) /VNT-hanatest10	> 	1 Basics Done ✓	Validation passed Basics Subscription Resource group	Microsoft Azure Internal Consum (new) RSG-HANATEST10
By clicking the Create button, I acknowledge that I am getting this software from SUSE and that the equal terms of SUSE apply to it. Microsoft does not provide rights for third-party software. Also see the privacy statement from SUSE         If       in       y       80       100	Summary SLES 11 SP4	Subnet      default (10.2.0.0/24)     Public IP address          (new) pip-hanatest10     Network security group          (new) nsg-hanatest10     Extensions		3 Settings Done ✓	Settings Computer name User name Size Disk type Storage account	west US vm-hanatest10 azureuser Standard DS14 v2 Premium (SSD) (new) strhanatest10
We adapt. You succeed.		Extensions © No extensions Monitoring Diagnostics © Disabled Inuber * Diagnostics storage account © (new) rsghanatest109239	> >	4 SLES 11 SP4	Virtual network Subnet Public IP address Network security group Availability set Diagnostics Diagnostics storage account	(new) VNT-HANATEST10 (new) default (10.2.0.0/24) (new) pip-hanatest10 (new) nsg-hanatest10 None Enabled (new) rsghanatest103426
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### Start deployment



# Demo



Download HANA installation media	Deploy SUSE Linux 11 SP4 VM	Connect to SUSE Linux VM	Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Install HANA Database	Install HANA Admin Console and connect to HANA
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Ŷ	Subscriptions	RESOURCE	vm-hanatest10 (virtu	al machine)		
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		Microsoft.Network/netw	<ol> <li>Informational</li> </ol>	Succeeded	6	
		Microsoft.Network/netw	1 Informational	Started	6	



### Start to attach additional disks





1<sup>st</sup> P20 disk (512GB) Read Only (caching)



-> for HANA Database files





4<sup>th</sup> P20 disk (512GB) Read Only (caching)





5 x P20 disks are attached to HANA VM



Download HANA installation media	Deploy S Linux 11 VM	USE SP4	Cor SUSE	nnect to Linux VM		Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Inst Da	call HANA atabase	Install HANA Admin Console and connect to HANA
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Stop Delete  Stop Delete  Computer name Vm-hanatest10 Operating system Linux Size Standard GS3 (8 cores, 112 GB memory) Public IP addres/UNS name label 1383 01243194/-onnee> Vmt-hanatest10/default	Setting         Dissociale         Delete           Essentials         ^           Resource group RSS-hanatest10 Location West US Subscription name Visual Studio Utimate with MSDN Subscription ID 4495d8ff-7f8a-40e8-b9dc-0aecca9ef4d3	IP address 138.91,243,194 DNS name - Associated to vm-hanatest10438 Virtual machine vm-hanatest10	د کی		> >		Filter settings  SUPPORT + TROUBLESHOOTING      Audit logs      New support request	>	Assignment Dynamic Stati IP address  138.91.162.155 Idle timeout (min	c utes) <b>0</b>
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м 12 РМ 6 РМ						•	RESOURCE MANAGEMENT  Tags  Locks Users  Funct template	> > >		

### Give a FQDN/DNS Name for HANA VM



# Demo







Run Putty



Download HANA installation media	USE SP4 Connect to SUSE Linux VM	Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Install HANA Database	Install HAI Admin Cons and connec HANA
PuTTY Configuration	? ×				
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Configure Software RAID on Linux

https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-configure-raid/





- Things to note during SUSE disk configuration
  - ✓4 disks are used to create a software RAID for HANA database files (/database) and 1 disk is for HANA database log files (/log)
  - ✓Hex code of disk partitions for Software RAID needs to be changed to "fd"(= RAID autodetect)
  - ✓ DO NOT change Hex code if it's NOT Software RAID
  - ✓Use "/dev/md127" for the file system name of Software RAID
  - ✓ When changing /etc/fstab test unmount (umount) and mount —a before rebooting OS









Install WinSCP

### Go to http://winscp.net/eng/docs/installation





nSCP	_		🚅 New Site	Eile protocol:	
New Site	Session File protocol: SFTP V Host name: Port User name: Password: Save V Advan	number: 22 💭 nced 💌		SFTP V Host name: Vm-hanatest10.cloudapp.net User name: Pa root Save V	Port number 2 ssword: Advanced
Tools 👻 Manage	▼ 🔁 Login 🔽 Close	Help			

Host name : vm-hanatest10.cloudapp.net and Login

Run WinSCP

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Download HANA installation media	Deploy SUSE Linux 11 SP4 VM	Connect to SUSE Linux VM	Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Install HANA Database	Install HAN Admin Conso and connect HANA	A ole to

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Upload HANA media kit into VM (drag & drop – file copy)

Wait for hours to complete upload

16:57:44 Time elapsed:

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Once finished:

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0:00:11

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Change permissions as above (and wait for hours to complete) (Don't forget to tick "Set group, owner and permissions recursively")





Connect to the VM







- SAP HANA Server Installation Guide
  - <u>http://help.sap.com/hana/SAP\_HANA\_Installation\_Guide\_en.pdf</u>
- SAP HANA Academy
  - <u>https://www.youtube.com/playlist?list=PLkzo92owKnVwADqaEp2-YhXFRKDVoUQNL</u>
- SAP HANA Academy SAP HANA Installation: Install or Update Components [SPS 09]
  - <u>https://www.youtube.com/watch?v=Ebp84m3UoJY&list=PLkzo92owKnVwADqaEp2-YhXFRKDVoUQNL&index=11</u>



Download HANA installation media Deploy SUSE Linux 11 SP4 VM	Connect to SUSE Linux V	М	Configure underneath disks on SUSE Linux VM	Upload HANA installation media	Install HANA Database	Install HANA Admin Console and connect to HANA
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http://www.oracle.com/technetwork/java/javase/downloads/

jre8-downloads-2133155.html (in this case 64-bit is use





Run hdbsetup.exe in HDB\_STUDIO\_WINDOWS\_X86\_X64 of HANA media kit (in this case 64-bit is used)

![](_page_41_Picture_3.jpeg)

![](_page_42_Figure_0.jpeg)

![](_page_42_Figure_1.jpeg)

![](_page_42_Picture_2.jpeg)

![](_page_43_Picture_0.jpeg)

#### Run HANA Admin Console

![](_page_43_Picture_2.jpeg)

![](_page_44_Figure_0.jpeg)

SAP HANA Administration Console - SAP HAN	NA Studio	SAP HANA Administration C	Console - SAP HANA Studio
File Edit Navigate Project Window Help		File Edit Navigate Project Wi	indow Help
	Quick Ar		- ▼ ↔ ▼ Quick A
IST (SYSTEM) hana	System   Specify System   Specify System   Specify the host name and instance number of the system.     Host Name:   vm-hanatest10.cloudapp.net   Instance Number:   O     Mode:   • Single containers   • Tenant database container   Name:   • System database container   Name:   • System database container   Name:   • System database container   Description:   Locale:   English (United States)   Folder:   /     Browse     ③     Aack     Yext >     Enish     Cancel	Image: Systems       Image: Systems         Image: Systems       Image: Sy	System   Connection Properties Specify the properties for connecting to the system. Authentication can be carried out using the current operating system user or a valid SAP HANA database Iser Authentication by current operating system user Authentication by database user User Name: SYSTEM Password: •••••••• Connect using SSL Connect using SSL Enable SAP start service connection Use HTTPS Iser Isore user and password in secure storage Connect using SSL Enable SAP start service connection Solve HTTPS Isore user Authentication

### Host name : vm-hanatest10.cloudapp.net

Log in with SYSTEM user

![](_page_44_Picture_4.jpeg)

![](_page_45_Figure_0.jpeg)

![](_page_45_Figure_1.jpeg)

SAP HANA Administra	ation Console - System: TST Host: har	a-test4.cloudapp.net Instance: 00 Connected User: SYSTE!	M System Usage: Custom System - SAP HANA Studio 🦳 🗌 🗙			
File Edit Navigate Proje	ect Window Help					
🖬 🕶 🖩 🗞 🗠 🖄 🕶 🖗 🦷			Quick Access 🛛 😰 🛸 SAP HANA Administration Consol			
🎙 Systems 🛛 🖱 🗖	#TST #					
	TST (SYSTEM) hana-tes	t4.cloudapp.net 00	l ast Undate: Jul 20. 2015 1:13:45 PM 🖑 🍽 Interval: 60 🔍 Seconds 📾 🖡			
STST (SYSTEM)	Overview Landscape Alerts Perform	ance Volumes Configuration System Information Diagno	sis Files Trace Configuration			
Backup	General Information		Current Alerts and Messages			
Catalog	Operational Status:	'sapstartsrv' service not started	<ul> <li>1 alert with MEDIUM priority</li> </ul>			
> SVS	System Usage:	Custom System	Show Alerts			
> # SYSTEM	Start Time of First Started Service:	Jul 20, 2015 7:57:18 PM				
> 3 SYS BI	Start Time of Latest Started Service:	Jul 20, 2015 8:00:54 PM				
> 🚜 _SYS_BIC	Distributed System:	No				
> 🚜 SYS_EPM	Version:	1.00.097.00.1434028111 (fa/newdb100_maint_rel)				
> 🚜 _SYS_REPO	Build Time:	Jun 11, 2015 3:22:05 PM				
> 🚜 _SYS_RT	Platform:	SUSE Linux Enterprise Server 11.4				
> 3 _SYS_SECURITY	Linux Kernel Version:	3.0.101-63-default				
> 🚜 _SYS_STATISTIC	Hardware Manufacturer:	Microsoft Corporation				
> 3 _SYS_TASK	SAP HANA Used Memory		Disk Usage			
> is_SYS_XS	Used Memory/Peak Used Memory	/Allocation Limit (GB)	Data Volume Size/Total Disk Usage/Total Disk Size (GB)			
<ul> <li>Content</li> <li>Panding</li> </ul>	On Host hana-test4: 6.92/7.25	12.35	On Host hana-test4: 1.08/18.21 29.5			
>  Provisioning	More Information		Log Volume Size/Total Disk Usage/Total Disk Size (GB)			
> 🔤 Security	Perident Memory		On Host hana-test4: 2.14/18.21 29.5			
	Database Resident/Total Resident/	Numinal Marmony (GP)	Trace Volume Size/Total Disk Usage/Total Disk Size (GB)			
	On Host bana-test4: 5 92/5 56	12 72	On Host hana-test4: 0.02/18.21 29.5			
	More Information	10/16	More Information			
	CPU Usage					
	Database CPU Usage/Total CPU Us	age/Maximum CPU Usage				
	On Host hana-test4: 12/65	100				
	More Information					
	<					
	Properties      Propertie					
	Property	Value				
< >						
			TST:HANA-TEST4.CL0:SINGLEDB:SYSTEM Fetching Children			

### SAP HANA Setup Complete !

![](_page_45_Picture_4.jpeg)

![](_page_46_Picture_0.jpeg)

(\*) In case unable to connect HANA, HANA service needs to be started manually

![](_page_46_Picture_2.jpeg)

vm-hanatest10:~ # cd /usr/sap/TST/HDB00
vm-hanatest10:/usr/sap/TST/HDB00 # su - tstadm
vm-hanatest10:/usr/sap/TST/HDB00> HDB start

![](_page_46_Picture_4.jpeg)

### (\*) Next Step : Setting Up SAP NetWeaver on SAP HANA Enterprise on Azure VM Check out :

https://onedrive.live.com/redir?resid=BE0DC33ADD24BDCD!102244&authkey=!ACE5Lf2fpXkk\_34&ithint=file%2cpptx

![](_page_47_Figure_2.jpeg)

- Software : SAP NetWeaver 7.4 ABAP
- OS : Windows Server 2012 R2
- Local Host Name : vm-nwtest2
- OS user : azureuser
- Location : US West
- VM size : Standard\_D11\_v2 (2 core, 14GB RAM)
- Virtual network : vnt-hanatest10
- Resource Group : rsg-nwtest2
- SAP System ID: NWA
- Instance Number : 00, 01

![](_page_47_Picture_13.jpeg)

## Thank You

![](_page_48_Picture_1.jpeg)

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