

Achieving Successful SAP on Azure Deployment & Governance

How a complete standardization and automated engineered workload delivery and governance strategy improves IT efficiency while reducing unplanned downtime and risk in 2020 and beyond

Abstract: IT modernization efforts often suffer from reliance on manual processes, especially in the complex work of migrating SAP landscape to the cloud. Unexpected negative results include costly, unplanned downtime, security risk exposure and compliance. Vnomic offers a solution. Its automated and engineered SAP landscape delivery and governance platform as a service eliminates manual processes while meeting all SAP and Microsoft performance, security, governance, and compliance requirements.



Introduction

The cloud is a means, not an end.

Companies that migrate enterprise software to the cloud while still relying on manual processes for workload delivery and governance tend to experience costly unplanned downtime. With SAP in particular, the demanding, complex configuration and compliance requirements of the system—along with those of cloud platforms like Microsoft Azure—can be especially challenging. One proven solution is to realize cloud-based IT modernization using a complete standardization and automated engineered workload delivery and governance strategy. With this approach, businesses can gain the benefits of IT modernization, but do so in a way that protects their brands and prevents devastating unplanned downtimes costs.



The High Cost of Unplanned Downtime

Fortune 1,000 companies' enterprise workload downtime could cost as much as \$1 million per hour, according to an IDC survey. And, while the typical mid-sized enterprise spends \$1 million per year on unplanned downtime, large enterprises can spend up to \$60 million or more, according to a research report from IHS. Figure 1 contrasts these levels of expenditure.

Driven by a lack of automated engineered enterprise workload delivery and governance, enterprise workload downtime cost companies worldwide nearly \$1.3 Trillion of lost revenues in 2019. As Figure 2 shows, this amount is nearly six times higher than the \$214.3 billion cloud services marketplace in that same year. And, these numbers are on the rise worldwide. In 2018, 76 major downtime incidents were attributed to workload misconfigurations. **In 2019, this number rose to 104, a 34% increase.**

Unplanned downtime events are devastating, not only to the organizations, but also to the public that is unable to access services. Moreover, often, when an unplanned downtime makes headlines, it is the company whose reputation suffers, not the underlying cloud service provider.

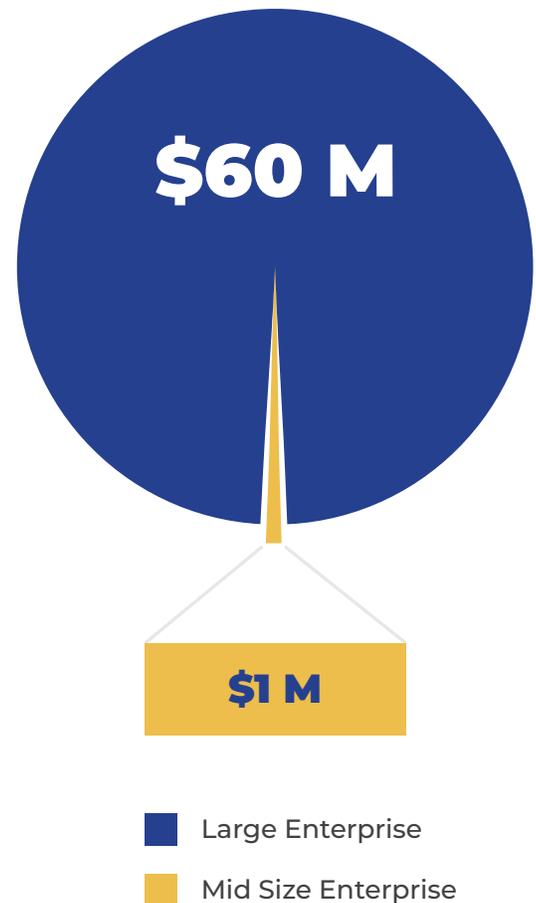


Figure 1 - Annual Enterprise Workload Downtime Cost



Figure 2 - Enterprise Workload Downtime Cost vs Public Cloud Consumption



Drivers of Downtime

The growth in unplanned downtime directly correlates with rising adoption rates of cloud services. Indeed, experts expect the upward trend to persist as companies continue to adopt cloud services rapidly but rely on manual approaches to enterprise workload delivery and governance measures. In analyzing the 180 major downtime caused by enterprise workload deployment misconfigurations on clouds, researchers validated a Gartner estimate that 99% of the unplanned downtimes was the enterprise's fault.

Most enterprise companies implementing a public cloud strategy are doing so quickly and out of necessity. They need to innovate to maintain a competitive edge, which requires the agility and speed only the cloud can offer. However, the results clearly demonstrate that organizations that lack a holistic approach to automated engineered workload delivery and governance are more vulnerable to unplanned downtime risk caused by:

- **Inexperienced users**
- **Failure to shift from outdated manual processes**
- **Lack of unified automated engineered workload delivery and governance platform**
- **Unprecedented rate of change, scale and scope for enterprise workload deployment and governance**

As companies adopted cloud computing, they have largely shifted responsibility for enterprise workload deployment and governance processes away from career IT deployment and governance professionals, who understood enterprise workload security, governance and compliance requirements, to less knowledgeable cloud specialists. At the same time, the pace of deployment has accelerated. Production deployments have gone from quarterly to weekly events.

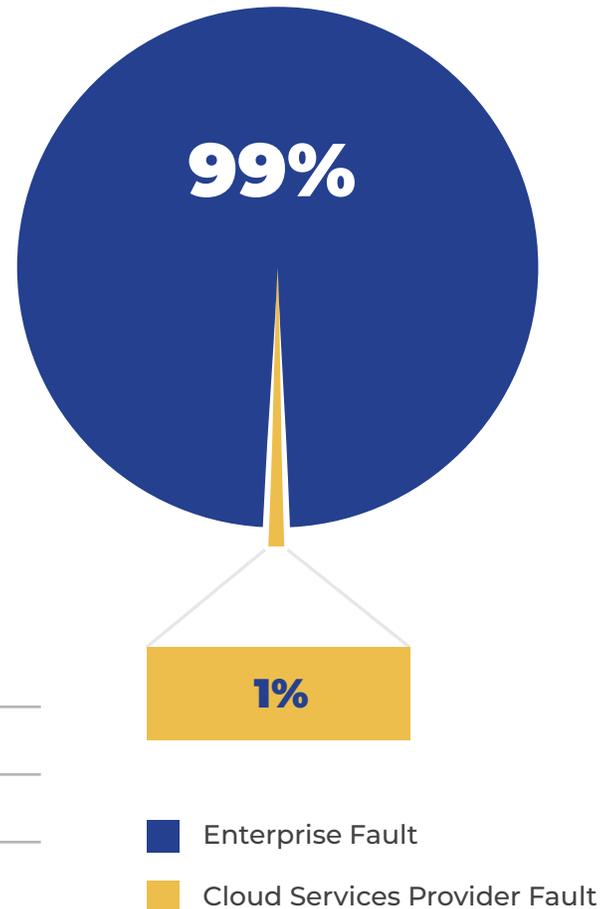


Figure 3 Whose fault caused enterprise workload downtime?



These enterprise workloads also typically feature continuous integration and deployment (CI/CD) approaches. This has led to massive cloud infrastructures that encompass large numbers of changes that are needed to meet the performance, security and governance of these enterprise workloads. When the deployment of enterprise workloads is done manually, the result is a loss of control. The process, and those who manage it, do not take into account the deployment configuration, security, governance or even compliance—all of which are critical for an enterprise workload deployment.

When it comes to deployment accuracy and consistency, there is a shared responsibility

relationship between enterprise and cloud service provider. The cloud service provider is responsible for providing the underlying components of cloud services, a task they typically fulfill without issue. The enterprise is responsible for ensuring how the enterprise workload uses the cloud services, including properly configuring identity and access management (IAM), storage and compute settings, operating systems, and the security of the application and data processed and stored in the cloud. Enterprise's may overlook their responsibilities, a deficiency that drives unplanned downtime.

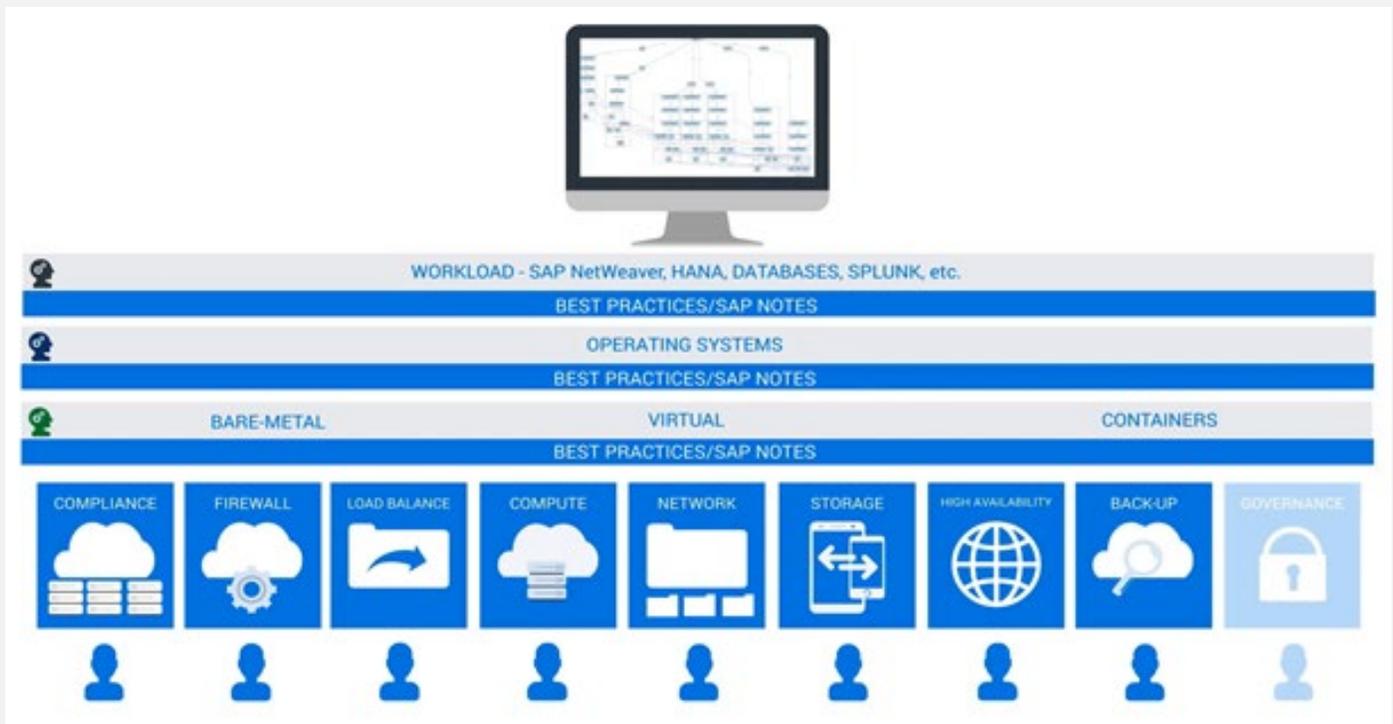


Figure 4 Enterprise workload deployment and governance complexity



How These Challenges Surface in the SAP Landscape

SAP landscapes are the digital heart of the 50,000 largest companies in the world.

SAP landscapes are the systems of record for these companies, processing trillions of dollars in revenue transactions annually. These companies are looking to deploy their SAP landscapes in the cloud to take advantage of the cloud agility, scalability, and enterprise capabilities.

Unfortunately, as they embrace the dynamic nature of public cloud, most enterprises fail to automate their SAP landscape delivery, governance, and

auditability to minimize manual misconfiguration risks. As a result, they are suffering from long time to value, failure to meet project go live dates and many un-planned downtimes. The impacts include billions of dollars in lost revenues and tarnished brands.

These SAP landscapes include many SAP systems and technologies, such as SAP S/4HANA, SAP Business Warehouse, SAP Governance Risk and Compliance (GRC), SAP CRM, SAP Solution Manager, SAP SLT, SAP Data Services, SAP Process Orchestration, SAP Gateway, SAP Enterprise Portal and SAP Web dispatcher as depicted in Figure 5.

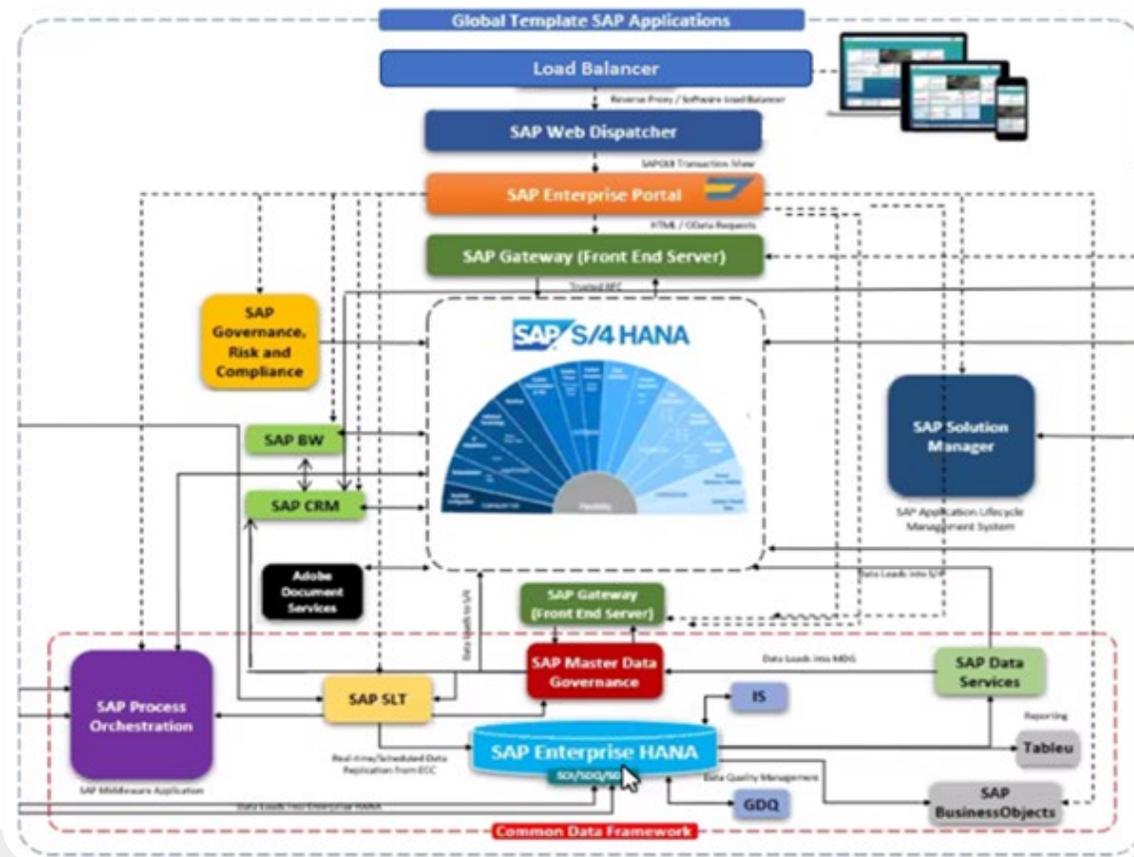


Figure 5 Enterprise SAP landscape

The Vnomic Solution

It is a best practice for SAP companies to adopt automated engineered enterprise workload delivery and governance solution for their cloud-based enterprise workload deployment. This is a proven way to protect their brands and avoid devastating unplanned downtimes costs. Vnomic offers a solution that aligns with this best practice. Its automated and engineered SAP landscape delivery and governance platform as a service eliminates manual processes while meeting all SAP and Microsoft performance, security, governance and compliance requirements.

Vnomic has been co-innovating with SAP and Microsoft engineering teams, leveraging advanced

modeling technologies to capture all SAP and Microsoft Azure requirements in Vnomic models along with Vnomic workbooks to eliminate manual processes.

Vnomic workbooks incorporate all SAP and Microsoft Azure requirements and eliminate virtually all potential manual misconfiguration errors. To deploy a SAP landscape, simply enter the SAP landscape information into Vnomic workbook Quick start tab and Vnomic workbook automatically computes all the parameters, bill of materials and costs associated with the landscape that meets all SAP and Microsoft best practices.

Input	Value	Description	Computed Server Fulfillment	Value
1 SAP SID	FVN	SID used for all NetWeaver and DB instances	CS Instance	1 NetWeaver C
2 Database Instance Number	00	Instance number used for database	ERS Instance	0 NetWeaver E
3 Database Schema Name	SAPHANADS	Schema name used for database	AS1 Instance	0 NetWeaver A
4 SAP Password	*****	Password used for all NetWeaver and DB instances	AS2 Instance	0 NetWeaver A
5 Server Administration User ID	adm00n	Administration user ID for all servers	AS3 Instance	NetWeaver A
6 Server Administration Password	*****	Administration password for all servers	AS4 Instance	NetWeaver A
7 SSM Public Key	*****	The SSM public key installed into each VM (when Key Vault is not used)	AS5 Instance	NetWeaver A
8 Deployment Name Prefix	FVN	String prepended to all deployment names	AS6 Instance	NetWeaver A
9 Deployment Name Suffix	00	String appended to all deployment names	AS7 Instance	NetWeaver A
10 High Availability	Yes	Cluster high availability for all deployments	AS8 Instance	NetWeaver A
11 Minimum Load Balancer SKU	Basic	Use this SKU even if lower SKUs fulfill requirements	Computed Server Fulfillment	
12 Load Balancer SNA7 method	Network	Defines method for implementing SNA7 for VMs in Internal Standard Load Balancers backend pools	CS Instance	0 Front Central
13 SBO Deployment ID		Name of STONITH Block Devices deployment	ERS Instance	1 Front ERS inst
14 Provision Solman Diagnostics Agent	No	Enable / Disable provisioning Solman Diagnostics Agent	AS1 Instance	0 Front AS1 inst
15 SAP Solution Manager Java SCS Message Server Host FQDN		The host name where the SAP Solution Manager Java SCS system is installed	AS2 Instance	0 Front AS2 inst
16 SAP Solution Manager Java SCS Message Server HTTP Port		The port number where the SAP Solution Manager Java SCS system can be reached	AS3 Instance	0 Front AS3 inst
17			AS4 Instance	0 Front AS4 inst
18			AS5 Instance	0 Front AS5 inst
19			AS6 Instance	0 Front AS6 inst
20			AS7 Instance	0 Front AS7 inst
21			AS8 Instance	0 Front AS8 inst
SAP NW Instance numbers				
22 SCS Instance number	1	Instance number for the SCS instance		
23 ERS Instance number	0	Instance number for the ERS instance		
24 Number of SAP NW instances (including PAS)	2	Applied to NetWeaver instances		
25 PAS and AAS Instance number # (0 to 97 - # instances)	0	Starts with this number		
Front End (Fiori) Instance numbers				
26 SCS Instance number	0	Instance number for the SCS instance		
27 ERS Instance number	1	Instance number for the ERS instance		
28 Number of SAP Fiori instances (including PAS)	2	Applied to Front End instances		
29 PAS and AAS Instance number for Fiori # (0 to 97 - # instances)	0	Starts with this number		
Virtual Machine Configuration				
30 OS Disk Storage Performance	Standard	OS disk storage performance tier		
Software Versions				
31 S/R Deployment	No	Yes means S/R is deployed with Front End (Fiori), no means NetWeaver only	Effective Software Versions	
32 NetWeaver version	SAP S/4HANA ERS	NetWeaver software version	Front End	S/R software
33 S/4HANA version	SAP S/4HANA 1709	S/4HANA software version	NetWeaver SAP S/4HANA 1709	NetWeaver s
34 SAP application server OS version	SAP LinuxOS	SAP application server OS version	S/4HANA Ver S/4HANA 2.0 SP5	S/4HANA software
35 SAP S/4HANA server OS version	SAP LinuxOS 1903	SAP S/4HANA server OS version	SAP appln S/4S E2 SP5	SAP appln
36 SAP S/4HANA server OS version	SAP LinuxOS 1903	SAP S/4HANA server OS version	SAP S/4HANA S/4S E2 SP5	SAP S/4HANA se
37 SAP application server OS version	SAP LinuxOS 1903	SAP application server OS version		
38 SAP S/4HANA server OS version	SAP LinuxOS 1903	SAP S/4HANA server OS version		
39 SAP S/4HANA server OS version	SAP LinuxOS 1903	SAP S/4HANA server OS version		
40 Operating System Repository	SAP LinuxOS 1903	Operating system repository for registering deployed servers		
41 Bootstrap Script URL	SAP LinuxOS 1903	Bootstrap script URL for registering deployed servers		
42 Activation Key	SAP LinuxOS 1903	Red Hat activation key for registration		
43 List of Channels	SAP LinuxOS 1903	List of channels that server needs access		

Figure 6 Vnomic workbook





After the SAP landscape configuration has been completed in Vnomic workbook, we can simply upload the workbook onto Vnomic service, where the Vnomic service will compute all the technical requirements while meeting all security, governance and compliance requirements and come up with the best design and builds the landscape. **This is done end to end, with zero touch, while documenting all the build steps to meet the security and governance requirements.**

Activity	ID	Status	Duration	Message	Target
+Apply class	862	Success	00:00:00	aws:RDS>gRDS>sh -c "supeet apply --d -detailed-stdout --color=false /tmp/vnomic/stage/...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	863	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	864	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	865	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	866	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Prepup update	867	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	868	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/BackUp/vnomic/imp/stage/remote_...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	869	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/BackUp/vnomic/imp/stage/remote_...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Apply class	870	Success	00:00:00	aws:RDS>gRDS>sh -c "supeet apply --d -detailed-stdout --color=false /tmp/vnomic/stage/...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	871	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	872	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	873	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	874	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Prepup update	875	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	876	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/diagnostics-install.sh	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	877	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/diagnostics-install.sh	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Apply class	878	Success	00:00:00	aws:RDS>gRDS>sh -c "supeet apply --d -detailed-stdout --color=false /tmp/vnomic/stage/...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	879	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	880	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	881	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	882	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Prepup update	883	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	884	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/BackUp/vnomic/imp/stage/remote_...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	885	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/BackUp/vnomic/imp/stage/remote_...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Apply class	886	Success	00:00:00	aws:RDS>gRDS>sh -c "supeet apply --d -detailed-stdout --color=false /tmp/vnomic/stage/...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	887	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	888	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	889	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	890	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Prepup update	891	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	892	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/diagnostics-install.sh	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Stage content	893	Success	00:00:01	Staging /tmp/vnomic/stage/updates/content/diagnostics-install.sh	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
+Apply class	894	Success	00:00:00	aws:RDS>gRDS>sh -c "supeet apply --d -detailed-stdout --color=false /tmp/vnomic/stage/...	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	895	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	896	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup remote	897	Success	00:00:01	Cleaning up remote staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Cleanup local	898	Success	00:00:01	Cleaning up local staging area	SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Build deployment model	899	Success	00:00:01		SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH
-Update component model	900	Success	00:00:01		SAP Diagnostics Agent - msQ33v1-6CS-9C33-VH

Figure 7 Vnomic automated delivery & governance



When the deployment is completed, the deployed landscape components and their dependencies can be viewed in **Vnomic console** as shown in Figure 8.

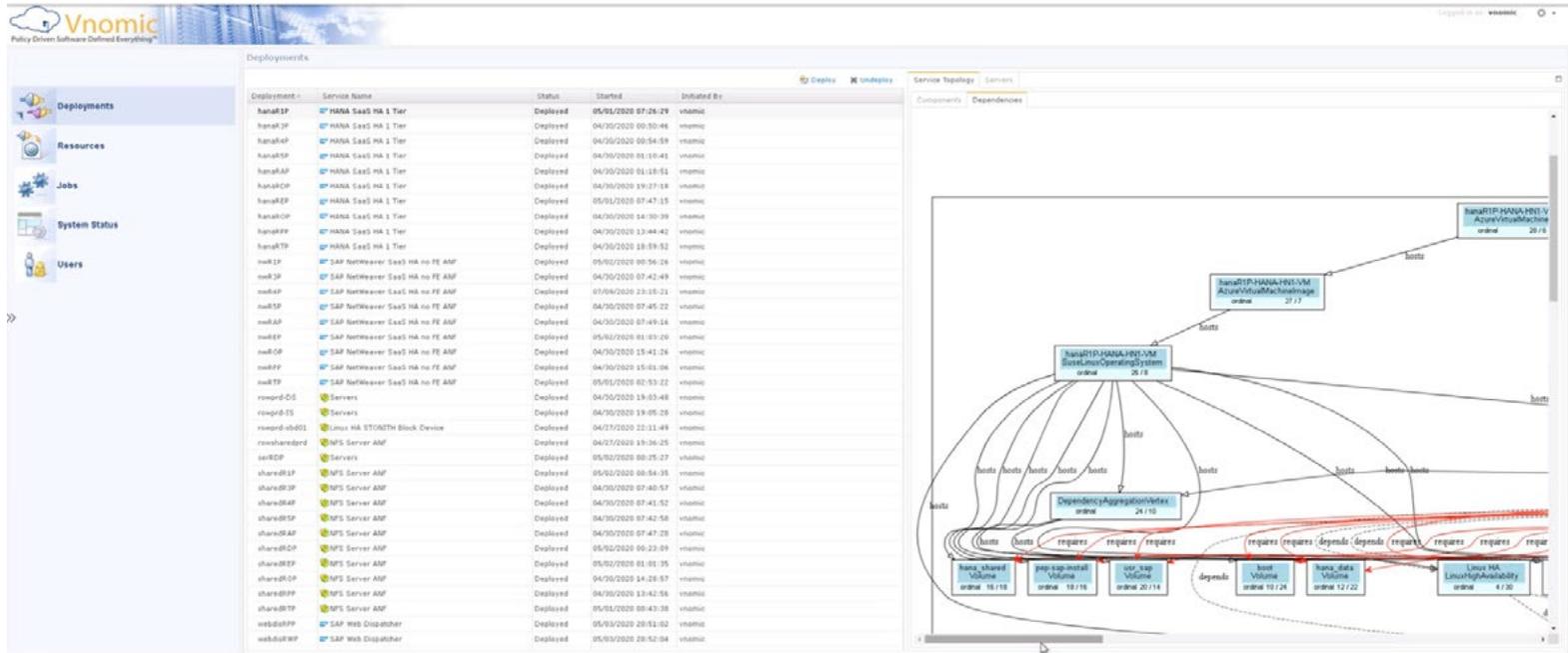


Figure 8 Vnomic deployed SAP landscape and dependency mapping

Please also see **full demonstration** of Vnomic automated engineered SAP landscape delivery and governance platform here.

<https://www.youtube.com/watch?v=IngDPJfT5GM>



Microsoft Azure

Automate SAP Landscape Deployment & Cost Management on Azure with Vnomic

Watch the video



www.vnomic.com



© 2009 – 2020 Vnomic Inc. All rights reserved.

All logos, trademarks and registered trademarks are the property of their respective owners.