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Vnomic

Automated & Engineered SAP Landscape as a Service

W H I T E P A P E R

How Vnomic Automates SAP on Azure

Authored by **Vnomic Inc.**

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500

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Automated deployment and management of enterprise workloads is a major concern for today's enterprises.

These enterprise workloads typically consist of heterogeneous distributed components combined to provide the workload's functionality. This architectural style challenges the deployment, operation and management of the workload as a whole and requires new concepts for its deployment, configuration, operation, and termination.



Vnomic provides new ways to enable automated deployment and management of enterprise workloads.

Vnomic describes the structure of composite applications as topologies containing their components and their relationships. Plans capture management tasks by orchestrating management operations exposed by the components.

The increasing use of cloud computing in almost every area of today's enterprises leads to a steadily increasing management effort. And, as cloud technology grows more complex, it can be challenging for companies to manage its cloud-based workloads. Automating IT management or outsourcing the work to external providers that are both enabled and supported by cloud computing helps address this problem.

In recent years, cloud computing introduced a new way of using and offering IT software, platforms, and infrastructure services. The "utility-like" offering of these services and flexible "pay-per-use" pricing are similar to how resources such as electricity and water are offered today: Applications and other IT resources such as compute and storage need not be bought upfront and managed by the enterprise on its own. Rather, they can simply be requested when the respective functionality is actually needed—without dealing with the complexity of management, configuration, and maintenance. The cloud thus enables enterprises to move away from the capital expense (CAPEX) model of IT to one based on operational expense (OPEX).

These approaches are expected to change the way how enterprises use and think about IT. They will relieve them from owning their own IT environment, which could be seen as the "next revolution in IT". Analysts such as Gartner consider the efficient use of cloud computing to be one of the key success factors for enterprises. From a provider's perspective, automating

the management of cloud services is of vital importance, because management and operation of IT is one of the biggest cost factors today—in terms of money and time.

The ability to offer services which are elastic, capable of self-service, rapidly provisioned, and priced based on actual consumption (pay-as-you-go) depends on the degree of automation of management. Thus, the management must be organized in an industrial manner, i.e., shared throughout a number of customers and tenants. Enterprise workloads are typically complex composite applications, which consist of multiple individual components, each providing a clearly distinguishable piece of functionality. The functionality of the involved components is aggregated and orchestrated into a composite workload that provides a higher-level of functionality. Components typically have relationships to other components.

For instance, a Web server component runs on an operating system component. Or, an application connects to a database and external services. These composite enterprise applications typically rely on modular, component-based architectures which benefit from cloud technologies and properties such as elasticity, flexibility, scalability, and high availability. The different components involved need to be managed in terms of deployment, configuration, quality of service, and their communication to other components. The management becomes time-consuming and error-prone if the workload structure, comprising its components and relations, is not documented in a well-defined, machine-readable format. The management is often done manually by executing scripts or even completely manual work, which hinders automation, repeatability, and self-service.



Vnomic: Automated Deployment and Management of Cloud workloads:

To enable the creation of cloud workloads and the automation of their deployment and management, the workload's components, their relations, and management must be modeled in a standardized format. This is where Vnomic uses a modeling approach that tackles these issues by formalizing the application's structure as a typed topology graph and capturing the management tasks in plans. Vnomic addresses three problems in the scope of IT service management in general and in cloud computing:

- ✓ **Automated workload deployment and management,**
- ✓ **Workload instrumentation,**
- ✓ **Resiliency management.**

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 1.

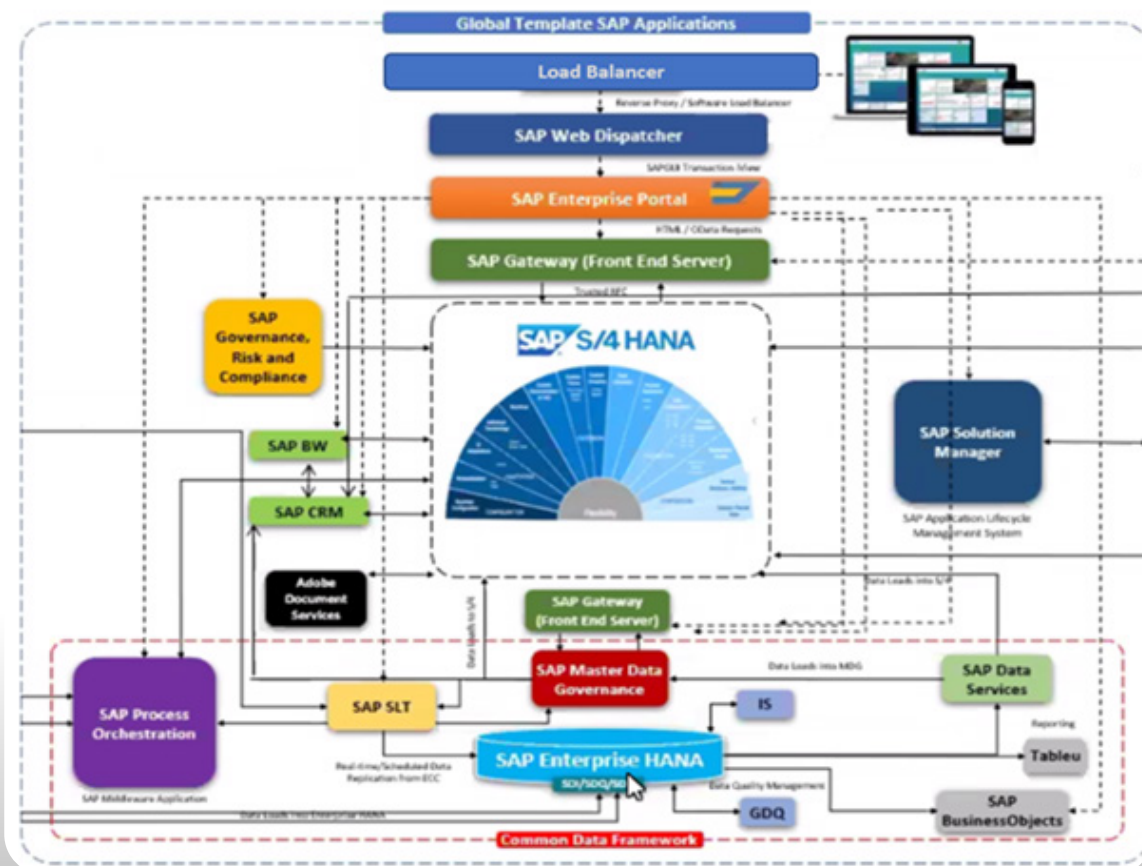


Figure 1 Enterprise SAP landscape

The Vnomic Solution

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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 Fx	Value	
1. SAP SID	PY/N	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	00	NetWeaver E
3. Database Schema Name	SAPHANA00	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	*****	Administration user ID for all servers	AS3 Instance	0	NetWeaver A
6. Server Administration Password	*****	Administration password for all servers	AS4 Instance	0	NetWeaver A
7. Size Public Key	*****	The size public key installed into each VM (when Key Vault is not used)	AS5 Instance	0	NetWeaver A
8. Deployment Name Prefix	PY/N	String appended to all deployment names	AS6 Instance	0	NetWeaver A
9. Deployment Name Suffix	Yes	String appended to all deployment names	AS7 Instance	0	NetWeaver A
10. High Availability	Yes	Cluster high availability for all deployments	AS8 Instance	0	NetWeaver A
11. Minimum Load Balancer SKU	Basic	Use this SKU even if lower SKUs fulfill requirements	Computed Server Fullstack		
12. Load Balancer SNAT method	Network	Defines method for implementing SNAT for VMs in Internal Standard Load Balancers backend pools	CS Instance	0	Front Central
13. SBD Deployment ID	No	Name of STONITH Block Devices deployment	ERS Instance	1	Front ERS inst
14. Provision Solman Diagnostics Agent	Yes	Enable / Disable provisioning Solman Diagnostics Agent	AS1 Instance	0	Front AS1 inst
15. SAP Solution Manager Java SCS Message Server Host FQDN	No	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. SAP Solution Manager Java SCS Message Server HTTP Port	*****	The port number where the SAP Solution Manager Java SCS system can be reached	AS4 Instance	0	Front AS4 inst
18. SAP NW Instance numbers			AS5 Instance	0	Front AS5 inst
19. SCS Instance number	1	Instance number for the SCS instance	AS6 Instance	0	Front AS6 inst
20. ERS Instance number	00	Instance number for the ERS instance	AS7 Instance	0	Front AS7 inst
21. Number of SAP NW instances (including PAS)	2	Applied to NetWeaver instances	AS8 Instance	0	Front AS8 inst
22. PAS and AAS Instance number # (0 to 97 - # instances)	0	Starts with this number			
23. Front End (FE) Instance numbers					
24. SCS Instance number	0	Instance number for the SCS instance			
25. ERS Instance number	1	Instance number for the ERS instance			
26. Number of SAP Fiori instances (including PAS)	2	Applied to Front End instances			
27. PAS and AAS Instance number for Fiori # (0 to 97 - # instances)	0	Starts with this number			
28. Virtual Machine Configuration	Standard	OS-disk storage performance tier			
29. OS Disk Storage Performance	Standard	OS-disk storage performance tier			
30. Software Versions					
31. S/4 Deployment	No	Yes means S/4 is deployed with Front End (Fiori), no means NetWeaver only	Effective Software Versions		
32. NetWeaver Version	SAP S/4HANA 1709	NetWeaver software version	Front End	S/4 software	
33. HANA Version	SAP S/4HANA 1709	HANA software version	NetWeaver	SAP S/4HANA 1709	NetWeaver
34. SAP application server OS version	SAP SCS 7.0 SP19	SAP application server OS version	HANA Ver	HANA 2.0 SP13	HANA software
35. SAP HANA server OS version	SAP SCS 7.0 SP19	SAP HANA server OS version	SAP appls	S/4S S2 SP3	SAP appls
36. SAP HANA server OS version	SAP SCS 7.0 SP19	SAP HANA server OS version	SAP appls	S/4S S2 SP3	SAP appls
37. Bootstrap Script URL	*****	Bootstrap script URL for registering deployed servers			
38. Activation Key	*****	Rego Manager Activation key for registration			
39. List of Channels	*****	List of Channels that server needs access			

Figure 2 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 Monitor

902 activities in total, 0 activities with errors.

Activity	ID	Status	Duration	Message	Target
+ apply-class	862	Success	00:00:09	new PATH=PATHS sh -c "rsync apply --d -detailed-excludes --color=false /tmp/vnomic/stage/psv	SAP Diagnostics Agent - mwQ33v1-RAS-RAS1-VH
cleanup-remote	863	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-RAS-RAS1-VH
cleanup-local	864	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-RAS-RAS1-VH
cleanup-remote	865	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-RAS-RAS1-VH
cleanup-local	866	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-RAS-RAS1-VH
+ Puppet update	867	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
stage-content	868	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/content/backup/vnomic/tmp/stage/vnomic_sap_diagnostics_agent	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
stage-content	869	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/classes/sap_diagnostics_agent_install_all_idm.pp	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
+ apply-class	870	Success	00:00:10	new PATH=PATHS sh -c "rsync apply --d -detailed-excludes --color=false /tmp/vnomic/stage/psv	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-remote	871	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-local	872	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-remote	873	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-local	874	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
+ Puppet update	875	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
stage-content	876	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/content/diagnostics-install-all	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
stage-content	877	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/classes/sap_diagnostics_agent_install_all_idm.pp	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
+ apply-class	878	Success	00:00:10	new PATH=PATHS sh -c "rsync apply --d -detailed-excludes --color=false /tmp/vnomic/stage/psv	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-remote	879	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-local	880	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-remote	881	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
cleanup-local	882	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS1-VH
+ Puppet update	883	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
stage-content	884	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/content/backup/vnomic/tmp/stage/vnomic_sap_diagnostics_agent	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
stage-content	885	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/classes/sap_diagnostics_agent_install_all_idm.pp	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
+ apply-class	886	Success	00:00:10	new PATH=PATHS sh -c "rsync apply --d -detailed-excludes --color=false /tmp/vnomic/stage/psv	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-remote	887	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-local	888	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-remote	889	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-local	890	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
+ Puppet update	891	Success	00:00:11	Processing puppet update on SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
stage-content	892	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/content/diagnostics-install-all	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
stage-content	893	Success	00:00:01	Staging /tmp/vnomic/stage/puppet/classes/sap_diagnostics_agent_install_all_idm.pp	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
+ apply-class	894	Success	00:00:10	new PATH=PATHS sh -c "rsync apply --d -detailed-excludes --color=false /tmp/vnomic/stage/psv	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-remote	895	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-local	896	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-remote	897	Success	00:00:01	Clearing up remote staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
cleanup-local	898	Success	00:00:01	Clearing up local staging area	SAP Diagnostics Agent - mwQ33v1-SCS-SCS2-VH
Build deployment model	899	Success	00:00:01		
Update component model	900	Success	00:00:03		

Figure 3 Vnomic automated delivery & governance



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



Microsoft Azure

Automate SAP Landscape Deployment & Cost Management on Azure with Vnomic

[Watch the video](#)





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To learn more about how Vnomic can help you operate cost-efficiently and securely on Microsoft Azure, contact Vnomic for a demonstration.

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