REPORT REPRINT

Vnomic models complex business-application semantics for convergence and the cloud

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Seven-year-old startup Vnomic has been working in the background for some time on automating complex application system deployments – primarily in partnership with SAP. However, a series of recent announcements – with Microsoft (Azure) in November 2016 and with CenturyLink and Accenture in May – looks likely to boost its profile. The company's SAP Management Service has, until recently, mostly been implemented in conjunction with on-premises Cisco UCS servers and NetApp FlexPod converged infrastructure. However, the new partnerships indicate that cloud deployments are the most likely future direction for Vnomic. In 2015, SAP announced S/4HANA, the latest version of its in-memory business software suite, and told customers it would only support older versions using other databases until 2025. Pressures to upgrade to the new version, alongside the parallel move to cloud-based delivery, will help drive future business for Vnomic, the company believes.

THE 451 TAKE

Standards move slowly, which is why Vnomic has built on TOSCA and Heat rather than relying on them to evolve quickly enough for practical purposes. It's done so by setting some tight parameters to start with, narrowing the choices of infrastructure supported and focusing on SAP as its primary application. That should help it prove its case – we hear that customers typically don't believe the company's story during initial approaches. Cloud offers another entry point, and it may soon become the preferred testing ground for future customers – and that's also likely to result in an expansion beyond the SAP customer base. We would like to see more companies working in this space, which would boost the confidence of customers looking into it. There's certainly an urgent requirement among customers of large enterprise business suites for simplified deployment and cloud delivery models.

CONTEXT

Sunnyvale, California-based Vnomic (initially known as Virtunomic) was founded in 2009 by CTO Derek Palma, best known as the co-editor of OASIS TOSCA (the Topology and Orchestration Specification for Cloud Applications). Before then, Palma was the founder and CTO of two other startups: online performance tracker Peakstone and (from 2002) Acsera, an application monitoring software house that changed its name to ClearApp and was subsequently acquired by Oracle in September 2008. CEO Allen Bannon is the former COO of Appeal Virtual Machines, which developed the JRockit Java virtual machine (also eventually sold to Oracle via the BEA Systems acquisition). Bannon went on to cofound Acsera with Palma. After the Oracle acquisition, he joined SAP as a vice president, where he led the development of the Netweaver Landscape Management product, an automation tool for SAP system operations. Vnomic has received angel funding (amounts undisclosed), has 31 staff and is cash flow positive. It's been working with both service providers and enterprises, and has 'several hundred' customers in total.

TECHNOLOGY

Vnomic's starting point was TOSCA, a vendor-neutral open source language for specifying relationships and dependencies between services and applications on a cloud or converged infrastructure platform. The first version of TOSCA was approved as a standard by OASIS in January 2014, and it was extended the following year to support declarative modeling for storage and network definition capabilities. The aim is to make cloud applications and services portable across their entire lifecycles by independently specifying the apps and services themselves, the relationships between parts of the service, and their operational behavior (e.g., functions such as deploy, patch, shutdown). From this, it's possible to embed a higher level of operation behavior intelligence into cloud infrastructure management tools. Deployments should be portable across clouds, enabling easier migration, cloud bursting and multi-cloud applications. TOSCA-like semantics are also part of OpenStack, developed as part of the OpenStack Heat project.

PRODUCTS

Palma helped put TOSCA together, but the company says the Vnomic Metadirector Platform goes much further, with TOSCA covering only a low single-digit fraction of the capabilities it can offer. The major contribution has been to build an expert systems framework on top of the application templates so that runbooks and best-practice models can be matched to the underlying infrastructure and automated. To achieve this, Vnomic initially focused on SAP (Business Warehouse, Netweaver, SAP HANA and S4/HANA) and its ecosystem, in combination with tightly defined programmable infrastructure platforms, including Cisco UCS and ACI networking, VCE (now Dell Technologies), and NetApp's FlexPod. VCE and FlexPod both use Cisco servers and networking at their core. There are four key components to Metadirector: the Vnomic Declarative Deployment and Governance Platform (management tools and user interface); the Vnomic Modeling Framework (for modeling the applications and infrastructure); the Vnomic Service Designer (used to visualize the models); and the Vnomic Desired State Controller, which enforces desired states, governance, and audibility over the lifecycle of the applications and matching infrastructure.

More specifically, the Vnomic Metadirector Platform automates the complexities of SAP business software that could otherwise take weeks and months to manually provision, deploy and configure – not to mention maintain and change to meet evolving compliance and security regulations and requirements. Those complexities include the manual layout of new infrastructure and configuration of layer 4-7 networking services – all quite likely to introduce new errors. SAP customers also have to face the difficulties of supporting distributed users, setting the appropriate availability and resilience levels, matching infrastructure resources to deliver dynamic performance and scaling demands without overprovisioning, and incorporating various storage technologies. The modeling framework looks at the different components of SAP HANA, describes the capabilities in detail and builds a HANA model. It does the same for infrastructure components (compute, storage, networking, load balancer, firewall). It takes these formal definitions and produces application models that express SAP BW and SAP HANA semantics, including structure, behavior, interdependencies, lifecycle and infrastructure requirements. The Desired State Controller then translates the application model into declarative policy instructions that can be automatically executed by the infrastructure networking layer.

STRATEGY

Complex SAP business applications running on Cisco and NetApp were the starting points, but the cloud is the most obvious destination. A key point is that the infrastructure and application modeling are independent from each other, so Vnomic isn't tied to UCS, ACI networking and NetApp storage. The availability of the Vnomic SAP Management Service for Azure was first announced in November 2016, and to support that service, Vnomic modeled the Azure infrastructure, including Azure's software-defined networking and compute, available through APIs. Azure's SDN capabilities may not be as sophisticated as ACI, but they can still support comparable overall functionality for the SAP application models. In June, Vnomic announced a partnership with CenturyLink for its cloud managed services. CenturyLink opted to used Cisco ACI and FlexPod for its infrastructure. If future cloud partnerships are announced, Vnomic says it will model whatever infrastructure is required – although it will recommend ACI and FlexPod where an open choice is still possible because it's already done all the certification work.

The other strategic pillar is to sign up services companies and vertical market experts as partners. Deloitte became a partner in September 2016, and Accenture signed up to use Vnomic for its Blackbird Hybrid Cloud service in May 2017. The idea is for such partners to leverage their vertical market expertise in areas such as healthcare, banking and government, to embed their own best-practice runbooks and build their own specialist policy packs for their customer bases. Vnomic will focus more on modeling the infrastructure components (such as Linux, HANA, Netweaver, NetApp storage, and Cisco ACI and UCS). Both application and infrastructure models populate a repository that can be made available to future customers.

COMPETITION

We can't see any direct equivalents to Vnomic. TOSCA and Heat are the starting points, and other software houses – most notably the GigaSpaces Cloudify orchestration and Ubicity model-driven service management tools – have also incorporated them, but few have ventured beyond their software-defined infrastructure focus to head deeper into the application stack. Alcatel-Lucent, Huawei, Nokia and Ericsson all now have a software-defined story, and have made some strides connecting their own converged infrastructure to the networking stack. But their main areas of interest are still telcos and network function virtualization, rather than enterprise business applications. Related to this are the mostly telco-focused operational and business support systems vendors, such as Amdocs, Netcracker (a subsidiary of NEC), Oracle, Comarch, Comptel, CSG International, Redknee and Sigma Systems. Cisco acquired Tail-f in 2014 for network services orchestration.

Chef, Puppet Labs and Ansible (now owned by Red Hat) are DevOps- and infrastructure-focused. Dell Technologies' VCE, HPE and other converged systems companies have their own lifecycle management tools to manage their own infrastructure components, but these are confined to their own specific architectures. There is a growing interest in using real-time analytics for operational management tasks. Expert systems frameworks such as IBM Watson and HPE Idol haven't typically been applied to business applications.

SWOT ANALYSIS

STRENGTHS

Vnomic has built an expert system framework for SAP business applications and the infrastructure it runs on. There's a great deal of pent-up demand for simplified and more efficient deployments of large-scale business application suites.

WEAKNESSES

At the moment, there aren't many other companies working on declarative modeling at the application and layer 4-7 networking levels. Vnomic's previous tight focus on Cisco ACI and FlexPod has also held back more general interest.

OPPORTUNITIES

The cloud will be the preferred platform for enterprise business suites in the future. Microsoft is keen to see high-end workloads deployed on Azure, and so is likely to be an active, engaged partner for Vnomic.

THREATS

There's a huge job to be done keeping up with vertical-specific regulations, and Vnomic will have to expand its supported infrastructure components. It needs to establish a healthy ecosystem to share that work if it is to keep up.