Why Choose Multi-Tenant Cloud-Native Services for Machine Data Analytics?

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Introduction

Cloud delivery is the future of software. IDC believes that the transition from on-premises software delivery to cloud-based software delivery is nearing completion, with 88% of net-new software and application offerings currently being delivered as services. When our customers (both commercial vendors and enterprise IT organizations) consider migrating their existing on-premises datacenter workloads to Amazon Web Services (AWS), or have a new digital initiative to create microservices-based applications for cloud platforms such as AWS, we remind them of the important implications for their existing management stack — asset management, configuration management, log management, and security management. Making the right choices ahead of cloud migration implementation and DevOps adoption will yield big dividends in security, manageability, and customer success.

This paper explains why and how to choose a management stack such as machine data analytics (logs, events, errors, etc.) that helps organizations realize the benefits of cloud such as agility, visibility, and elasticity — without compromising security.

Executive Summary

- Multi-tenant cloud-native services running on platforms such as AWS cloud — built for multi-tenancy and with a host of other critical differentiators — are superior to single-tenant cloud hosted services or on-premises deployment running old-school enterprise software. Some enterprise management software stack companies running on AWS have chosen not to build multi-tenant cloud-native services from the ground up. Instead, they have taken shortcuts in service — operationalizing their enterprise software architected over 10 years ago and deploying it on AWS as is to avoid the burden of rewriting code. These shortcuts negatively impact performance and scalability and lack or limit some features of multi-tenant cloud-native management stacks.

- IDC advises that the success of a cloud migration or customer digital transformation initiative is in part determined by how easy (i.e., fewest steps, greatest native reliance on the underlying platform) it is to build, run, and secure an organization's cloud-native modern applications. This, in turn, is largely determined by the management stack the organization selects. The selection of a management stack provider has become a significant challenge for IDC clients, in part due to the confusion created by traditional enterprise management software stack vendors that advertise themselves as cloud-based services.

■ This paper provides clarity on how to choose a next-generation management stack that helps organizations realize the benefits of cloud — such as agility, visibility, and elasticity — without compromising security. The more human intervention is required for management stack configurations (e.g., log analytics), the more painful it becomes to scale. To help organizations avoid costly mistakes, we describe key differences between management stack vendors with multi-tenant cloud-native services and traditional enterprise software running on AWS or other cloud platforms. Organizations can use this information to evaluate any vendor for a cloud-based log analytics service and as a framework to evaluate vendors providing management stack solutions (asset management, configuration management, and security analytics).

Trends

IDC calls the set of native services built and consumed on the cloud "3rd Platform" (see Figure 1) to distinguish it from earlier platforms composed of mainframes/terminals and client/server or LAN/Internet.

Companies are leveraging this 3rd Platform called cloud and disrupting the industries that once thought they would never see any disruption or innovations. For example, in the automobile industry, modern applications built from the ground up to leverage the 3rd Platform are at the heart of a wave of innovation.

FIGURE 1

Cloud Is the 3rd Platform
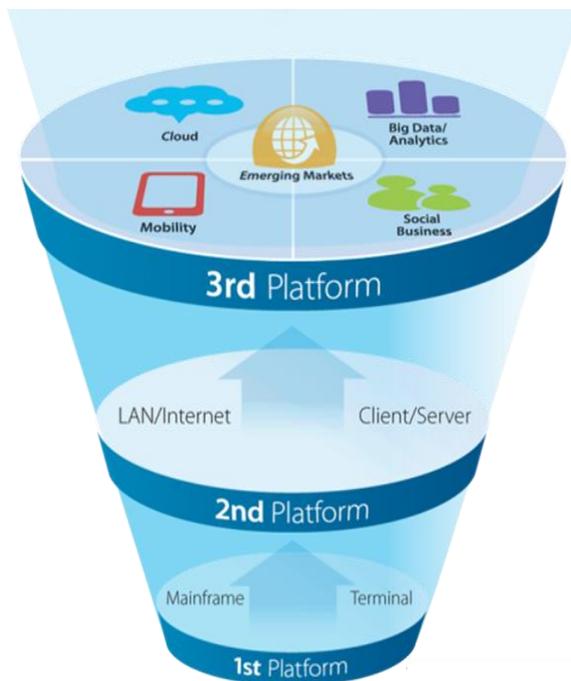
The transition from limited distributed compute, in which a fixed number of servers syncs with a set of known client endpoints, to massively distributed n-tier architecture and utility-like metered consumption is a tremendous leap forward. Pure cloud services built on the 3rd Platform — whether they are public or private cloud services, applications, business services, or enterprise management software — have a set of defining characteristics:

Shared, standard service — built for multi-tenancy, among or within enterprises, that provides the same service, support, and product features to all customers irrespective and independent of the revenue contribution

Packaged solution — a turnkey offering, pre-integrating required resources

Self-service provisioning and management — delivered typically via a Web portal

Elastic resource scaling — providing dynamic, rapid, and fine-grained resources on demand without any constraints

Elastic, use-based pricing — supported by service metering

Automation and published service interfaces/APIs — using standard Web services and other common Internet APIs
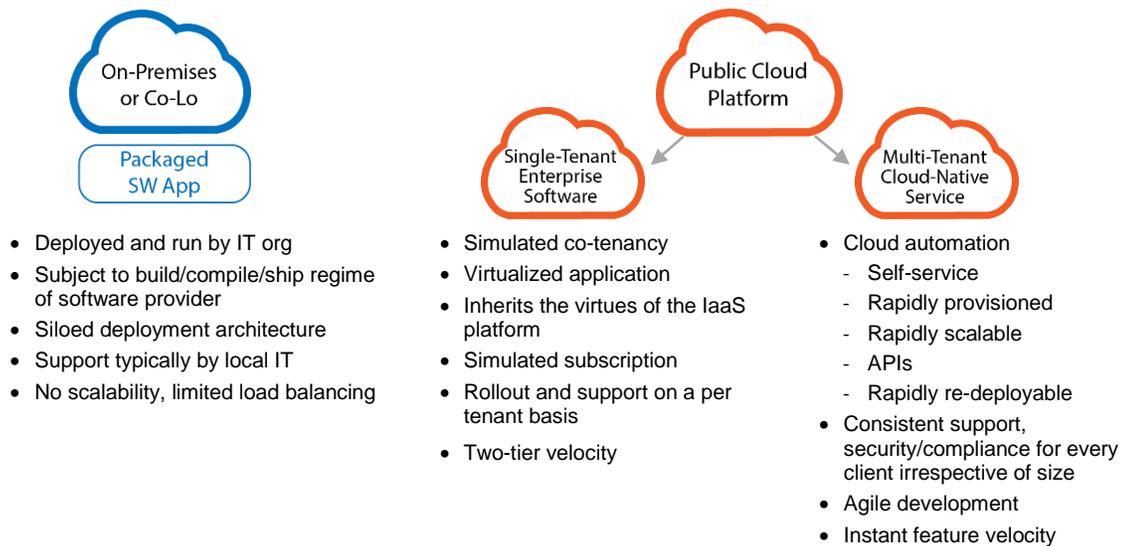
Source: IDC, 2016

Cloud Delivery Is the Future

IDC believes that 88% of net-new software and application offerings are being delivered as a service rather than being burned onto a CD and that this trend is a key to the future of software. The notion of a static, rigid stack for applications — operating system, database, application server, and associated middleware and connectivity — is no longer the centerpiece of datacenter operations or the way software vendors build their businesses. Despite this evolution, applications continue to be built for legacy deployment and run from a datacenter in a conventional manner, supported by siloed software, storage, and networking, as shown in Figure 2, which depicts three models of software deployments, two of which are cloud based.

FIGURE 2

Customer Choices for Consuming Software

On-Premises or Co-Lo

Packaged SW App

- Deployed and run by IT org
- Subject to build/compile/ship regime of software provider
- Siloed deployment architecture
- Support typically by local IT
- No scalability, limited load balancing

Public Cloud Platform

Single-Tenant Enterprise Software

- Simulated co-tenancy
- Virtualized application
- Inherits the virtues of the IaaS platform
- Simulated subscription
- Rollout and support on a per tenant basis
- Two-tier velocity

Multi-Tenant Cloud-Native Service

- Cloud automation
  - Self-service
  - Rapidly provisioned
  - Rapidly scalable
  - APIs
  - Rapidly re-deployable
- Consistent support, security/compliance for every client irrespective of size
- Agile development
- Instant feature velocity

Source: IDC, 2016

Where and How Software Vendors Build Their Products Matter

Many software vendors are working hard to "SaaS-ify" their software, and they have choices about where and how they do that. A common approach is to deploy single-tenant packaged server and client software run from the company datacenter. This approach places the greatest burden on the customer because the customer is responsible for deploying, running, supporting, customizing, integrating, and upgrading the software package. Assembling the stack from bare metal up and ensuring security and performance are the responsibility of the customer. Further, there is an upfront sunk capital cost, and IT organizations must pay for it and support it — whether anybody uses it or not. It's the software deployment modality of the past. More and more vendors are moving to host their software from public cloud platforms, a choice that can have clear advantages.

A more recent approach leverages the 3rd Platform — the cloud platform — to take advantage of all the high-performing and consistent infrastructure assets, including service, customer, and configuration management, as part of the platform. These turnkey services are provided with an SLA ensuring that both the software maker (often called an ISV) and the customer of the ISV (the SaaS user) can focus on their use of and success with the service being offered and not worry about the

application operations. For example, a provider running on Amazon Web Services Elastic Compute Cloud (AWS EC2) has a full array of highly abstracted services powering its software offering and doesn't need to worry about break/fix on hardware components, patching server or storage assets, or network failure.

Which is better: single-tenant enterprise software on a cloud platform or multi-tenant cloud-native? (See Table 1 for the pros and cons of software deployment options.)

TABLE 1

Pros and Cons of Various Software Deployment Options

	On-Premises	**Single-Tenant Service**	**Multi-Tenant Cloud-Native Service**
Pro	• Control over the full stack	• Transfer of operations responsibility to vendor • Dedicated compute resources	• Elasticity and scalability without any constraint • Level playing field for all customers (same feature, same support quality, same service SLA) • Lower TCO • Up and running within minutes • Scalable secure solution

Con	• Customer is responsible for
	   o Troubleshooting
	   o Scaling
	   o Compliance and security
	   o Upgrade
	   o Scalability of management stack
	• Higher TCO
	• Lack of ease of use
	• Lack of scalability and elasticity without overprovisioning
	• Inability to drive continuous improvement and innovation
		• Enterprise software unable to leverage new architecture (e.g., lack of security, compliance, multi-tenancy)
		• Different level of service, support, and security based on revenue contribution by the customer
		• Slow innovation and feature velocity
		• Lack of elasticity and scalability without constraints
		• Fewer features and lack of security for smaller customers
			• Lack of control over the entire machine data analytics stack

Source: IDC, 2016

Cloud platform means the application lives on a platform such as AWS, but not all cloud-hosted services are alike. Providers can be either dedicated hosted (often referred to as single-tenant hosted) or multi-tenant cloud-native. Cloud-native specifies multi-tenant application services, built using a microservices assembly, directly calling service components in the underlying platform. Cloud-native applications leverage the built-in security, scalability, and elasticity and create security by design, while single-tenant enterprise software companies are trying to bolt on security and scalability and — more important — are unable to match cloud-native services in terms of the level of support, services, and feature velocity provided across all customers.

Benefits

Multi-Tenant Cloud-Native Services Provide Clear Benefits for User Organizations

- **Feature velocity: Get new features more often with tight feedback loops.** Vendors are beginning to build "cloud first." That is, they are writing code that can be scaled and continuously improved. So rather than users waiting for annual updates, providers push new features, improvements, and patches out weekly or biweekly. Most important in multi-tenant architecture, features are built and improved according to a tight feedback loop from the customers in real time, based on how those features are used and where the improvements are required.

- **All customers are created equal (irrespective of revenue contribution by the customers).** Multi-tenant cloud-native services will assess issues based on the criticality of the issue and not the revenue contribution made by the customer. One of the major benefits of multi-tenant service is that it levels the playing field by providing the same level of support, services, and features to all customers. In single-tenant hosted products, attention and service level vary based on the revenue contribution made by the customer.

- **Security and compliance are for everyone irrespective of the size of the customer.** Multi-tenant service increases leverage by providing a common framework for security. Most important, if the service has been confirmed for regulations such as PCI and HIPAA or standards such as ISO 27001 and SOC 2 Type II, it is applicable to every customer on that service — unlike single-tenant hosted enterprise software, with which providers cannot afford confirmations for everyone unless there is an additional cost of compliance for the customer.

- **Easier upgrades.** When SaaS providers manage patches and upgrades, there are no CDs or online links for customers to download or distribute. No professional services are required either. Every customer is on the current version of the software and able to take advantage of the latest features. Version control is automated and predictable.

- **Accommodation of data variability with elasticity and scale.** The single-tenant hosted approach is not far from the on-premises approach. Customers are assigned a fixed set of resources (compute, bandwidth, storage, and memory). Customers are not allowed to burst beyond their license limit or are sometimes allowed to burst for a fixed amount of time. Multi-tenant architecture allows service to scale and burst without imposing severe constraints.

The benefits for customers are very easy to understand: quick access to the best features, an asset-lean approach to capital expenditures, and an IT department that can focus more on innovation and less on management.

Considering Sumo Logic

Sumo Logic is a multi-tenant cloud-native machine data analytics service that helps organizations build, deploy, run, and secure their modern applications. It is designed to simplify how machine data (log files, events, errors, etc.) is collected and analyzed so that organizations can gain deep visibility across their full application and infrastructure stacks to accelerate application delivery, monitor and troubleshoot in real time, and improve security and compliance posture. Sumo Logic offers the following benefits:

■ **Instant value.** With Sumo Logic's cloud-native SaaS offering, organizations can get started in minutes and have access to all the latest capabilities without the need for time-consuming, expensive upgrades. Organizations can start small and expand as business grows.

■ **Elastic scalability.** Sumo Logic's multi-tenant architecture scales on demand to support rapid application growth and cloud migration. The service overcomes the inherent limitations of traditional architectures by allowing organizations to burst as needed without any manual intervention.

■ **Proven proactive analytics.** Sumo Logic is known for powerful machine learning and analytics. It leverages machine learning to help make sense of expected and unexpected behavior across environments with pattern, anomaly, and outlier detection.

■ **Secure by design.** Sumo Logic is the industry's benchmark, according to the company, in delivering secure SaaS. Sumo Logic has achieved the highest levels of security certification to protect organizations' data, such as CSA STAR, PCI DSS 3.0 Service Provider Level 1, ISO 27001, SOC 2 Type II Attestation, FIPS 140 Level 2, and HIPAA.

■ **Reliability.** SLAs on availability and performance ensure the service is always on and delivering high performance. Sumo Logic publishes live service status for greater transparency.

Challenges

Like all vendors, Sumo Logic faces some challenges. Other competing log and monitoring solutions exist in the AWS Marketplace, including AWS CloudWatch and CloudTrail, and while the AWS services are typically less full featured than many management solutions offered by third parties, they are easy for AWS to make part of its turnkey deployment experience when customers are standing up environments. To differentiate, Sumo Logic must constantly work to demonstrate an understanding of specific customer problems and environments at a deeper and broader level than AWS can support.

Conclusion and Recommendations

IDC believes that multi-tenant cloud-native services running on platforms such as the AWS cloud — built for multi-tenancy and with many other critical differentiators — are superior to hosted services built with single-tenant, packaged software. However, some enterprise management software stack companies running on cloud platforms have chosen not to build multi-tenant cloud services from the ground up. Instead, they have taken shortcuts in service — operationalizing their enterprise software (architected in many cases in the 1990s) and deploying it as is on AWS to avoid the burden of rewriting code. These shortcuts negatively impact performance and scalability and lack or limit some features of multi-tenant cloud-native management stacks. To fully take advantage of cloud-scale platforms, software vendors should build cloud-native applications rather than using single-tenant deployment of applications in the cloud (frequently referred to as "cloud washing").

IDC advises that the success of a cloud migration or customer digital transformation initiative is in part determined by how easy (i.e., fewest steps, greatest native reliance on the underlying platform) it is to build, run, and secure an organization's cloud applications. This, in turn, is largely determined by the management stack the organization selects. The selection of a management stack provider

has become a significant challenge for IDC clients, in part due to the confusion created by traditional enterprise management software stack vendors that advertise themselves as cloud-native services.

Customers of solutions running on cloud-scale platforms experience a degree of environment management, flexibility, security, uptime, and speed unmatched by co-location providers or single-tenant hosted products and far superior to the service levels provided by most enterprise IT organizations. ISVs that build multi-tenant cloud-native services gain an absolute understanding of the health of the environment in which they run. And when properly harnessed, these services help enterprises ensure the security and compliance of their underlying platform.

Vendors such as Sumo Logic and their customers benefit from the service assurance of the platforms and can constantly iterate on their core service offerings and focus 100% on serving their customers with winning log management and machine data analytics solutions. Companies developing modern applications should carefully evaluate the management stack to ensure it provides all the benefits of a multi-tenant cloud-native service. Table 2 provides a recommended checklist to aid companies in their management stack evaluations.

TABLE 2

Multi-Tenant Cloud-Native Solutions: A Checklist

What Should I Ask?	Why Should I Ask?
Is it offered as a cloud-based service?	Determine that it is offered as a cloud-based service and that you will not need to host it yourself.
Is the service multi-tenant?	Confirm that the cloud solution is multi-tenant rather than single-tenant so you get all the benefits of elasticity, scale, feature velocity, and equal status regardless of customer spend.
How often are you allowed to go over the license limit?	If you are not able to go over the license limit, you may be unable to burst when you need it most or face delays for manual approvals and provisioning.
How often will you have access to new features? Will you need to wait for annual updates?	Access new capability just as soon as it's ready — or later: It's your schedule. Provide real-time feedback and get the features that matter faster.
How difficult is it to upgrade to a new release?	Same features, 100% of integrations and customizations are auto-upgraded, for consistent user experience.
Is on-boarding automated and configuration access consistent?	Improved, consistent user experience, simple access to resources, fewer trouble tickets.
Which security certifications are available? Are those certifications and attestations applicable to all customers?	Validate that the cloud solution has security and compliance certifications in addition to those provided by the IaaS or PaaS. For example, ensure that vendor service can demonstrate compliance with the U.S.-EU Safe Harbor framework, ISO 27001, SOC 2 Type II, HIPAA, and PCI DSS 3.0.

Source: IDC, 2016