



White Paper

Enabling Digital Transformation in Datacenters and Hybrid Cloud: Cisco Analyze, Simplify, Automate, and Protect (ASAP)

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IDC OPINION

As organizations worldwide harness the power of cloud in pursuit of digital transformation, workloads are becoming increasingly distributed, with applications running in public and private clouds as well as in traditional enterprise datacenters. At the same time, development environments are changing, with applications becoming more modular, leveraging containers and microservices as well as virtualization and bare metal.

This paper considers how IT must meet the challenge of devising a datacenter strategy that transforms the datacenter for a multicloud world. Key priorities are simplicity, agility, pervasive visibility, and comprehensive security.

This paper also looks at how Cisco Systems has sought to meet these strategic datacenter requirements with Cisco Analyze, Simplify, Automate, and Protect (ASAP), an architecture devised to modernize infrastructure, simplify operations, prepare for next-generation cloud applications, fully leverage hybrid cloud, and provide comprehensive visibility and security throughout the datacenter and across all application environments.

SITUATION OVERVIEW

Digital transformation – the process of creating value, growth, and competitive advantage through new digital offerings, business models, and business relationships – has emerged as a critical imperative for enterprises worldwide, irrespective of company size or vertical market. Enterprises implicitly understand that organizations that fail to embrace and execute on digital transformation risk significant consequences, including long-term business irrelevance.

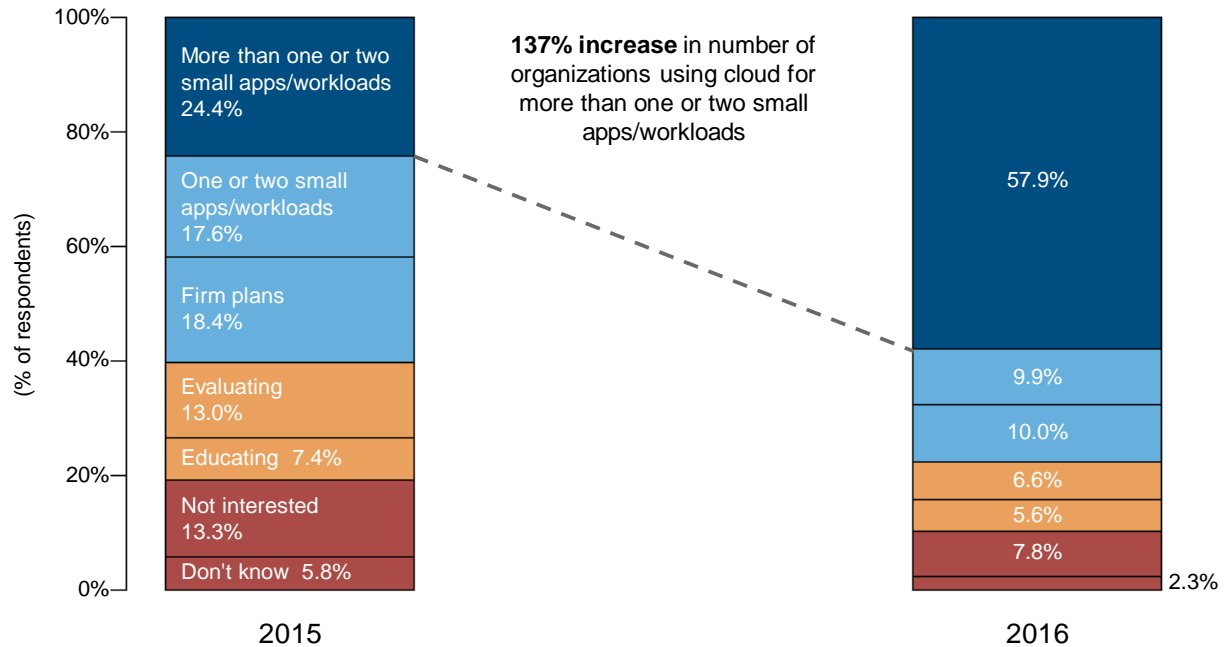
Cloud computing has become an integral element of any successful digital transformation strategy. Accordingly, IT budgets are shifting toward cloud. IDC forecasts that public IT cloud services revenue will exceed \$141 billion in 2019, recording a compound annual growth rate (CAGR) of 19.4% – almost six times the rate of overall IT market growth. In 2019, public IT cloud services will drive 20% of the \$716 billion aggregate revenue generated by the need for applications, development and deployment tools, infrastructure software, storage, and servers. By 2018, more than half of enterprises' IT infrastructure and software investments will be cloud based (private and public), reaching 60% to 70% of IT spend by 2020.

IDC's latest *CloudView Survey* found a 137% increase (from 2015 to 2016) in the number of organizations using cloud for more than one or two workloads (see Figure 1). Further, nearly 80% of survey respondents indicated they are embracing or deploying cloud, in that they are using or planning to adopt public and private cloud for application workloads in the next 12 months. Those embracing cloud see a multicloud world, with strong interest in private cloud and public cloud and a growing percentage embracing both.

FIGURE 1

Cloud Adoption Trends: 2015 Versus 2016

Q. *How would you best describe your organization's current or near-term plans to use public cloud or private cloud solutions to support production workloads and services?*



n = 19,080 worldwide respondents (2014 survey)

n = 11,350 worldwide respondents (2016 survey)

Note: Data is weighted by GDP and company size.

Source: IDC's *CloudView Survey*, December 2014 and January 2016

As a result, workloads are increasingly distributed – some being traditional and on-premises, some residing in hosted private clouds, and some migrating to public clouds. In fact, a broad range of workloads are migrating to the cloud, with more than 30% of respondents to IDC's *CloudView Survey* indicating that they have already migrated, or have plans to migrate, practically every category of workload to the cloud.

That said, certain types of workloads are more likely to run in public cloud, others gravitate to private cloud, and still others are likely to be deployed conventionally onsite. The public cloud tends to claim many application workloads (email, enterprise social networks) and data-oriented workloads, the private cloud tends to attract ERP and supply chain logistics, and the conventional datacenter still tends to host human resource applications and traditional data-oriented workloads such as enterprise content management (ECM) and data integration.

To be sure, digital transformation and cloud are having a hugely disruptive impact on the evolution of applications, on where applications reside, and on infrastructure management. There's no question that application environments are evolving, with an expanding mix of bare metal, virtualized, and containerized applications. Applications are becoming less monolithic and less rooted to the enterprise datacenter. Conversely, they're becoming more distributed, more mobile, and more like the applications typically associated with hyperscale environments. The rise of containers and microservices presents a number of infrastructure challenges, including the need to manage, network, and secure a proliferation of endpoints.

Application location (where applications reside) is an acute challenge. Whereas traditional IT could support and manage users and applications from within the confines of the on-premises datacenter, modern IT organizations must accommodate workloads that also reside in public and private clouds.

This multicloud reality has operational implications, too. With regard to technology adoption and procurement, the cloud-era enterprise is becoming increasingly user centric, as line-of-business (LOB) constituencies and developers now wield significant influence and control over technology decisions.

All the while, traditional client/server applications remain ensconced in the enterprise datacenter. These applications will be with us well into the future, but IT faces the challenge of continuing to maintain and support them while accommodating next-generation, cloud-native applications. IT's challenge is to support legacy applications in on-premises datacenters while achieving agility and simplicity through support of applications resident in public and private clouds.

To successfully meet this challenge, enterprises must devise a datacenter and cloud strategy that meets the aforementioned IT challenges and provides value in four key areas:

- **Simplicity** enables speed and also helps organizations that are suffering from a cloud computing skills gap.
- **Agility** results when datacenter technology is streamlined, open, integrated, and converged. Agile programming, continuous software development, and DevOps are dependent on a simple, integrated architecture. Automation is critical as a source of agility, but automation delivers its greatest value when it is informed and supported by real-time, pervasive analytics, allowing IT and the enterprise to respond dynamically to changing business conditions, such as customer demand or competitive pressures.
- With **ubiquitous real-time analytics**, everything occurring in the datacenter is visible and risk is significantly mitigated. This also allows IT to have a more forward-looking posture, planning for the future.
- The datacenter environment must be **secure**, with analytics providing an essential means of ensuring comprehensive security and maintaining compliance.

To achieve success in these areas, enterprises need to adopt a comprehensive, integrated approach that results in a flywheel effect and a virtuous cycle involving analysis, simplification, automation, and protection.

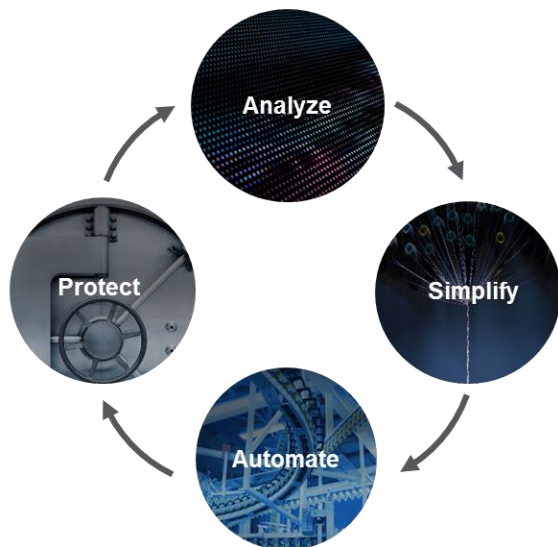
CISCO ASAP: ENABLING DIGITAL TRANSFORMATION IN THE DATACENTER

Cisco is a strong believer in the merits of the flywheel effect – and thus a virtuous cycle – created by analysis, simplification, automation, and protection. Cisco's ASAP architecture helps organizations navigate business modernization – and keep their flywheel turning – so they can simultaneously evolve in four critical areas (see Figure 2):

- **Analyze** to monitor 100% of applications and infrastructure in real time so enterprises stay in complete control.
- **Simplify** to be more productive with significantly less effort and to allow staff to become more forward looking.
- **Automate** to become more agile and cost-efficient in responding to the needs of the business.
- **Protect** to ensure security is integrated at every layer and across a wide ecosystem to minimize the threat of security breaches.

FIGURE 2

Cisco ASAP Datacenter and Cloud Architecture



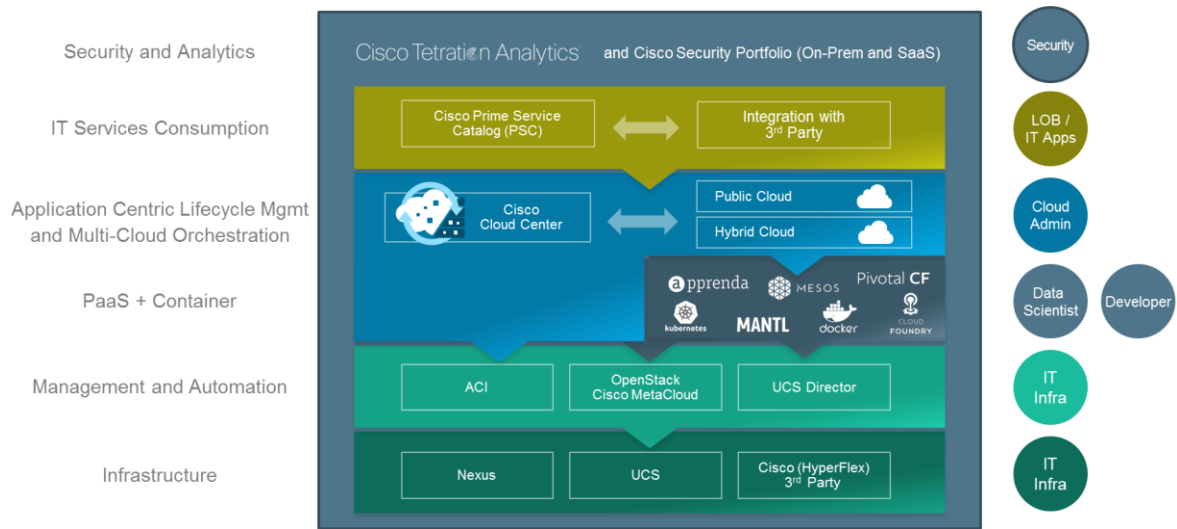
Source: Cisco, 2016

These four areas are important not only on their own but also in terms of how they integrate with each other to help enterprises continuously innovate and move forward.

Cisco provides support for these areas through hardware and software platforms, including its Application Centric Infrastructure (ACI), its CloudCenter (formerly CliQr), its Tetration Analytics, its Nexus family of switches, its UCS servers, its HyperFlex Systems, its converged infrastructure platforms, its Enterprise Cloud Suite (ECS), and its next-generation firewalls (NGFWs). In addition, Cisco enables seamless integration across the IT stack with a broad and open partner ecosystem (see Figure 3).

FIGURE 3

Cisco ASAP Reference Architecture Stack



Source: Cisco, 2016

Essentially, Cisco believes that the customer journey toward datacenter transformation for cloud involves five steps, all of which must be taken, though not necessarily in any particular order:

- **Modernization of infrastructure.** To satisfy demands for performance, scale, and security, enterprises will want to evolve the capabilities and capacity of their compute, networking, storage, and security products. This will help establish a foundation capable of supporting modern automation, management, software-defined networking (SDN), orchestration, and analytics, regardless of whether that infrastructure foundation is provided by Cisco's Nexus and UCS or by fully integrated stacks such as FlexPod, VersaStack, and HyperFlex.
- **Simplification of operations.** Enterprises will need a single, consistent policy model that can be applied within and across datacenters and clouds. An application-centric, policy-defined infrastructure provides the foundation needed to simplify operations and deliver on the agility benefits of automation. It's here that Cisco calls upon its ACI technology and set of rich ecosystem partners to provide an essential role.
- **Preparation for next-generation, cloud-native applications.** Enterprises will be compelled to deliver self-service capabilities, especially for their LOB and DevOps constituencies. In this context, open and programmable integrations with technologies such as Docker and OpenStack often are required, in addition to potential integrations with technologies from vendors such as Apprenda, Pivotal, Cloud Foundry, and ServiceNow.
- **Selection of hybrid cloud.** With Cisco CloudCenter (formerly CliQr), Cisco provides enterprises with a means of identifying where an application should run (public cloud, private cloud, traditional datacenter) based on performance and cost criteria while delivering the ability to move workloads and data securely with the click of a button.
- **Pervasive analysis.** A key capability is pervasive visibility and analysis within and across all datacenters and clouds. It's here that Cisco Tetration Analytics provides an ability to analyze every flow and transaction while affording IT actionable insights into how it can optimize infrastructure and operations.

Cisco provides differentiation through how it seamlessly integrates and conjoins each step. For example, real-time analytics are shared across a simple, converged platform that informs security policies and enables automation, resulting in ongoing innovation and the ability to move at the speed of business in support of digital transformation. The process continues, of course, with new data constantly fed into the ever-repeating cycle.

What's more, Cisco posits that another key differentiator is its ability to deliver a single, consistent policy model applicable throughout a datacenter – spanning network, compute, storage, and security infrastructure – as well as across multiple datacenters and clouds.

OPPORTUNITIES AND CHALLENGES

In providing datacenter and cloud architecture comprising several products and technologies, Cisco is attempting to capitalize on a significant growth opportunity. Organizations are reassessing their datacenters and embracing a multicloud application posture, and vendors that successfully position themselves to facilitate those transitions stand to prosper, as the market numbers cited previously in this document strongly attest.

That said, Cisco is not without challenges. The breadth and depth of the opportunity itself poses an inherent challenge because Cisco must establish that it has a mandate and the supporting technologies to equal its considerable ambitions spanning the entire datacenter and the multicloud landscape.

Competition will also be fierce. Some customers might gravitate toward best-of-breed solutions, either within the datacenter or in the cloud, while others might want to extensively adopt open source platforms and technologies. Indeed, while the appeal of open source is compelling to many – offering benefits such as flexibility, interoperability, and lock-in mitigation – organizations that adopt it must ensure that they have the skill sets and resources to successfully deploy, integrate, and manage the technologies in question. Those considerations often will make an off-the-shelf solution – in which components are tested, verified, integrated, and fully supported – more attractive for many enterprises.

Finally, public cloud players with hybrid cloud offerings also will compete aggressively for cloud-native workloads.

IDC ESSENTIAL GUIDANCE

IDC recognizes that digital transformation and cloud are having enormous impact on application environments, on where applications reside, and on the infrastructure that supports and delivers those applications.

Modern IT organizations must accommodate legacy workloads that reside in the traditional datacenter as well as workloads that run in private and public clouds. What's more, they must do so in a manner that optimizes the business value of each application and that applies consistent governance and policy across all workloads.

To meet the challenge, organizations must not only modernize their infrastructure but also simplify their operations, prepare for cloud-native applications, optimally leverage hybrid cloud, and provide pervasive visibility into application workloads running in the datacenter and the cloud.

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