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A Secular Tailwind Toward Cloud Native Computing - Part II *Back To Basics*

By Dmitry Netis & Jordan Rupar / 5.28.2020

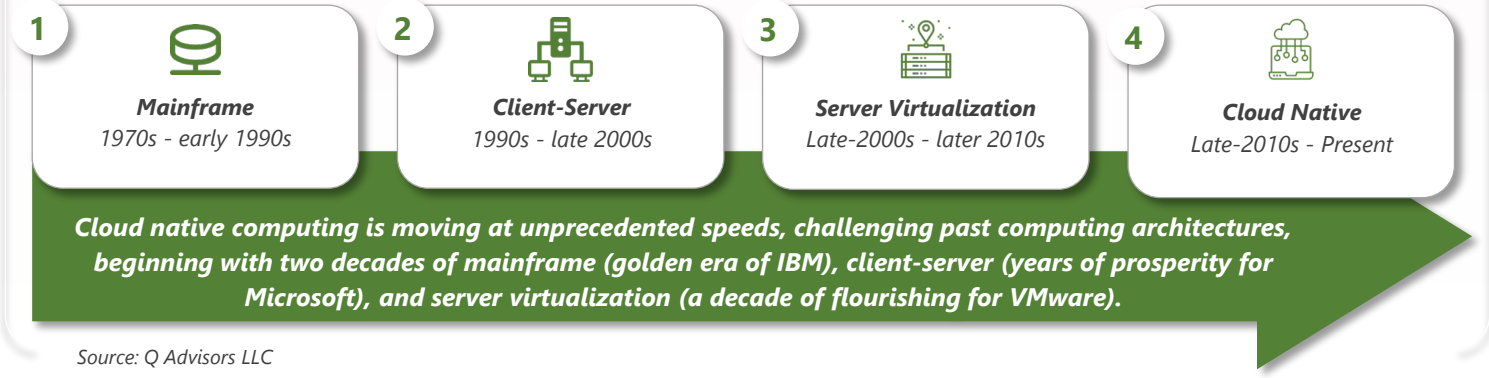
As part of Q Advisors' two-part industry leadership series [download Part I] and broadening of focus into Cloud Native and DevOps IT infrastructure technologies, this QSights steps through the basics and birth of the cloud native industry, its on-going evolution, and transformative M&A that is shaping up this industry.

Q Advisors believes cloud native technologies will play a central role in enterprise software deployments with Kubernetes continuing to be the most widely adopted container-orchestration platform. As the trusted IT providers for enterprises, MSPs will be expected to play a central role in cloud native deployments by being well-versed in Kubernetes and its container-based management framework while offering DevOps and other managed services around the platform. The COVID-19 pandemic is forcing businesses to accelerate their digital transformation initiatives, causing the shift towards cloud native platforms that streamline various data environments and workflows, driving more consolidation in a market that is already evolving through several transformative acquisitions.

Cloud Native or the Fourth Wave of Computing

The term "Cloud Native" describes technologies that are used to develop containerized applications built with microservices (a collection of loosely coupled modular services) that are managed on agile infrastructure through DevOps processes and continuous delivery workflows. At the heart of this adoption is technology pioneered by Google called Kubernetes—an open-source container-based orchestration system for automating cloud application deployment and management, which has become synonymous with the cloud native standard. These containerized applications can be easily moved or ported onto any operating system using container orchestration tools (such as IBM/Red Hat's OpenShift) and reside in any hybrid (bare metal / hosted data center) or public cloud (MS Azure, Amazon AWS, or Google Cloud).

Evolution of Computing



Source: Q Advisors LLC

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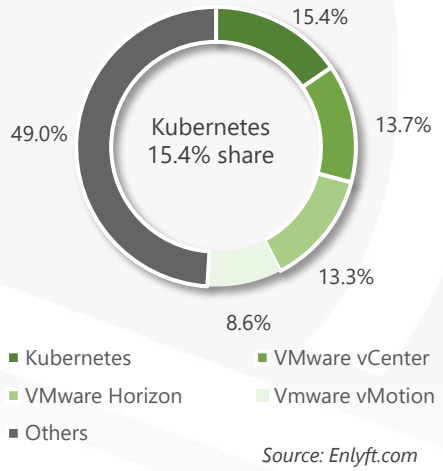
Kubernetes, A Five Year Old Technology Leading Cloud Native Revolution

Kubernetes is only five years old but has already taken the developer's world by storm, being used by over nearly 10,000 global enterprises. It is the leading container management and orchestration software in the market. As a distributed application framework, it is fulfilling enterprises' desire to run applications across multi- and hybrid-cloud infrastructures spanning public clouds, private clouds and on-premises environments.

Kubernetes is made up of and connected to dozens of other open source software projects that are critical elements to Kubernetes environments. These include Helm (package management), Prometheus (monitoring), Jaeger (tracing), Harbor (registry), Istio (service mesh), Knative (serverless) and many more. Key use cases with Kubernetes increasingly involve not only containers, microservices and hybrid cloud, but also integration with other innovative technologies in serverless, machine learning, data analytics and edge computing.

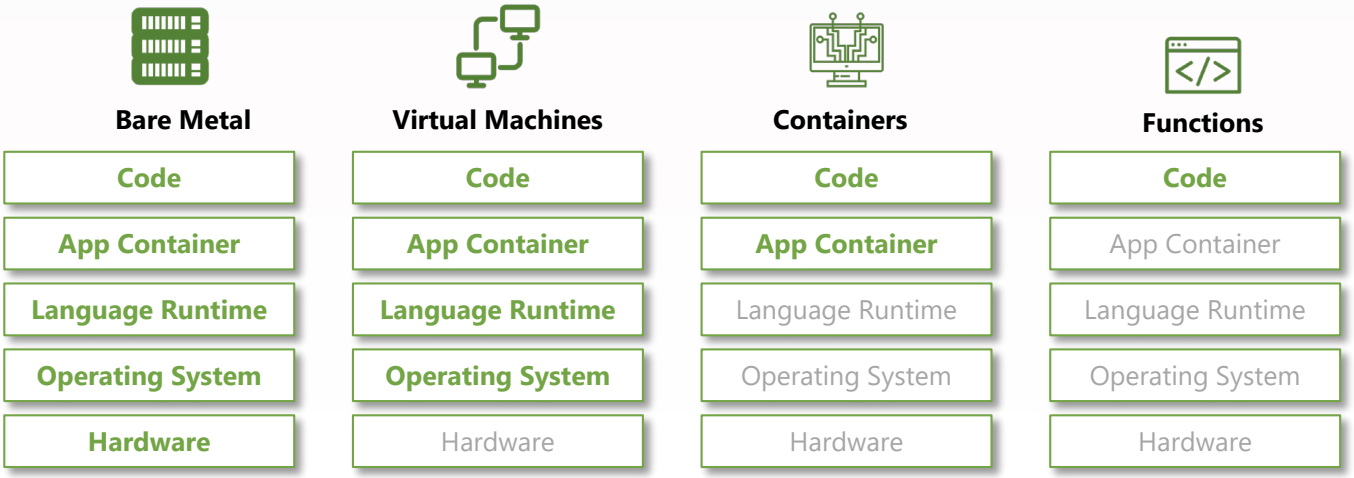
Virtualization Management Software



Source: Enlyft.com

Containers vs. Virtual Machines

Containers differ from virtual machines (VMs) in several ways, but the primary difference is that containers provide a way to virtualize an operating system (OS), so that multiple workloads can run on a single OS instance; with VMs, the hardware is being virtualized to run multiple OS instances. Furthermore, a Kubernetes cluster appears to a user as a single computer, while it is actually a set of independent nodes and multiple services that have been connected together. According to Gartner, over 75% of global enterprises will be using containerized applications in some shape or form by 2022, up from less than 30% today.



Source: Q Advisors LLC

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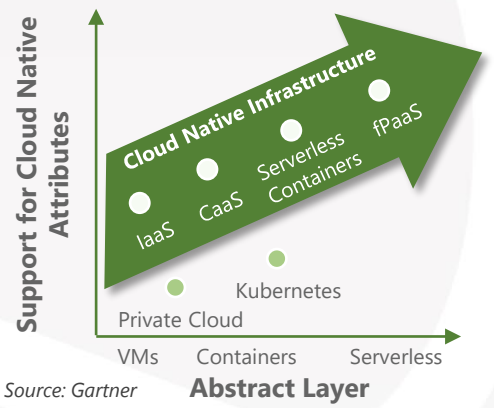
Cloud Native Evolution: From Bare Metal to VMs to Containers and Serverless…

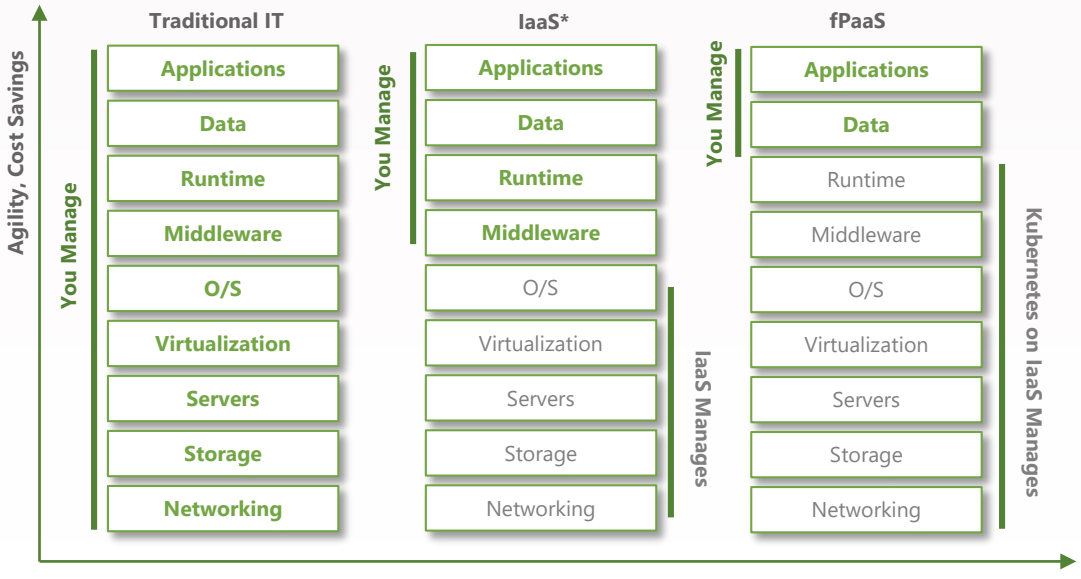
Containers and serverless are new forms of virtualization that can abstract computing resources at increasingly fine granularity. Containers enable virtualization at the host operating system level, while serverless virtualizes the entire infrastructure up to the application layer. The shift away from server-centric architectures to an application-centric architecture based on cloud native framework enables faster application development, deployment and mobility, leading to improvements in automation, efficiency and overall infrastructure costs.



Source: Gartner

…to Platform- and Infrastructure-as-a-Service Utility Models

As a result, we are beginning to witness IT evolve into new platform-based infrastructure utility services. Gartner categorizes cloud-native platforms into platform-as-a-service (PaaS), function PaaS (fPaaS), containers-as-a service (CaaS) and self-hosted platforms on IaaS. These platforms wrap the entire application, its operating system (OS), and underlying infrastructure environment for deployment on-premises or in the cloud and have varying degrees of virtualization in the stack (e.g., server, OS, runtime, app container). As a result, the application management burden on a software developer or end user is significantly reduced in each deployment scenario.



**IaaS (Infrastructure-as-a-Service): AWS, Azure, GCP, OpenStack, VMware vSphere*

Source: Pivotal Software

Open-source cloud native platform services include: Cloud Foundry, IBM Red Hat OpenShift, Canonical, Docker, Heptio, SUSE, and Rancher, among others.

Dedicated cloud native platform services include: Amazon Elastic Kubernetes Service (EKS), Microsoft Azure Kubernetes Services (AKS), Google Kubernetes Engine (GKE), Microsoft Azure App Service, and Google App Engine. [Download our Matrix]

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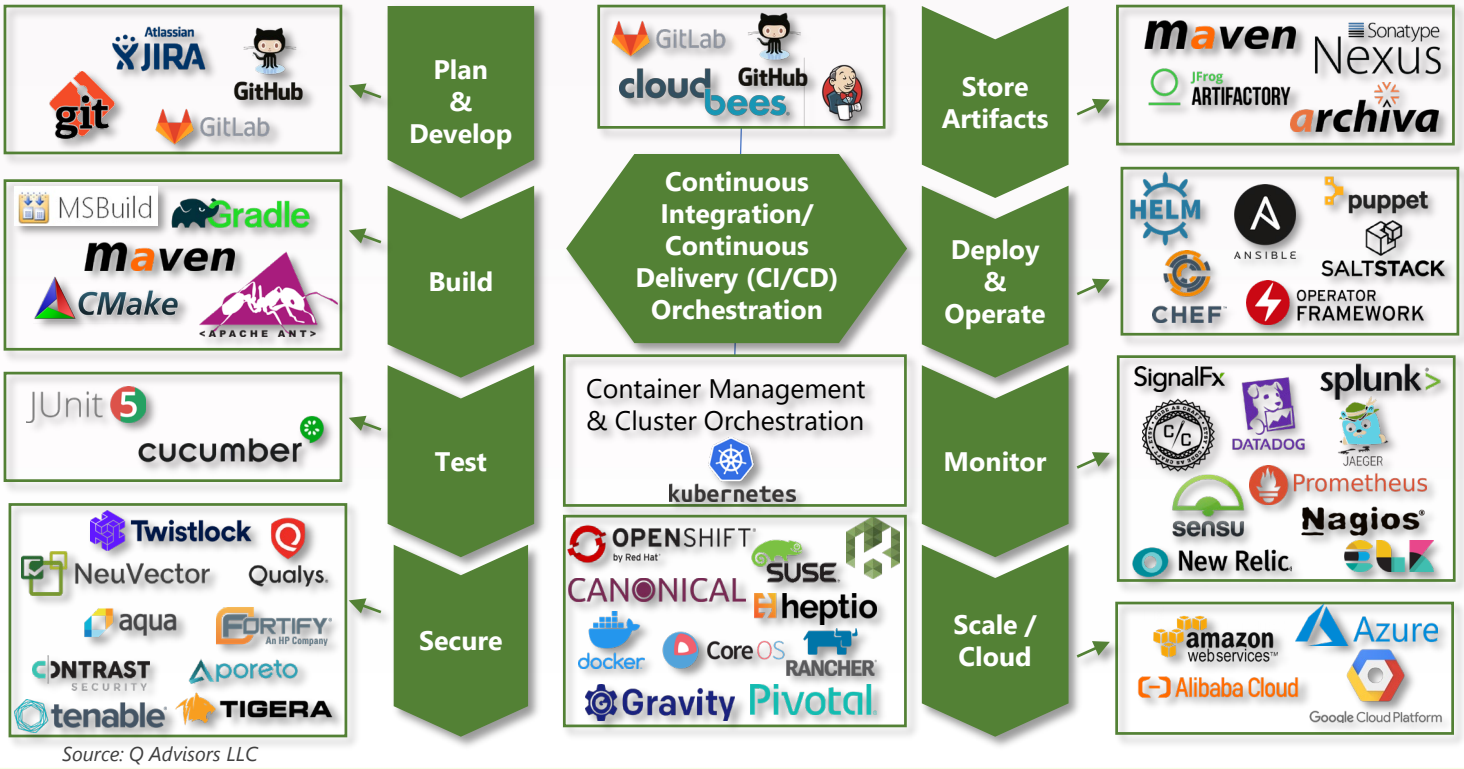
What is DevOps?

DevOps is a set of software development practices that combines software development and IT operations to shorten the systems development lifecycle. Enterprise IT professionals today leverage DevOps to make hundreds of updates per day, a dramatic change from the common quarterly release cycles. In the age of digital transformation, software has become the backbone for new services and competitive differentiation. Lines continue to blur between development and operations in a cloud native world, with an added sprinkle of security. As developers are driving adoption of serverless and containers, operations teams (e.g., site reliability, test/monitoring, security, and cloud infrastructure) continue to shift toward tighter integration with development teams, driving convergence of various DevOps tools along its lifecycle phases. Traditional software development methods have become too slow and inefficient, presenting a swelling risk to companies that fail to embrace DevOps tools. Given the mission-critical nature of enterprise application environments and constantly evolving IT infrastructure, ***Q Advisors sees*** an opportunity for IT managed service providers (MSPs) to gain a differentiated foothold in cloud native environments by offering DevOps services. The DevOps tools market is expected to grow to $13 billion by 2025, registering an 18.6% CAGR during the forecast period (Grand View Research).

Stages of DevOps Automation and Vendor Mapping

DevOps lifecycle and respective major cloud native technology vendors underwriting each of its nine phases.



Source: Q Advisors LLC

Transformative M&A Transactions Shaping Cloud Native and DevOps Industry

Date	Acquirer	Target	Product/Service	Deal Value	EV/Revenue
5/13/2020	VMware Inc. (NYSE:VMW)	Octarine Inc.	Kubernetes application security SaaS	N/A	N/A
04/28/2020	Rapid7 Inc. (NASDAQ:RPD)	Divvy Cloud Corporation	CSPM & compliance SaaS	$145.0 MM	14.5x
03/10/2020	Hitachi Vantara LLC	Containership Inc. (Kubernetes assets)	Kubernetes SaaS assets	N/A	N/A
02/25/2020	Mirantis Inc.	Lakend Labs Inc.	Cloud container software	N/A	N/A
02/03/2020	Hewlett Packard (NYSE:HPE)	Scytale Incorporated	Security authentication SaaS	N/A	N/A
01/21/2020	FireEye Inc. (NASDAQ:FEYE)	Cloudvisory LLC	Cloud policy compliance SaaS	$13.2 MM	N/A
11/13/2019	Mirantis Inc.	Docker Inc.	Open source software development PaaS	N/A	N/A
09/04/2019	Splunk Inc. (NASDAQ: SPLK)	Omnition	Application performance management SaaS	N/A	N/A
08/21/2019	Splunk Inc. (NASDAQ: SPLK)	SignalFx Inc.	Cloud performance monitoring SaaS	$1.05 B	21.0x
05/29/2019	Palo Alto Networks Inc. (NYSE:PANW)	Twistlock Ltd.	Cloud security management PaaS	$410.0 MM	27.3x
5/11/2019	F5 Networks, Inc. (NASDAQ:FFIV)	NGINX	DevOps software application delivery	$670.0 MM	22.8x
02/21/2019	Jfrog Inc.	Shippable Inc.	Software content delivery SaaS	N/A	N/A
02/06/2019	New Relic Inc. (NYSE: NEWR)	SignifAI Inc.	Machine learning-based IT event analytics SaaS	$37.0 MM	N/A
11/27/2018	Red Hat Inc. (NYSE:RHT)	NooBaa Inc.	Multi-cloud & hybrid Storage SaaS	$11.6 MM	N/A
11/06/2018	VMware Inc. (NYSE:VMW)	Heptio Inc.	Kubernetes container orchestration software & services	$550 MM	137.5x
10/28/2018	IBM Corp (NYSE:IBM)	Red Hat Inc. (NYSE:RHT)	Linux OS & virtualization PaaS	$33.4 B	10.8x
07/02/2018	EQT Partners	SUSE	Linux systems & virtualization software	$2.5 B	7.9x
04/17/2018	Vista Equity Partners	LogicMonitor	IT performance monitoring SaaS	$300.0 MM	6.7x
01/30/2018	Red Hat Inc. (NYSE:RHT)	CoreOS Inc.	Linux-based OS & deployment tools	$250 MM	16.7x
09/08/2016	Alphabet Inc. (NASDAQ:GOOGL)	Apigee Corp.	API management SaaS	$625.0 MM	6.5x

Source: 451 Research, LLC, TechCrunch, S&P Capital IQ

Conclusions

1. Rapidly Evolving IT Landscape toward Cloud Native	• Natural progression of IT to Cloud Native technologies represents huge upside for enterprises in terms of application deployment, agility, and scale and it is the most prominent enabler of the digital transformation.
2. Agile DevOps Tools are Key Enablers	• Given the mission critical nature of software-centric enterprise environments, DevOps is becoming a must-have tool for enterprises to continually innovate and keep systems updated in real-time, especially as cloud native technologies emerge. • Several vendors are tailoring applications to various stages of the DevOps cycle with growing opportunities for MSPs to address services around each stage.
3. Significant Growth Opportunity for MSPs	• Enterprises and SMBs are turning to their trusted IT partners (i.e. MSPs, VARs, IT Consultants) to provide outsourced DevOps services and cloud native deployments. • Large emerging growth and upsell opportunity for MSPs to play the outsourced DevOps provider and specialist in cloud native technologies such as Kubernetes.

About Q Advisors

Q Advisors LLC (www.qllc.com) is a world-class global boutique investment bank formed in 2001 serving public and private companies, PE firms, entrepreneurs and large multi-nationals in the telecom, media, and technology (TMT) sectors. The firm has extensive, global reach, while also providing the personalized service of a boutique advisory firm. Thanks to our partners and senior staff, who come from leading investment banks and operating companies, we leverage extensive industry knowledge and analytical insights to help our clients achieve successful M&A and capital markets transactions.

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Dmitry brings over 24 years of combined financial and operating industry experience in the telecom, media, and technology sector (TMT). Most recently, he consulted for several public and private companies under the practice he founded and was CFO/COO of CafeX Communications. Prior to this, he spent 12 years as an equity research analyst, 10 of those with William Blair & Company, where he was a founding member of the TMT team, where he established cloud communications and infrastructure software practices. Mr. Netis holds a B.S.E.E. from the University of Rochester, a M.E. from Cornell University, and an M.B.A. from Rensselaer Polytechnic Institute.

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Jordan Rupar joined Q Advisors in 2012. During this time, she has executed numerous mergers and acquisitions, equity financings and strategic advisory assignments for clients across the TMT industries with a deep focus on cloud communications, software and technology, communications infrastructure (cloud infrastructure, fiber, towers, etc.) and other emerging growth sectors. Jordan received her B.S.B.A. in Finance with Distinction, as well as minors in both Mathematics and Economics from the University of Denver.