FEBRUARY 2022

ANYTHING-AS-A-SERVICE:

Consumption models when the cloud is everywhere

By Peter Cohen

As cloud computing becomes decentralized, what are the implications for customers?

As more and more customers seek out cloud services, we are entering an 'Anything as a Service' or XaaS era. The traditional cloud service models are giving way to a growing trend of new and vast products and tools related to cloud computing and remote access.

What does that consumption model look like at a time when businesses and consumers are becoming cloud natives? What are the potential headwinds? Where are the emerging marketing opportunities? This report seeks to answer those questions as we look at the state of play in XaaS consumption, examine the landscape, challenges and for XaaS in the future.

What is XaaS?

XaaS, or Anything as a Service, refers to any products that are delivered to users as services. Historically, IT departments had to purchase up-front or license the software and systems businesses needed to get things done. XaaS provides businesses with a more flexible consumption model, because companies pay as they go, based on need and use. That's typically through either a subscription model or as metered payment, based on actual use.

All XaaS solutions share one basic trait: They're built using cloud computing infrastructure. XaaS encompasses a rapidly expanding galaxy of "as a Service" options. Gartner research says that end-user spending on public cloud services topped $332 billion in 2021. Gartner expects that trend to continue in 2022, with $397.5 billion expected to be spent – almost a 20% increase year over year.

The pandemic accelerated an existing corporate trend away from on-premises data centers and into the cloud, according to Sid Nag, research vice president at Gartner.

"Even absent the pandemic there would still be a loss of appetite for data centers," said Nag. "Emerging technologies such as containerization, virtualization and edge computing are becoming more mainstream and driving additional cloud spending. Simply put, the pandemic served as a multiplier for CIOs' interest in the cloud."

Gartner predicts that the next phase of enterprise cloud adoption will see significant investments in AI, Internet of Things (IoT), 5G and other technologies.

"In other words, cloud will serve as the glue between many other technologies that CIOs want to use more of, allowing them to leapfrog into the next century as they address more complex and emerging use cases. It will be a disruptive market, to say the least," said Nag.

That pull away from simply investing in cloud infrastructure and into practical and, by necessity,

All XaaS solutions share one basic trait: They're built using cloud computing infrastructure

more complex use cases creates the opportunity for anything as a service to emerge.

One benchmark to gauge the growth of the "Anything as a Service" market is Bessemer Venture Partners (BVP's) Nasdaq Emerging Cloud Index, which tracks public cloud computing companies. That index's total market cap reached $1.9 trillion in 2021 with an annual growth rate of 37.5%.

The SaaS trend is continuing as more enterprises digitalize, finding ways to move not only their data but also essential operational and business functions to the cloud. Enterprises are migrating to the cloud, whichever one makes the most sense for the business task: public cloud,

BVP NASDAQ Emerging Cloud Index
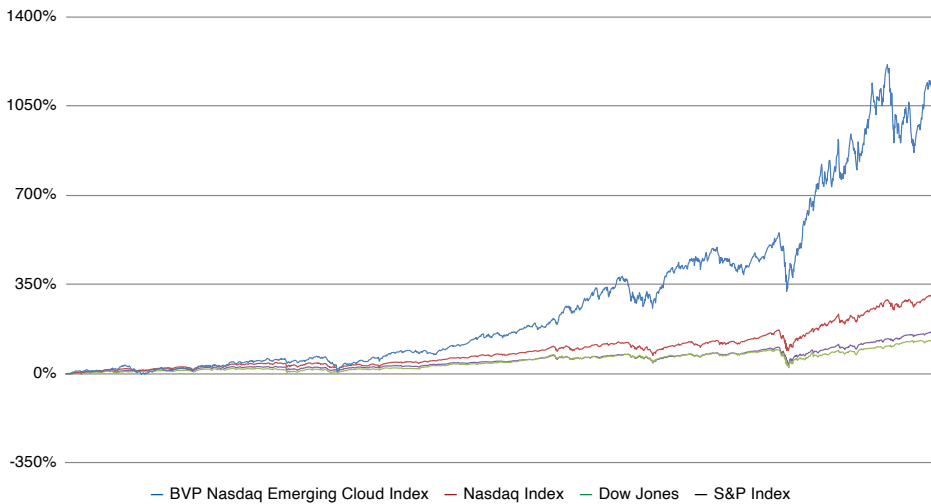
Courtesy of Bessemer Venture Partners

— BVP Nasdaq Emerging Cloud Index — Nasdaq Index — Dow Jones — S&P Index

private cloud, or hybrid – on-premises or in remote data centers.

The three pillars: SaaS, IaaS and PaaS

It's almost impossible to stay abreast of every emerging XaaS offering. But today's landscape is a three-legged stool built on three key "as a Service" segments: software as a Service, Infrastructure as a Service and Platforms as a Service. Not surprisingly, the hyperscalers dominate some of these segments, though they've left plenty of room for others.

Software as a Service (SaaS) is the clear market leader. Gartner projects SaaS spending to exceed $145 billion in 2022, up from $122.6 billion in 2021. That's been built on the success of companies which have brought solutions to bear like Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP): Businesses like Salesforce and SAP. Zoom and other teleconferencing platforms, Microsoft Office 365 and Adobe's ever-expanding suite of Creative Cloud tools have propelled those companies into dominant positions in the SaaS space, as well.

Infrastructure as a Service (IaaS) is also a key market driver according to the Gartner report. IaaS enables enterprise IT to outsource cloud computing network infrastructure like physical computing resources, scaling and security. Examples include Amazon EC2, Microsoft Azure Virtual Machines, and Google Compute Engine. Alibaba, IBM, Oracle, and Rackspace also occupy this market segment. Customers spent more than $82 billion on IaaS in 2021, said Gartner, which projected a 30% spend increase in 2021 to top $106 billion.

What's driving that unusual growth? In short, the pandemic and the massive changes it triggered in labor. IaaS spending has increased as more businesses invest in hybrid workforce solutions and digitalize their operations into the cloud.

Platform as a Service (PaaS) is the third leg. PaaS delivers a framework for developers to create customized applications and middleware. SAP Cloud, for example, which lets developers build applications using their open business platform. Another is Google's App Engine, which lets developers create and host web apps. PaaS providers host environments that deliver the app to users over the web. Gartner predicts 20.3% year over year market growth, from $59.4 to $71.5 billion.

XaaS consumption: From buyers to subscribers

Pay as you go isn't a new idea, just ask the telecom industry or any utility company. The old aphorism applies: Why buy the cow when you

can get the milk...well, if not free, at a predictable monthly expense?

The emphasis on corporate agility has engendered a cultural change to accelerate the XaaS trend. It's an emphasis away from costly infrastructure and processes that require constant corporate capital to maintain. It's advantageous for many businesses to simply pay for what they need, and the rise of public cloud infrastructure and services has enabled that to happen.

For the businesses providing services, customers aren't one-time purchasers; they're subscribers. Hyperscalers have created the XaaS infrastructure and landscape. Hyperscalers are of course, only too

Customers aren't one-time purchasers; they're subscribers

happy to populate that landscape with their own offerings for various verticals.

For customers, it's convenient and cost-effective. XaaS models give businesses a high degree of on-demand scalability. Businesses can streamline IT and administrative processes into the cloud with lower operational costs.

The "magic mix" of 5G, telecom and XaaS

Quali is an enterprise software company which develops sandbox software for cloud app development and DevOps automation. Their products include CloudShell and Torque. Quali's business is an outgrowth of the Infrastructure as a Service (IaaS) concept, a niche known as Environment as a Service, or EaaS. EaaS combines applications and the environment to run them.

David Williams is Quali's vice president of Product Strategy & Product Marketing. His career in tech has spanned decades, including BMC Software, Emulex, and several stints at Gartner. Williams recently shared his perspective with RCR Wireless News on the growth of the Anything as a Service Market.

XaaS is a predictable business cycle, said Williams. Williams sees it as the refinement of the general cloud computing concept, applied to address corporate needs for better transparency, visibility, and accountability.

"It's an example of platforms that have become best of breed," he explained, adding that XaaS provides businesses with better observability, accountability and control.

Meanwhile, the evolution of

David Williams, Vice President of Product Strategy & Product Marketing, Quali

business has accelerated because of the cloud's quick ability to iterate.

XaaS enables organizations to experiment and iterate almost instantly, speeding innovation to market, posits Williams. Outsourcing services to the cloud as subscriptions takes away institutional roadblocks against capital and operational changes. Teams can iterate new ideas on the fly as separate cloud instances.

"Everything's becoming ephemeral," he said. "Temporary states are normal now."

When it comes to reliability, hyperscalers talk about uptime and service availability well above 99%,

but outages still happen. Recent cybersecurity exploits like Log4Shell illustrate the dangers of depending on other people's infrastructure. And Williams sees a corporate disconnect when the infrastructure isn't theirs to manage.

In late 2021 services in AWS's most populous region went offline for several hours, crippling companies with concentrated cloud resources there until the service was restored. It also affected Amazon, as the outage disrupted some Amazon package delivery logistics.

Williams thinks enterprise XaaS customers must be proactive when it comes to cloud failure mitigation strategies.

"If you assume that going in, it enables your ability to take the ownership of this," he said.

"NASA will always assume that something is going to go wrong," said Williams, referencing the design of layered failure mitigation backup systems in spacecraft. That approach is something that more companies depending on cloud infrastructure should emphasize, he said.

"It's almost like the lessons of the past are ignored because we assume that Amazon's got our back," said Williams. "This wasn't a unique event, and it will happen again."

5G and hyperscalers provide a "magic mix" for XaaS to flourish, said Williams. "They need each other," he said.

"Consumers focus on a massive amount of bandwidth and guaranteed performance," he said. But we're only at the start of a long evolution that promises new service and functionality yet to be realized.

"The architecture will get smarter, and smartphones will get smarter too," he quipped.

XaaS History

Really, this goes back to the old mainframe days. Computers and what they could do were still a novelty to businesses and workers. Demand for compute access greatly outstripped supply, and access was restricted to a tiny talent pool of engineers who could operate them. Selling access to hardware, instead of the hardware itself, was essential.

Minicomputers in data centers of the 1970s ushered in the time-sharing era. Still, demand for access to computing outstripped supply. An ample industry of retail specialists, system integration and services filled the void straight through the desktop computing era.

The Public Internet and the drive towards usage models

The accretion of legacy computing hardware, software, and their related processes has always been a burden both financial and logistical to enterprise operations. But the Y2K bug and associated modernization efforts sharply focused critical business attention on the issue.

That happened in parallel with explosive growth of public and business Internet use. The web 1.0 bubble pushed businesses and consumers online in massive numbers. This created a new enterprise service market opportunity: the Application Service Provider (ASP). ASPs provided enterprises with hosted access to essential business software, some managed through dedicated circuits, others using burgeoning public Internet connectivity as the medium. ASPs operated their own data centers, freeing up their customers from the capital and operational burden.

Breaking out of the ASP silo and into the cloud

The promise of ASPs was simple: Outsourcing essential business software and processes provided enterprises with lower opex, improved agility and better scale. Yet most

ASPs, which charged into the millennium as bright stars, had faded to dust within a few years. Why? Cloud computing changed everything.

Instead of the siloed hosting operations of ASPs, hyperscalers provided a public infrastructure to enable everything to provide a platform or a constellation of services.

The promise of "as a Platform" vendors is the same as it was for ASPs — let us take care of essential services for you, instead of burdening your operations and requiring huge capital outlays. ASPs seeded the market for Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) software.

But with hyperscale infrastructure as the underlying platform, the successful ASPs pivoted to embrace cloud computing, and remain big players today in the SaaS market. SaaS has become interchangeable—arguably synonymous—with cloud computing itself.

The actual term SaaS itself is credited to Riseforth president John Koenig, who introduced it into the corporate lexicon during the SDForum Software as a Service Conference in March, 2005.

XaaS opportunities

Gartner sees end-user spending

Worldwide Whole Cloud Outlook

2021 ($706.6B)
55.7% As-a-Service

2025 ($1,301B)
64.1% As-a Service

- Business SaaS
- IaaS & SISaaS (Sys Infra SW)
- Cloud-Related Services
- PaaS
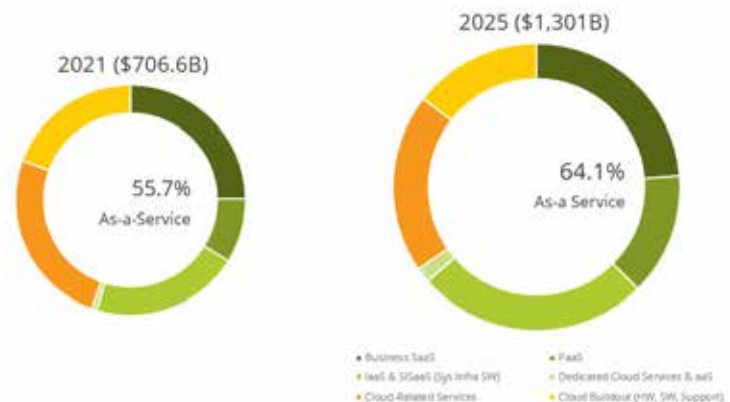- Dedicated Cloud Services & aaS
- Cloud Buildout (HW, SW, Support)

Image courtesy of IDC

on public cloud services topping $480 billion this year. Gartner cites growth trends: cloud ubiquity, regional cloud ecosystems, sustainability and carbon-intelligent cloud.

Also on the list: what Gartner calls cloud infrastructure and platform service (CIPS) providers. CIPS is a combination of IaaS and PaaS, led by Artificial Intelligence (AI) and Machine Learning (ML)-enabled cloud services from hyperscalers aimed at shifting traditional infrastructure and operation roles to the public cloud.

"Infrastructure is becoming programmable, and its operation is subsequently becoming automated. Modern IT infrastructure, whether deployed in the data center or consumed in the public cloud, requires less manual intervention

and routine administration than its legacy equivalents," said Henrique Cecci, senior research director at Gartner.

IDC's Whole Cloud Forecast, which combines public and private cloud services, estimates the global market at $706.6 billion for 2021, growing to $1.301 trillion by 2025. IDC estimated that $393 billion (55.7%) in 2021 was spent on XaaS. IDC predicts that figure to grow to $834 billion (64.1%) by 2025.

"Moving forward, the fundamentals driving the cloud market will continue to shift with the transition to a digital-first economy," said IDC.

XaaS challenges

Meanwhile, established businesses are carefully assessing risks and opportunities as they continue to

invest in cloud infrastructure and services. Shifting the burden of operational responsibility for essential services or infrastructure also means dependency on those services and that infrastructure.

Service outages are increasingly commonplace at a time when even hyperscalers' infrastructure fails. It's uncommon enough that it's often front-page news when it happens, as it did last December when a regional AWS outage disrupted businesses for several hours after an internal network update failed. Businesses affected included Amazon's own delivery network.

The relentless pace of commerce outstrips any potential shortfalls. However, even telecom network outages have gone up during the pandemic, but they aren't necessarily impacting users, according to a report from ThousandEye.

Information security and data sovereignty is also top of mind both for enterprises and governments at a time when many regions around the world are undergoing significant digitalization efforts both on municipal and business levels.

This is driving the hybrid cloud trend, as enterprises, hyperscalers and carriers focus on providing options to meet specific enterprise security requirements and regional data sovereignty regulations.

The future of cloud computing?

Enterprises and consumers are inexorably moving to cloud computing, and many are already cloud-native. The corporate emphasis towards leaner, more agile operations began this trend years ago. And the COVID-19 pandemic and its tectonic shift in skilled labor to a hybrid workplace has accelerated the trend. Fewer companies are building small data centers; hyperscalers and other cloud computing giants are filling the gap. The cloud itself may be public, private, or hybrid, but fundamentally, cloud computing is central to innovation in corporate IT and software development.

The XaaS phenomenon is the natural outgrowth of this evolution. The subscription consumption model central to XaaS holds enormous promise for entrepreneurs looking to bootstrap innovative businesses without huge capital investments, and many businesses are already seeing significant savings. XaaS also holds the promise of new revenue streams and growth opportunities for CSPs as they pivot to 5G.

Anything as a Service comes with some downsides, as well. Some of these are issues enterprises have grappled with for years, such as dependency on a single vendor or dead-end technology. Depending on the cloud means additional security requirements, backup and service outage mitigation strategies. Data sovereignty and data privacy are of paramount concern. And while XaaS holds the promise of lower capital costs for businesses, it's still a consumption model. Hidden fees and license charges can create staggering charges for businesses, potentially limiting profitability and growth.

XaaS isn't a panacea for all corporate capital concerns, and it isn't a one-size-fits-all solution. The cloud isn't right or necessary for every business, or every business process. But the majority of businesses looking at XaaS right now think that the model gives them a leg up over the competition on getting new products to market, and many of them consider it a strategic advantage. One thing for sure: It's growing, and will continue to grow and evolve, along with the rest of the cloud computing business. ((•))

RCR Wireless News

INTELLIGENCE ON ALL THINGS WIRELESS

Need guaranteed leads? Thought leadership? Incremental content marketing opportunities?

Sponsor an *RCR Wireless News*' multi-platform, editorial program and receive the following benefits:

Editorial Webinar – sponsorship includes 250 guaranteed leads, participation as sponsored guest and recognition as sponsor in all promotional materials. Sponsors will receive webinar registration and attendee list, responses to pre and post surveys and polling responses gathered during webinar.

Editorial Feature Report – in addition to recognition as sponsor in program promotion, sponsorship includes 250 guaranteed leads, distinct from webinar leads, one-page ad spread or advertorial in feature report, and responses to lead capture survey questions.

For information contact sales@rcrwireless.com

Fast facts about *RCR Wireless News* digital network

- 382,000 monthly page views
- 170,000 unique monthly visitors to websites
- 81,000+ opt in newsletter subscribers
- 220,526 monthly video minutes viewed on *RCR Wireless News* Youtube channel
- 45,000 leads generated annually
- Industry leading demand generation programs and results

http://www.rcrwireless.com/category/free-reports