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Migrating BSS to the Cloud: Cloud-Native BSS Application Development



Summary

Catalyst

The telecoms industry is moving at a faster pace and generating greater volumes of data, which is placing a significant burden on communications service providers' (CSPs') legacy IT systems. CSPs are also under pressure to evolve their business models to better compete with the low-cost and digital-first services of internet content providers (ICPs). In response to the changing market dynamics, many CSPs are exploring new business models, launching digital services, and expanding into new industries. However, to ensure the success of these new endeavors, CSPs will need to adopt agile IT systems to both support existing operations and evolve the business.

Migrating systems – specifically those within the business support systems (BSS) domain – to the cloud will enable the scalability and agility that CSPs so desperately need. Despite many CSPs understanding the value of the cloud, many are unsure of where to start or how to migrate systems within the BSS domain to the cloud. This report is the fourth in a series that provides CSPs with guidance on how to migrate BSS to the cloud, including where to start, approaches, and lessons learned from the telecoms industry.

Omdia view

CSPs want to move BSS to the cloud in efforts to improve business agility and scalability and be able to react faster to market conditions and needs. In recent years, the telecoms industry has come to realize the value of cloud-native BSS applications and embracing microservices and other cloud-native technologies and principles is a top business challenge for CSPs in 2021. Despite the desire to embrace cloud-native, Omdia's 2021 OSS/BSS Evolution survey found that 61% of CSPs are hindered by limited in-house IT expertise. As a result, many CSPs will seek out solutions and services from vendors to help their organizations embrace cloud-native applications. The vendor community has responded to these challenges by providing productized solutions and comprehensive professional services aimed at lowering the barrier to entry for cloud-native BSS application development.

Key messages

- There is a significant appetite for cloud-native BSS applications within the telecoms industry, but limited in-house IT expertise and financial resources are the biggest hurdles to adoption.
- To address these challenges, CSPs will outsource application development and testing services in 2021, with billing and customer engagement systems being the biggest priorities.
- Software, systems integrators, and other services vendors have developed productized solutions and comprehensive professional services programs aimed at educating CSPs and guiding them in the development of cloud-native BSS applications and the migration of the applications to the cloud.

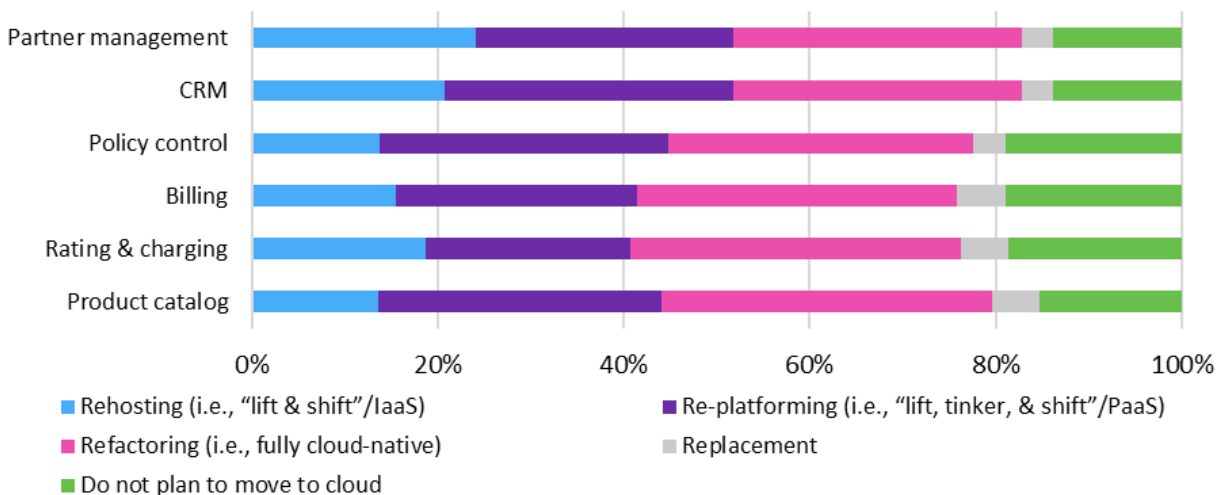
CSPs face several stumbling blocks on the road to cloud-native BSS

Cloud-native BSS adoption is stymied by limited IT expertise and financial resources

The case for moving BSS to the cloud has been stated quite thoroughly in recent years. Now, as the telecoms industry turns its focus towards improving business agility to support new monetization strategies and deliver a differentiated customer experience, the need for CSPs to embrace cloud-native is becoming more evident. Still, for much of the telecoms industry, cloud-native represents a monumental change in culture, operations, and IT. Its adoption will require CSPs to undergo a major transformation, and that's before any applications are even built.

1. Figure 1: CSPs are more likely to refactor BSS applications to be cloud-native

What path do you plan to use to migrate the following BSS applications to the cloud?



n=61

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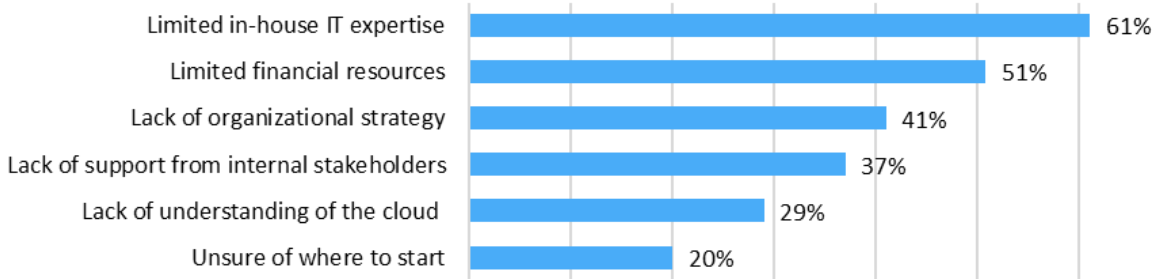
Source: Omdia 2021 OSS/BSS Evolution survey

Despite the seemingly daunting task ahead of them, many CSPs are quite keen to embrace cloud-native technologies for applications within the BSS domain. Omdia's 2021 OSS/BSS Evolution survey found that CSPs are more likely to embrace cloud-native technologies for systems in the BSS domain. As Figure 1 shows, on average, 34% of CSPs plan to refactor their BSS applications to be cloud-native in 2021.

Additionally, an average of 28% of CSPs plan to re-platform BSS applications to take advantage of cloud-native features such as containers and load balancing.

2. Figure 2: Limited IT expertise and financial resources the biggest hurdle on the path to the cloud

What are the biggest challenges your organization faces in migrating OSS/BSS to the cloud?



n=61

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Source: Omdia 2021 OSS/BSS Evolution survey

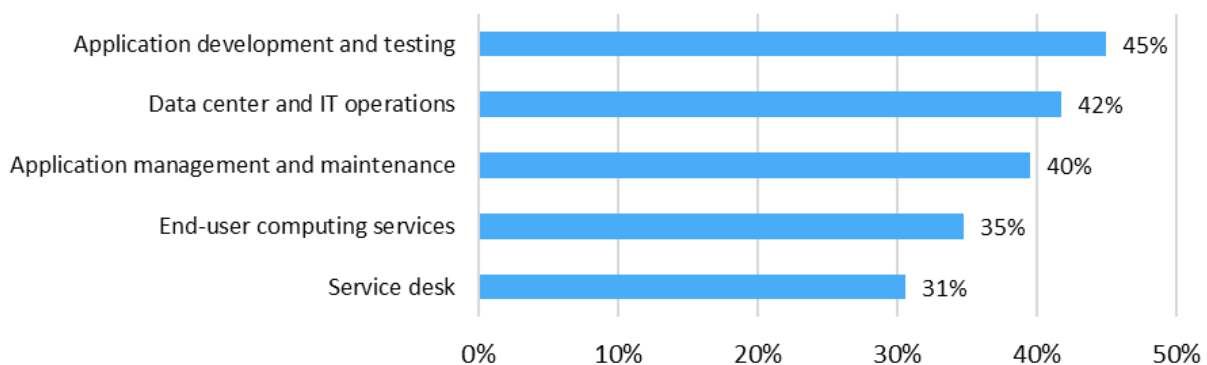
The industry’s appetite and eagerness to embrace cloud-native BSS applications, however, has been met with several barriers that must be addressed. The same Omdia survey found that the biggest challenge that CSPs face in migrating OSS/BSS to the cloud is the limited in-house IT expertise, while limited financial resources present the second-biggest challenge – as Figure 2 shows. CSPs will need to rely on outside help from the vendor community to surmount these challenges if they are to fully embrace cloud-native.

Vendors will play an important role in helping CSPs embrace cloud-native BSS applications

Vendors will play an active and crucial role as CSPs take on the tall task of migrating BSS to the cloud while embracing cloud-native technologies. Limited in-house IT expertise, financial constraints, and uncertainty around the migration strategy will create a demand for professional services including consulting, outsourcing, and managed services from vendors. Omdia’s *Telecoms IT Vendor Revenue Forecast 2020–25* projects BSS service revenues to grow at a CAGR of 4.5% over the next five years, with managed services revenues growing at a similar pace.

3. Figure 3: Application development and testing is the top outsourced function for CSPs

What percentage of the following do you outsource or use third-party services for?



n=110

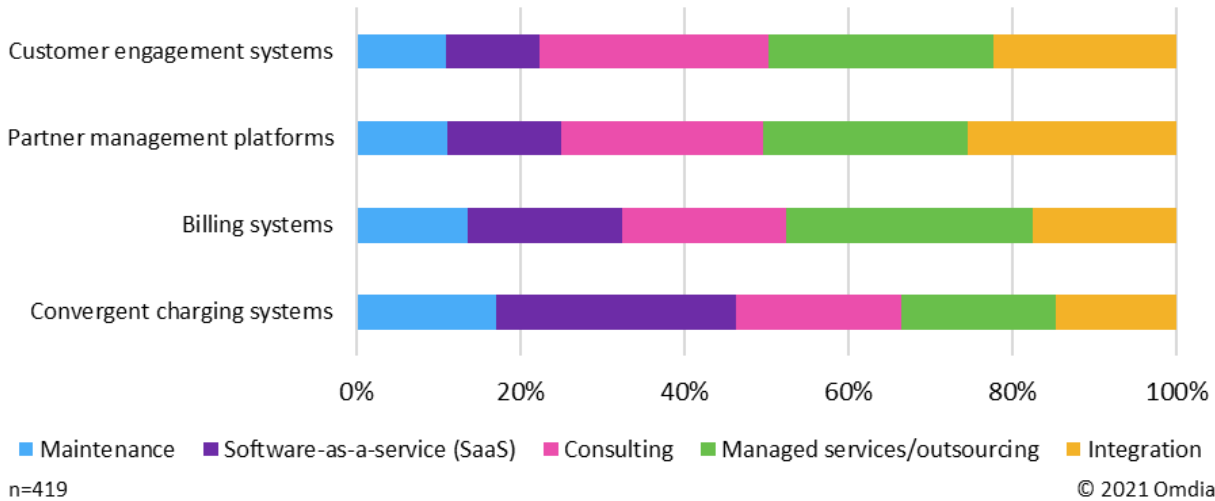
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Source: Omdia ICT Spend & Sourcing – ICT Enterprise Insights 2021

Specifically, application development and testing is an area that has historically been outsourced at a higher rate, as the industry has struggled to attract and retain the right IT expertise. As Figure 3 shows, Omdia’s 2021 ICT Enterprise Insights survey found that on average 45% of CSPs’ application development and testing are outsourced to vendors.

4. Figure 4: CSPs are more likely to outsource applications in the BSS domain via managed services

What are the top areas where you expect to use professional services or outsourcing partners over the next 18 months?



Source: Omdia Telecoms – ICT Enterprise Insights 2021

The areas of importance within the BSS domain for CSPs is focused around billing and customer engagement. As Figure 4 shows, the same Omdia survey indicates 50% of CSPs will seek out consulting and managed services/outsourcing services for their billing systems in 2021. Additionally, nearly 56% of CSPs plan to use consulting and managed services for their customer engagement systems. The high rate at which CSPs seek outside help for these systems is indicative of the desire for CSPs to reduce the total cost of ownership of BSS applications and the importance of billing, partner management, and customer engagement in CSP monetization strategies. Furthermore, these trends are key drivers for the adoption of cloud and cloud-native technologies.

Migrating BSS to the cloud and embracing cloud-native architectures and technologies where possible will enable CSPs to gain more cost efficiency in the operations and management of BSS applications. The agility that cloud-native creates will also enable CSPs to rapidly adapt to market conditions and customer needs, including supporting the rapid launch of new services, pricing, or billing models.

How vendors are helping CSPs develop cloud-native BSS applications

To understand how the vendor community is helping CSPs overcome the challenges with developing cloud-native BSS applications, Omdia reached out to several software and service vendors to discuss their respective cloud-native methodologies, their approaches to helping CSPs develop cloud-native BSS applications, and what trends they are seeing in the market.

Netcracker

Netcracker's cloud-native methodology

The core of Netcracker's cloud-native BSS application development methodology focuses on being a joint development partner for CSPs. To support this approach, the vendor has closely aligned itself with industry standards and focuses on the interoperability of its software products with open source tooling such as Kubernetes, CassandraDB, and Kafka.

Open source technology plays such an important role in the vendor's methodology that it established a center of excellence dedicated to the testing of various open source technologies alongside Netcracker's software products. Through this ongoing testing the vendor can recommend the best open source technologies to use to meet a CSP's business and technology needs. For example, which open source databases would work best with a certain type of data (e.g., static data versus data that needs to be streamed between the database and the application).

Netcracker began its cloud-native journey in 2016 when the vendor first introduced a microservices architecture for its software products. Since then, Netcracker has been heavily involved with TM Forum on its domain-driven design principles which is reflected in the vendor's development methodology. Netcracker emphasizes that CSPs must strike the right balance when designing microservices. Designing systems that rely on too many microservices can put unnecessary demand on IT teams who may not be well enough equipped to maintain such complex systems.

Netcracker's approach to cloud-native development

Netcracker offers several professional services to help CSPs embrace cloud-native for BSS, including its Cloud Transformation Services. Netcracker's Cloud Transformation is a portfolio of services that includes Cloud Strategy Design, Cloud Delivery, and Multi-cloud Operations. While Netcracker's software is cloud agnostic and interoperates with open source cloud-native technologies, the vendor provides additional services and capabilities that underpin all its OSS and BSS products to ensure the cloud operates at "telco grade." This includes working in active-active mode with load balancing, which ensures a high uptime of applications across multiple data centers, delivering 99.999% availability, and carrier-grade security.

Netcracker offers several professional services, including DevOps Enablement which comprises consulting, training, environment design, organization setup, and joint application development with CSPs. To facilitate this, Netcracker provides several tools including smart plug-ins, which enable CSPs to develop their own custom code and plug it in to the core application. Netcracker's service delivery team also makes use of low-code capabilities (including low-code microservices) which enable the team to quickly deliver software customizations for CSPs.

Furthermore, Netcracker is also focused on providing closed-loop cloud operations. This is achieved by monitoring all layers of the software being delivered on the cloud, including the hardware, IaaS, PaaS, cloud services and SDK, and the application layer. Automated scaling in and out of software is executed by combining analytics with insights gained from monitoring CPU consumption, memory, the number of virtual machines, and the number of containers being used, offering CSPs more-efficient cloud consumption.

Finally, Netcracker believes that its proximity to parent company NEC (which provides hardware, infrastructure, and platform services for the cloud) and the vendor's focus on security across all levels of the cloud (from hardware to application) are its biggest differentiating capabilities. Netcracker notes that, historically, concerns and skepticism around the security of the cloud have been the biggest detractors of CSPs' adoption of the cloud. To curb these concerns, Netcracker has invested in incorporating several

security features throughout its software, including a secure enclave environment, anonymization, separation of duties, and governance and policies, to name a few.

Netcracker's perspective on cloud-native BSS trends

Telecoms' increasing appetite for joint development

An emerging trend in the telecoms industry is the increasing appetite for jointly developed cloud-native applications. Netcracker notes a growing trend of CSPs preferring to develop components of an application on their own – such as an e-commerce portal. In these cases, the vendor sets up a synchronous DevOps pipeline alongside its CSP customers to enable joint development.

CSPs are embracing open source databases to keep costs down

CSPs are embracing open source databases such as CassandraDB. This is being driven by the desire to keep cloud costs down, especially as transaction volumes rise exponentially (and even more so in 5G). Even under scenarios where data is being zero-rated, the CSP must still process this data. This puts pressure on database costs to remain low to ensure profitability, and Netcracker has observed that this is the biggest driver of the adoption of open source databases.

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