

next-generation

BSS

the case for a
modular approach

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contents

- 03 Setting the scene
- 06 **Chapter 1** Digital transformation is all about change
- 08 **Chapter 2** Can CSPs transform without massive capex risk?
- 10 **Chapter 3** What's in a modular BSS architecture?
- 12 Open Digital Architecture: BSS aims for interoperability
- 13 **Chapter 4** Reducing costs: Public cloud, BSS stacks and customization
- 16 **Chapter 5** Towards the future: CSPs' top BSS requirements
- 18 Meet the Research & Media team

setting the scene

Communications service providers (CSPs) are being forced to make their businesses behave more like their digital-native peers and competitors, but most are just starting out on the journey to digital transformation.

“Gone are the days where telecom is a medium to do voice and data comms,” says Manoranjan Mohapatra, the CEO of Comviva Technologies. “Operators have realized it’s a matter of survival, so they are trying to be more digital.”

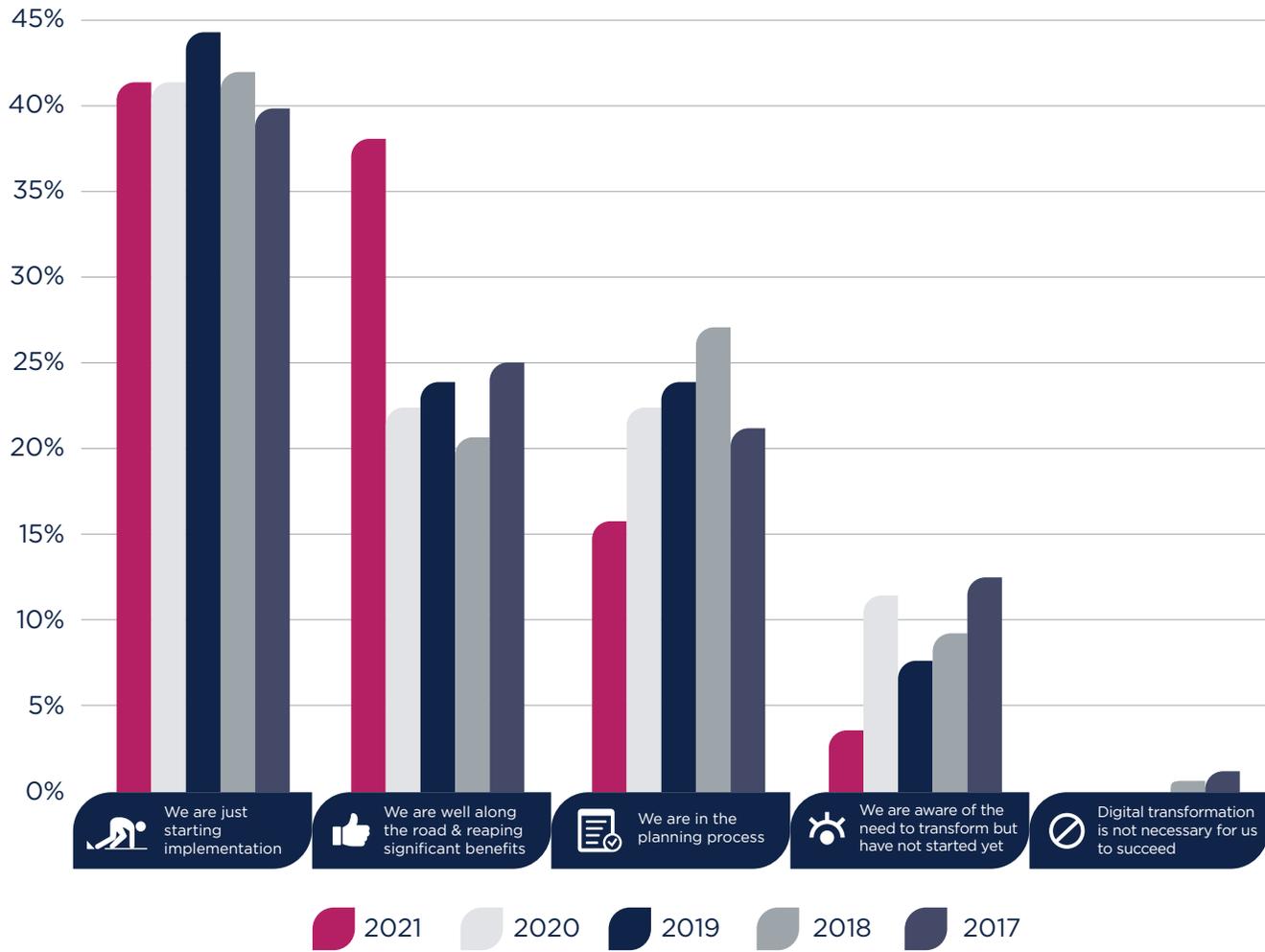
Our research for the *TM Forum Digital Transformation Tracker 5 report* shows that due to the Covid-19 pandemic more than 70% of CSPs have shifted more of their focus to customer experience (CX) and operations digitalization. More than half worked to launch new lines of business, while 45% accelerated their adoption of cloud-native technology.

A full 80% of CSPs have started to implement digital transformation programs or are already benefitting from ongoing transformations (see chart on page 4).

This sudden wave of change has also left CSPs and many of their suppliers misaligned on what it will mean to be a CSP in future, and this uncertainty places a premium on agility, openness and innovation.

“Operators have realized it’s a matter of survival, so they are trying to be more digital,” says Manoranjan Mohapatra, CEO of Comviva.

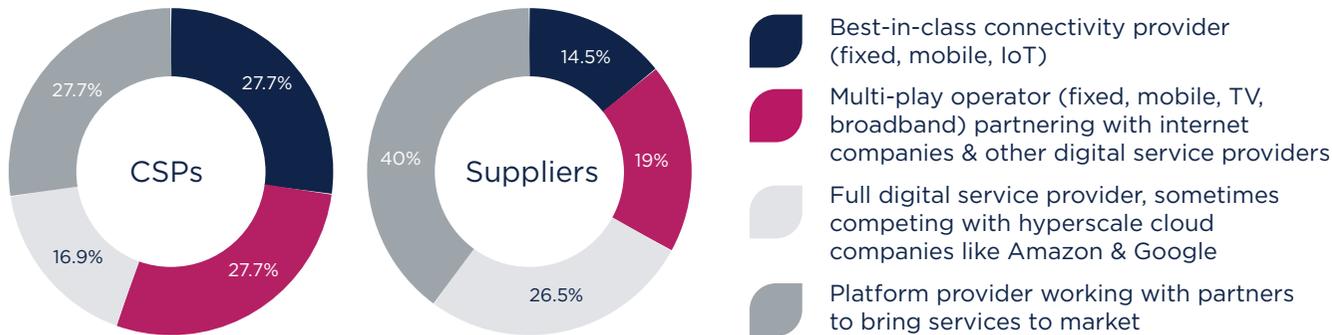
Status of CSPs' digital transformation programs



“When you have to meet certain requirements and maybe don’t think you have the resources, that’s when you innovate,” says Mohapatra.

But CSPs and many of their suppliers are not aligned on what a digitalized version of their business should look like. Some 40% of suppliers see a platform-centric future, but fewer than 30% of CSPs agree (see pie chart below).

What should CSPs aspire to become?



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In the face of such divergence, a CSP's business support system (BSS) stack must have the flexibility to support a variety of business models. This flexibility is central to the ability to respond to market changes and catalyze CSPs' own service and business model innovation.

In this ebook we consider this crucial need for CSPs to adapt BSS, and examine:

- Why legacy BSS business models need to change
- The barriers to BSS change and cost containment
- Why some experts argue a modular BSS approach is needed
- The shift from customized to configurable BSS
- CSPs' top BSS requirements.

digital transformation is all about change

Communications service providers (CSPs) face organizational barriers when aiming for full-scale transformations.

In our *Digital Transformation Tracker 5* report they identified the top five challenges as:

-  Inflexible legacy IT
-  Lack of a clear, aligned vision and goals
-  Cultural and organizational issues
-  Shortage of skills
-  Product, process and other complexity.

Each of these factors, and others, can multiply scale, complexity, risk and cost in a CSP's transformation program. But the number one barrier - inflexible legacy IT - sits at the center of many CSPs' business support system (BSS) environments.

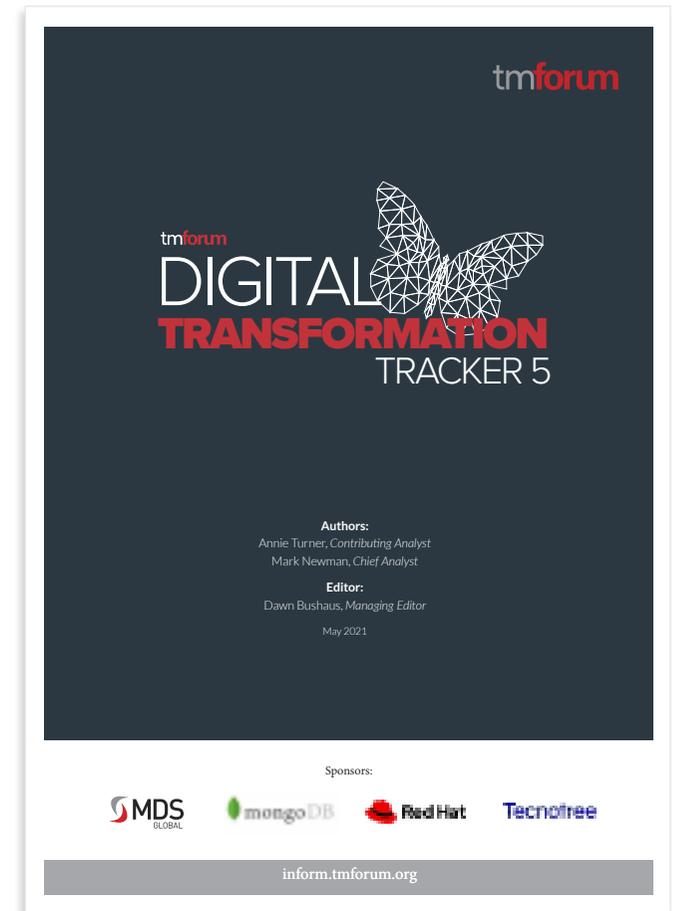
One senior architect with a large European CSP says: **“On average our large transformation projects arrive 150% over budget and time. We have found that there is a direct correlation between the size and success of these projects.”**

BSS has always presented a special challenge for CSPs because they have shepherded billions in revenue effectively and can be perilously risky to disrupt. Too often BSS transformation has meant CSPs facing these risks in exchange for uncertain benefits.

High risk and failure rates validate cautious CSP executives who do not want to risk disruption. But in the BSS world, a growing number of voices say it is the legacy BSS business model that must change to meet operators' need for more speed and less cost.

A legacy licensing model that delivers periodic releases and monetizes custom change requests has forced many CSPs to rethink how they approach BSS.

“BSS is broken,” says one senior VP at a global BSS supplier. **“It’s a business model that can’t carry on. Operators simply cannot afford expensive change requests, and even vendors who charge a fortune for those requests realize that the situation has to change.”**



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can CSPs transform without massive capex risk?

Legacy business support system (BSS) replacements impact people and processes as well as systems. New user experiences mean staff must learn, transition to and master new systems and process changes to do their daily jobs.

“In most cases you are replacing a legacy system and you can’t change that completely because the learning and unlearning process is time-consuming and expensive,” says Mohapatra at Comviva.

CSPs must ask themselves if they can transform BSS in a way that:

-  Contains capex costs
-  Minimizes disruption for teams
-  Enables incremental deliveries and milestones
-  Delivers useful digitalization in stages.

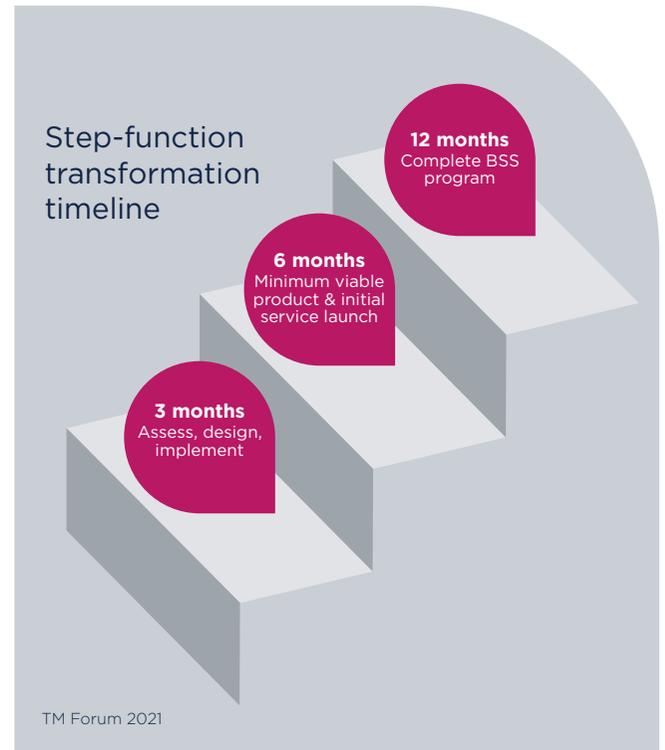
“In most cases you are replacing a legacy system and you can’t change that completely because the learning and unlearning process is time-consuming and expensive,” says Mohapatra.

Mohapatra believes CSPs can achieve these aims using a step-function approach to transformation that avoids a major capex outlay and business disruption (see graphic).

And to support a step-function transformation, modular BSS can prove advantageous. In the next chapter we look at what is in a modular BSS architecture.

step-function transformation timeline

- 3 months**
Assess, design, implement
- 6 months**
Minimum viable product & initial service launch
- 12 months**
Complete BSS program



“We tell customers we are not expecting you to rip apart what you have, but rather to launch new digital services on the new stack while running current services and not interrupting solid legacy processes,”
Mohapatra says.

what's in a modular BSS architecture?

One western European tier-1 operator which has moved to a modular, ecosystem-based business support system (BSS) designed to support different business customers, says: “In the past we have had many different business units and many different software stacks.”

But by creating a containerized ecosystem, which consists of pre-approved BSS modules developed in-house or by certified third-party suppliers, the operator can now create BSS solutions quickly to suit each use case and customer size (see Open Digital Architecture page 12).

This modular approach has enabled the CSP to address new industrial IoT markets with solutions and connectivity. It can now leverage new BSS modules that track dynamic pricing, monitor service-affecting network performance and instantiate new virtual network functions (VNFs) and edge compute services.

A modular BSS should be “digital native, cloud native, highly modular and highly flexible”, says Mohapatra at Comviva. “You don’t know what the services will be, so the platform must be extensible, adaptable and must let CSPs bring in new services and new partners more easily.” The ability to “mix and match” components is a central tenet of modularity, enabling CSPs to launch services and adapt to market conditions faster.

The graphic below is an example of a modular BSS architecture that leverages TM Forum's Open Digital Architecture (ODA). Its purpose is to define functional BSS components according to common definitions. Component integration is simplified via TM Forum Open APIs to enable superior solutions delivered faster, while lowering the cost to deliver and maintain the BSS.

Example of an ODA-based modular BSS architecture

Party Management



Core Commerce Management



Intelligence Management

The key to making modular BSS work while achieving digitalization is embracing openness. Mohapatra says: **“Like Open RAN in 5G networks, BSS is moving in that direction, becoming more standard and more compliant with TM Forum APIs, and that would give the confidence that any SI [systems integrator] could combine these pieces.”**

open digital architecture: BSS aims for interoperability

“Operators have realized they can’t run a monolithic voice and data network and make enough money,” explains Mohapatra. “So, to make the system enabled for third-party services and integrations you have to commit to an open system.”

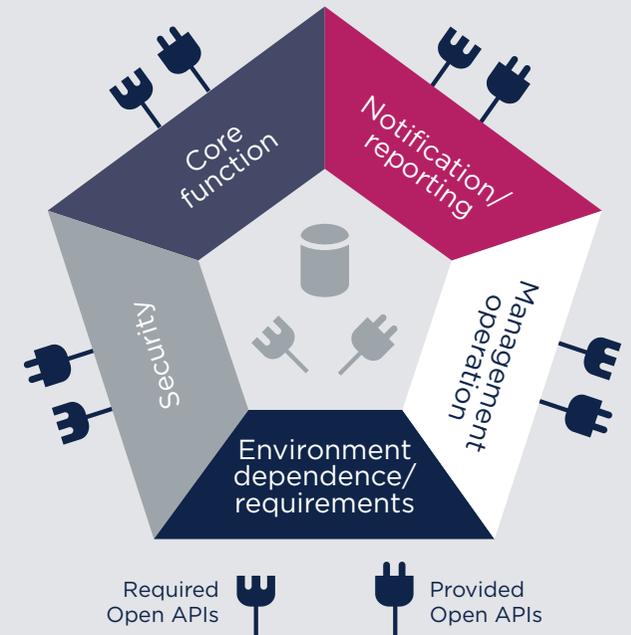
The TM Forum Open Digital Architecture provides a component-based approach to operational and business support systems (OSS/BSS) that defines standardized, interoperable software components organized into loosely coupled domains.

An ODA component is an independently deployable piece of software, typically built out of one or more microservices. Components have an “envelope” that provides metadata to describe its core function and specify which Open APIs it exposes or depends upon.

These components expose business services through TM Forum Open APIs built on a common data model. The ODA also provides machine-readable assets, software code, a reference implementation and a test environment.

The ODA Component Accelerator is developing a reference implementation to test commercial ODA components for interoperability and catalyze a market for standardized software components to run service provider businesses.

“Open API-ization is necessary,” says Mohapatra at Comviva. “We are heavily committed to TM Forum’s Open API programs.”

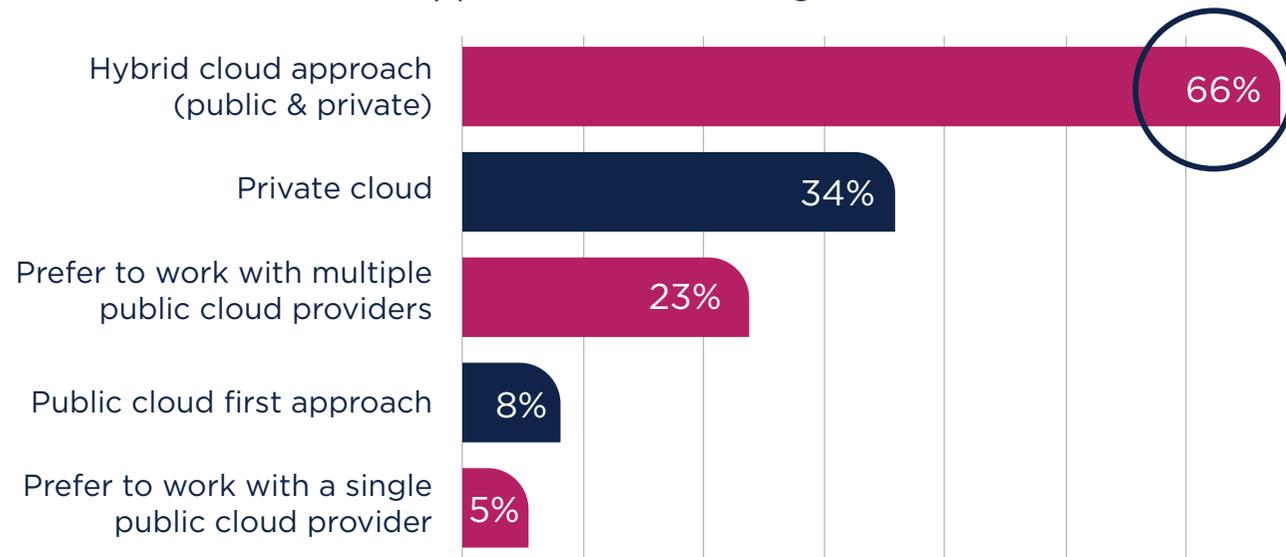


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reducing costs: public cloud, BSS stacks and customization

TM Forum research for [Digital Transformation Tracker 5](#) found that 66% of CSPs are employing a hybrid cloud approach – using both private and public clouds (see chart). Only 13% are taking a public cloud-first approach or working with a single public cloud provider.

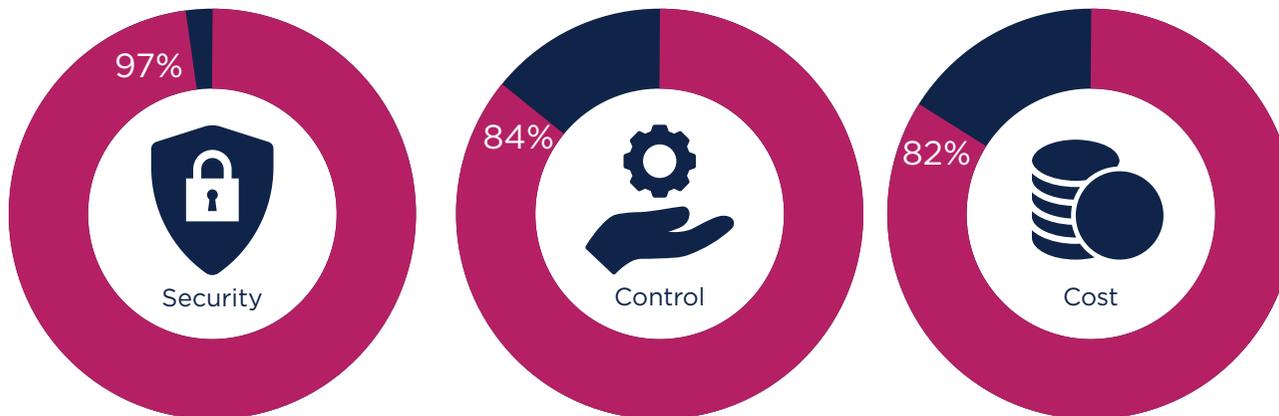
CSPs' approach to cloud migration



Mohapatra argues that “public cloud has many advantages and is much cheaper from a total cost perspective”, but he admits that among CSPs “public cloud adoption is a little slow but changing”. He adds: “We prefer public cloud and we work with them all.”

TM Forum research finds 77% of CSPs worldwide have moved less than 15% of their IT workloads to public clouds, with security, control and cost their main concerns when setting a cloud strategy (see chart).

CSPs' top 3 cloud strategy concerns



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how many stacks?

Because 65% of CSPs say cost reduction is their top driver for digitalization, debate arises as to whether one BSS stack can support both consumer and business customers.

“The base platform is common,” says Mohapatra, “but a B2B workflow is very different from a B2C workflow. The non-functional requirements like user management and reports are common building blocks, but the workflow management is very different.”

Ideally, Mohapatra says, 70% to 80% of the common base functionality will already reside in a modular BSS to minimize customization, which can focus on implementing an operator's specific non-standard requests.

According to our research for the report *Future enterprise billing: the big picture*, 58% of CSPs have already converged their billing stacks or plan to, while 42% have separated B2B and B2C or plan to (see chart).



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modular BSS minimizes costs

Reducing customization costs has become both a priority and an opportunity as BSS goes digital, cloud-native, modular and open.

Mohapatra says a modular BSS should minimize customization, delivering 70% to 80% of needed functionality configurable in the platform. "Customization has gone down significantly in features, functionalities and flows," he says, "but in a telco environment there's a lot of integration that happens and those integrations are not yet standard, so they are still customized."

The remaining customization can then focus on implementation specifics and attending to regional customer experience variations. "Every culture and region prefers different user experiences, and you have to customize," Mohapatra says.

towards the future: CSPs' top BSS requirements

Digitalization has introduced cloud-native ways of working to CSPs, but much like business support system (BSS) transformation, changing IT culture and methodology has proven to be a gradual process.

For example, while a supplier may run its product development teams in the Agile world, the CSP may continue to run delivery using waterfall methodology because that's what its people know best.

Suppliers are responding to this dual reality, explains Mohapatra, by delivering containerization and continuous integration / continuous deployment (CI/CD) to speed up change requests compared to legacy processes.

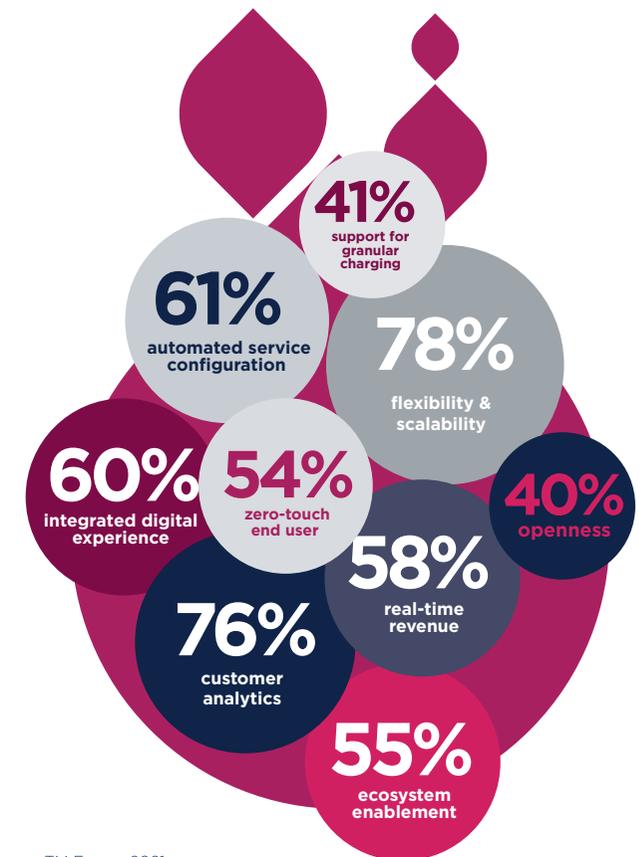
forward-looking BSS functions

As BSS environments advance to keep pace with a rapidly digitalizing marketplace, CSPs say a range of capabilities are now needed urgently to support their new service plans such as 5G and complex B2B solutions.

The graphic right shows CSPs' most urgent new BSS requirements based on our research for the report *Is BSS ready to monetize enterprise 5G?*

These priorities show how BSS has evolved far beyond billing to encompass many advanced customer experience capabilities. And it completes billing's evolution from a batch-based, offline invoicing process to an array of real-time monetization capabilities.

CSPs' most urgent new BSS requirements



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what will define a transformed BSS?

A transformed BSS requires a rethink across architecture, functionality, cloud-native, openness and ODA-compliance.

“CSPs need something digital,” says Mohapatra, whose Comviva team created its modular, digital- and cloud-native Blue Marble BSS from the ground up. “You don’t know what the services will be, so the platform must be extensible, adaptable, and must let CSPs bring in new services and partners more easily.”

What BSS must deliver going forward is to enable CSPs to adapt fast and capitalize on the unknown. The critical characteristics of a transformed BSS include:

-  Flexibility – to introduce new services and enable agility to support multiple and new business models.
-  Configurability – reducing or eliminating reliance on custom code reduces a chronic cost center for CSPs.
-  Interoperability & Open Digital Architecture compliance – key to modularity, ODA compliance simplifies integration and enables CSPs to mix and match BSS components, including legacy systems that continue to make valuable contributions.
-  Public, private & hybrid cloud – BSS should be able to span them all, as needed, and leverage the scale and cost advantages of public cloud.
-  Automated & real-time – CSPs’ most urgent BSS needs now emphasize automated, real-time functionality to support customer experience and monetization demands.

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