

WHITEPAPER

# The Journey Towards Cloud Native OSS



## Abstract

Operations support systems (OSS) have evolved over time from home grown to off the shelf, readily available applications. With the quest of communication service providers (telcos) to become digital enterprise; OSS applications also need to be ready to be deployed as “cloud native” applications. OSS being closer to networks; was always considered as an impediment for it to be moved to public clouds. This paper brings out key market trends, Tech Mahindra’s approach, best practices, and methodology to move OSS applications to the cloud.

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# Introduction

Telco businesses are consumer centric, and these consumers are diverse in nature, having different demands at different time. These consumers could be an individual end user, a group of users, or a big enterprise. They are from different industry domains like life sciences, manufacturing, retail where they all are having their own business model and need specific solution to support requirements.

The major investments for telcos go into spectrum license. Apart from that, the other two major areas where revenue drains are license fee for application/equipment and bringing innovation/technology into their ecosystem. These challenges are critical when we talk about 5G, multi-access edge computing (MEC), network-as-a-service (NaaS), connectivity as a service (CaaS), internet of things (IoT), private 5G, and such use cases where containerization is key, real time, and zero touch automation is essential part of ecosystem. These use cases affect OSS vendor, integrator, and operation/OSS users to move towards cloud native to support diversified ask from end customer.

This is the right time to think how we can modernize OSS to support cloud native network, move towards hyperscalers, and operating model like self-heal and close loop. Telcos also understand the same and have started moving towards cloud native architecture.

Figure 1 is a summarized view of our survey with different customers across the globe:

## Cloud Native OSS Asks from CSPs

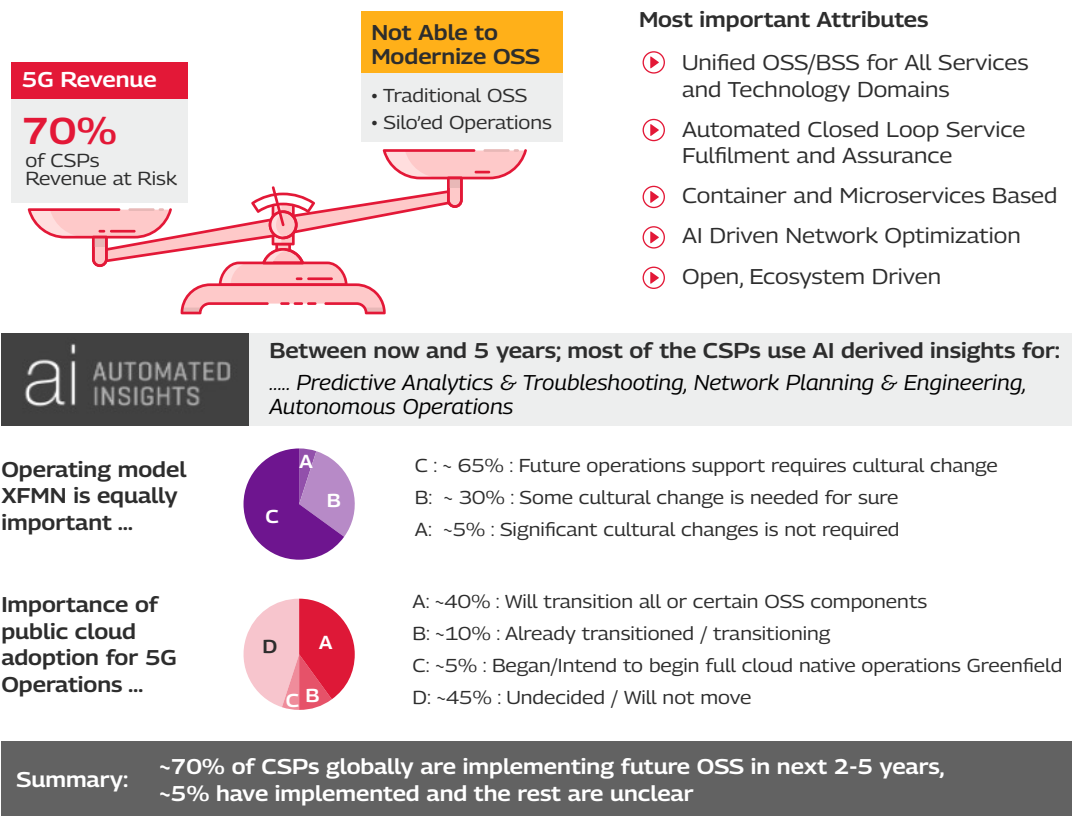


Figure 1: Global CSPs view towards Cloud Native OSS

Currently hyperscalers and original equipment manufacturers (OEMs) are trying to build an ecosystem where they can easily offer telco services and supporting functions out of the box as a one shop solution. To do this, they are tying up with OEMs, investing in provider. Here are some facts referencing hyperscalers where they are trying to invest significant amount and resources

- ▶ Amazon's \$2B stake in Bharti Airtel
- ▶ AWS is having dedicated TelcoMarketplace.
- ▶ Google's \$4.7 billion investment in Jio Platforms
- ▶ Acquisition of Metaswitch Networks and Affirmed Networks

Considering above data, hyperscalers are trying to come into this space indirectly by investing in existing communication service providers (CSPs) or offering them their infrastructure. Similarly, OEMs are also moving their OSS/BSS solutions towards the cloud and supporting cloud first approach. These two important pillars of telco ecosystem are not only compelling telcos but the other OEMs and cloud providers as well, to start their journey towards the cloud or cloud native architecture. Following sections describe why, what, and how of OSS application migration to cloud.

Let's deep dive into why should CSPs look at OSS applications migration to cloud, what would they get; if they do that, and how to get there through Tech Mahindra's best practices and methodology.

## Key Drivers

Apart from the above numbers there are some significant business and operation aspects/requirements that continue demand us to think for an alternative but innovative solution. One of the options is to move OSS towards cloud.

The figure below depicts some key business requirements like cost saving to reduce OpEx and Capex and invest in research and new development. Same goes with innovative services and supporting of next gen service models, private 5G, and the metaverse. Today, customer also demands to have services in real time with minimal effort and cloud migration will help to realize that with less dependency on resource availability which theoretically provides us unlimited capacity. Recently we all experienced a big pandemic that changed our approach for providing and consuming services. Customers prefer solutions in real time without any human touch on top cloud-based OSS which can bring scalability and elasticity.

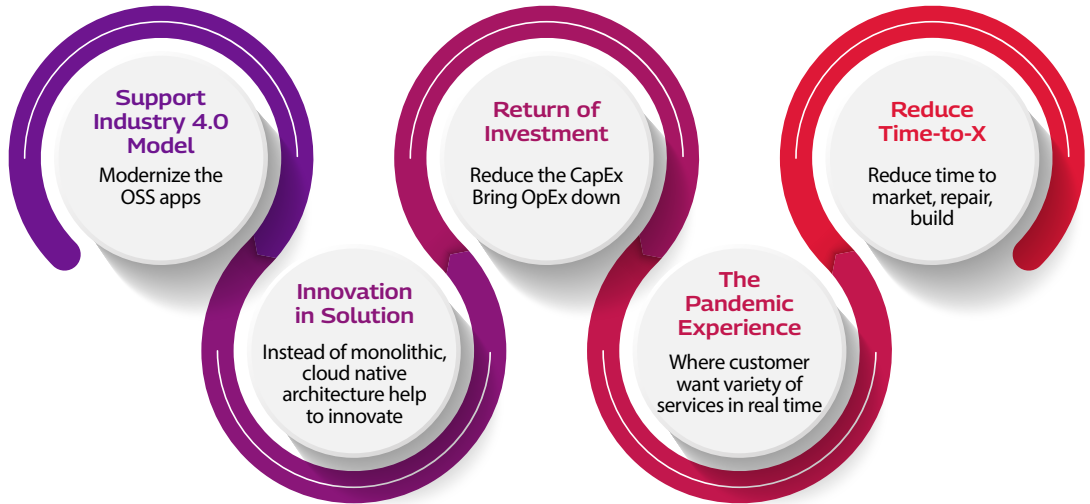


Figure 2: Key drivers

## Key Benefits

We discussed a lot of challenges and understood that if we really need a solution which can support cloud native architecture deployed on cloud, this could be hybrid or purely hyperscalers based.

### More Open But Standard Architecture

Current solution which is monolithic and is difficult to support the open APIs (TMF, ETSI, ORAN) but next gen cloud native architecture build in such a way that it is open and support all standard interfaces. With cloud native modular architecture operating model and processes will be much simpler and make E2E operation more efficient.

### Automation and CI/CD

Considering cloud native architecture CI/CD with automation is an inbuilt capability, it will help you utilize resources efficiently and reduce the cost. At the same time, it will help us to take all the possible advantage of technology enhancements.

### Cultivate The DevOps Culture and Enable SRE/NRE

Benefits we get from DevOps culture is not hidden from anyone. A cloud native architecture helps to bring DevOps culture in OSS application area. Where we can optimize our development and operation of telecom/OSS. Bringing a containerized Microservices architecture will bring innovation faster and reduce the time. This is an essential component to realize SRE/NRE.

### Sustainability

This term recently talked across the industries and telecom CXOs are also thinking how to reduce the carbon foot printing. With the technology advancement we have different option to make sure our environment is healthy and livable. So, moving towards a cloud native technology which make sure efficient use of resources and sharing them will surely help to achieve our goal.

Figure 3: Key Benefits

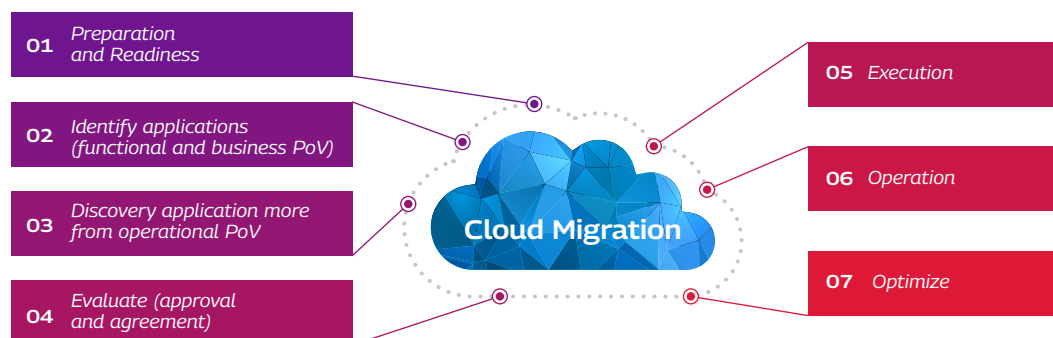
This doesn't mean that telcos need to build everything as cloud native on their own and start offering solutions, it's also practically not possible. Cloud transformation is a long journey, and every company has different ways to approach it. Enterprises should take a phase wise approach based on requirements and current ecosystem.

## TechM Transformation Approach

It is important for telcos to understand that only moving to cloud native architecture or just deploying on cloud will not give them the desired results. To achieve best results, it is crucial to adopt cloud along with cloud native architecture. Although enterprises need to make the move to the cloud with cloud native (CN) architecture, transformation to cloud and cloud-native architecture is often difficult to begin with and the journey is often not seamless.

Based on our global experience delivering similar programs, we have arrived at best practices, methodology and our OSS cloud migration approach.

### OSS Migration Methodology



- Unique approach which handle all the aspect starting from preparation to optimization
- Moving towards Hyperscalers is not priority but cloud native is our approach
- Cost optimization is integral part of approach
- Continue monitoring aspect

Figure 4 OSS migration approach

The following is a short summary of our approach.

### Preparation

Preparing for cloud is one of the very first thing that any organization need to do. Telcos need to assess and make sure that organization is prepared to move towards cloud or cloud native architecture.

## Readiness

Telcos need to make sure that they are ready to move towards cloud. For this they need to secure the budget. Additionally, they need to build security expert, OSS expert, and cloud expert team which will take care of different aspects and plan for the roadmap.

## Identify The Application

It is important to identify the application based on different criteria like which all application should go first based on business requirements. At the same time, it is important to identify stakeholder and agree RACI among. There is also a need to prepare a macro level plan for migration with cost estimation along with approvals from stakeholder.

## Discovery Application

Discovering the application involve operational aspects like what are the dependency for application, different requirement (resource, integration, protocol) before moving towards cloud. Discovery can be done manually or automated using tools available. These tools could be available free of cost from major hyperscalers.

## Evaluate

Once discovery is done, next step is to evaluate which approach to take based on 6Rs (re-host, re-platform, re-factor/re-architect, re-purchase, retire, and retain) are available. Once that is finalized and agreed we need to take opportunity to identify which cloud we need to move or keep service within our own data center.

## Execute

In this phase telco experts need to make sure that destination environment is ready and keep a track of not only migration activities but also the destination environment.

## Operation

Once everything is migrated this is the time for diverting traffic towards migrated application. This is the phase when we monitor service on agreed SLA/KPIs/QoS.

## Optimization

Optimizing application and infrastructure based on operation team's feedback and KPIs monitored.

# How Tech Mahindra Can Help Enterprises Realize The Cloud Journey

Tech Mahindra can help enterprises to realize cloud journey for OSS applications and become a cloud continuous integrator (C2I) partner. The experience we have gained over the years working as key integrator and technology partner keep us ahead of the curve to give our customer a competitive advantage when they start building cloud native solution and wants to migrate on cloud.

## Assessment of Cloud Migration Stage

Majorly, we categorize OSS migration as 3 major stages P (planning and readiness), M (migrate), O (operate). Figure 5 is an overview of our PMO model and key activities needed to perform.

### OSS Migration Assessment - PMO Model

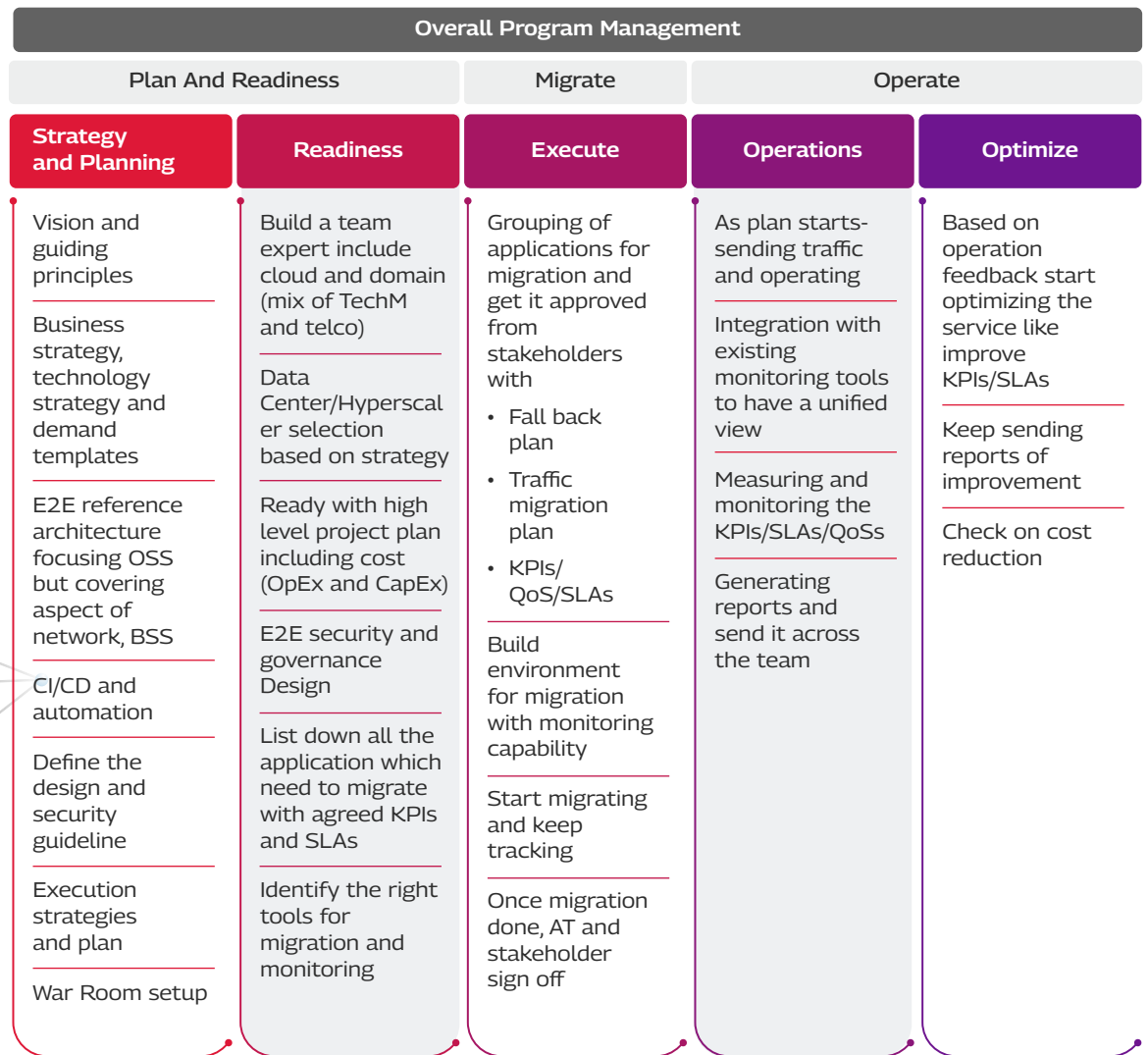


Figure 5: OSS Migration Assessment - PMO Model

This PMO model will help telcos to identify which stage they are in or where they need support. Based on the stage where the telco is on their cloud migration journey, we can help them with our PMO framework per their requirements.



## TechM Cloud Native (CN) Framework

Over the years, leading in the OSS/telecom domain we have matured ourselves not only as service integrator but also as a telecom business/domain expert. This significant experience helps us to learn the priority and related applications with key SLAs/KPIs. We have used this learning when we come up with our OSS blueprint solution. This blueprint will help telcos find out all the essential component they should have in their OSS architecture to manage and operate their solution.

The following blueprint is based on industry standards:

- ▶ Based on ONAP we come up with different framework, run time framework.
- ▶ Based on TM Forum we have divided different OSS journey but make sure that they are cloud native, support CI/CD and integrated with TMF open APIs.
- ▶ Based on ETSI we take care of different MANO and related integration mentioned in Network domain manager
- ▶ Agile and DevOps concept is an essential part of this solution.
- ▶ To support NRE/SRE we have Test Automation as part of unified governance which will help to perform run time automated test continuously whenever a change in observe.
- ▶ Change management is all about managing continuous change and to bring governance in solution

### CN OSS Solution view

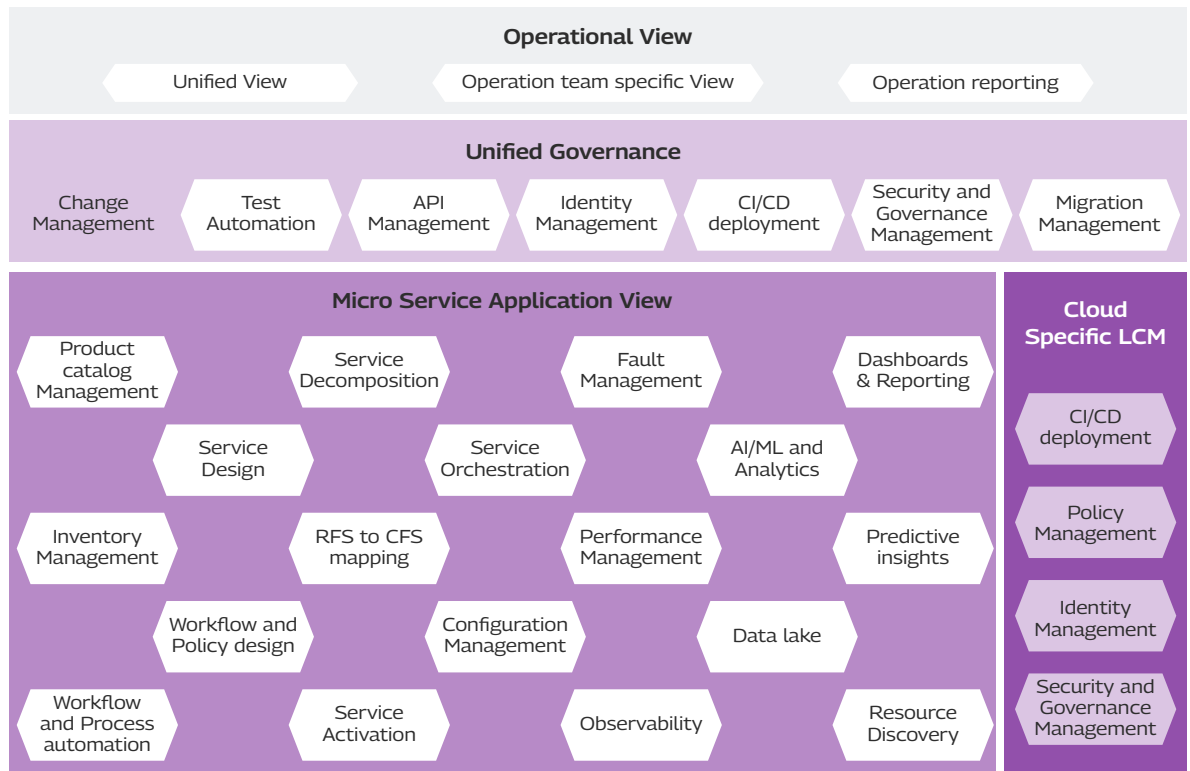


Figure 6: CN OSS Solution View

## IDENTIFYING THE RIGHT SOLUTION

Our experience in different domains and implementing cloud solutions, helps us to bring the right solution based on assessment of services. In general, we have seen teams struggling and facing challenges. Telecom OSS is a specialized area where we need the right set of skills to understand OSS solutions, cloud offering, and cloud native technology to offer the correct solution. This is a big gap that Tech Mahindra bridges.

## BRINGING THE RIGHT TEAM AND TOOLS

To support migration, it's good to have an automated solution via tools and only in specific case a manual approach is recommended. Different tools are available these days, some of them are specific to hyperscalers (offered free) and others are offered commercially. TechM helps you to find the right tool sets based on needs leveraging experience with different hyperscalers and solutions available some of them are Robin.io, Cloudhedge.io, Corent Surpass to support your cloud native journey.

## END TO END PROGRAM MANAGEMENT

Transformation towards cloud is a long way and has many milestones on the way. It is important to keep an eye, track them, and escalate to get things done. TechM as a partner can help customer to support on time delivery with a team of experienced program and project manager who not only are experienced in the telecom and OSS domain but also understands the technology evolution and trends. TechM as a C2I will make sure that right skills sets are available to get deliver the projects.

## Our Key Experience: Recent Engagements

Strategy and Planning	Readiness	Execute
Global Tier1 CSP	Germany	Built a solution for observability, data analytics, service assurance with AI/ML. Deployment is on GCP.
Large Teco/CSP in North America	USA	Built a solution for plan, build, and rollout management. Deployment was done on Azure public cloud.
Large Tier1 Telco/CSP	UK	Delivered a cloud native solution to support single pane of glass assurance architecture.
Tier2 small CSP	USA	Integrated AI/ML based prediction to make assurance more effective and improve customer experience.

Table 1 Recent Engagements

## Moving Towards A Cloud Native Solution

To summarize, until now we have seen that cloud is a mission critical thing for any CSP. Based on our recent discussion on different forum with CSPs, we understood that they have acknowledged it very well. Some key facts are:

- ▶ In MWC21, telcos such as Orange emphasized efforts to completely rewrite software for the cloud to focus on customer relationships and to become more customer-centric by embracing cloud-based tools for its OSS and BSS infrastructure
- ▶ ACG Research estimates that, today, about 30% of newly deployed OSS and BSS are cloud based. By 2025, that figure will rise to 90%, and most CSPs will have plans for the eventual phase-out of non-cloud-based OSS/BSS.
- ▶ 82% have a roadmap in place for evolving their Digital, BSS and OSS systems to cloud native technologies or are proactively working on a plan
- ▶ 64% say microservices architecture will be a requirement for new systems within 2 years

Considering this we think this is the right time for any provider/OEM to move towards cloud native solution and start replacing the existing OSS. If they choose a path with hyperscalers, it would be a win-win situation for OEM, hyperscalers, and telco as they jointly save the cost and bring innovations to the solution. As a result, the customer will be benefited with best-in-class experience with optimized costs.

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