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5G: THE RACE CAN'T BE WON WITHOUT THE CREW ONBOARD

WHITE PAPER

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Professional yacht racing is a lot like running a telecommunications operation. There are a lot of moving parts, the wind shifts frequently, and the crew needs to be in perfect harmony. Changing the goal of the race, the destination, or major components on the yacht may change the crew's chemistry. Similarly, as Communications Service Providers (CSPs) continue to seek ways to be more agile, evolve their infrastructure to the cloud, and automate their operations, a serious look at the crew and how they operate is required.

Technology Evolution is Not the Problem

Efficiently managing a 5G infrastructure is different from all the previous G's and network infrastructures before it. Technology is not the biggest hurdle; old paradigms limit the racers. Moving to the cloud changes the operations and processes more than it changes the technology. Without significant change to the operating model and culture, 5G transformations, microservices, and containerization may not deliver the expected efficiency or reduce the complexity of managing the network. If manual, inconsistent, and time-consuming processes are not changed, siloed operating models are not integrated, the crew will be unable to respond quickly when the winds shift.

Designing the yacht to be race-ready from the first day is essential because that yacht will be asked to race in the future, and it should already be built to sail! In the same way, CSPs should start evolving the 5G core from day one by training the operations crew for the big day and the journey ahead. A 5G core is designed to support many new use cases. Massive IoT for smart factories, smart cities, mining, cellular V2X, AR/VR, intelligent video surveillance, and autonomous driving are just some of the innovative new opportunities CSPs have been seeking.

Realistically, this requires enabling different network characteristics for each use case. Business needs around latency, bandwidth, traffic demands, mobility, and plenty of other metrics, including legal considerations, will vary widely. How do operations personnel support all of them? In addition, customers will expect different pricing for each use case based on performance, SLA, and consumption. Therefore, network planning and operations, done by people, will also have to change to meet the new business models of the 5G era.

Operators need to adopt a new DevOps outlook based on an agile methodology. Adding to that are lean processes, role-based training, automation, and a culture where building, testing, and releasing are quick and supported by CI/CD pipelines.

Benefits of 5G Operational Modernization

In general, the business driver for telco transformation and cloud *is operational modernization*. 5G operations allow CSPs to function more like internet companies that are far more nimble, can grow rapidly, and respond to market changes quickly.

Operational modernization brings four main business benefits:

Infrastructure optimization. The flexibility to reallocate capacity or hardware investment based on user demands allows CSPs to use capital more efficiently.

Increased productivity. Increased operational efficiency results in productivity gains. With better automation, operational tasks are completed with less manual intervention, less time, less cost, and also less human error.

Service agility. The ability to deploy new services and features to the market more quickly is the goal. Legacy operations and processes that require long development cycles, long lab testing, proof of concept, KPI validation, and a complex production rollout must change. New service deployment cannot continue to take months or years if CSPs are to compete with internet companies.

Innovation. Increasing the speed and ability to innovate is critical. If the entire lifecycle can get services out to market faster, with less cost, less risk, it's much easier to take more chances, try new services, and reduce the investment risk.

5G Change is Challenging

When the winds change, there are always challenges. There's a desire to evolve, but it's always easier said than done. The crew needs to be clear on the goal and how to achieve the expected outcome. Three primary areas present challenges:

1. **Infrastructure economics**. Significant infrastructure investments in revenue-generating technology and services are being capitalized. Replacing it all requires a solid business justification as this could be a costly proposition.
2. **Service and performance requirements.** Past performance needs were predictable, but new 5G use cases have different needs, SLAs, and price points for various workloads. Balancing the infrastructure investment against performance needs poses constant challenges.
3. **Operational fit.** While private and public clouds require operational changes, they also offer many potential solutions to some of the more difficult operational challenges.

It's essential to balance financial economics with the performance and operations demands to ensure operational fit and fully realize the benefits of cloud operations.

The most important benefits of having all workloads leveraging the same environment come from having the radio, packet core, and mobile core, all sharing the same COTS hardware, the same network, storage, and running on any cloud infrastructure. Workloads should be deployed, updated, and maintained using the same CI/CD pipeline, harmonizing end-to-end network operations. This change alone significantly reduces the overall CAPEX burden.

When all these systems and services plug into a common observability framework, all the network information is seen in one central place. This holistic, end-to-end view of services allows CSPs to make more targeted and intelligent decisions in managing the network.

Integrating with Telco Operations

All the crew needs to be rowing in the same direction. If the technology doesn't work for the operations personnel, the benefits will be limited at best. When operationalizing cloud technology services, there are four areas to consider.

1. **The onboarding process —** If network operators can't onboard the applications into the cloud framework, nothing happens. Using standard upload procedures, adhering to a common way for accessing the CD portal, uploading packages, versioning, naming conventions, validation procedures, and notifications are extremely important for shared understanding and maintaining a single source of truth in the CD pipeline.
2. **The CI/CD pipeline —** Operational personnel carry out their day-to-day work here. They localize packages and approve jobs. In order to execute workflows, the CI/CD framework must adapt to their specific processes and procedures. No CSP is exactly the same, so designing workflows and allowing modifications to site-specific parameters must all be adaptable for operational teams.
3. **Re-engineering operations' processes —** The digital transformation brought by 5G makes it imperative to reassess processes and workflows. They must be adapted to include different ways of network management and aligned to industry standards of business process frameworks**.**
4. **Observability framework —** A service assurance framework captures items such as the application logs, events, alarms, and configuration. Centralized network data, stored in a common framework, provides an end-to-end view of network health. CSPs can use AI solutions for better data analytics.

The Fastest Boat has the Best Crew

Leveraging capabilities built in the NFV ecosystem has enabled Mavenir to help customers smoothly transition into the world of microservices and containers. When managing the 5G network on any cloud, it helps to have these common operations and management layers harmonized across the mobile core with Cloud-Native IMS, Converged Packet Core, and Open vRAN. This common framework simplifies the overall network operation, orchestration, and management.

The most important lesson learned from many years of experience throughout the cloud journey with CSPs is that the people who actually operate the network are the true captains. If new technology is not simplifying their tasks, CSPs will not get the full benefit of smooth sailing with web-scale operations.

About Mavenir

Mavenir is building the future of networks and pioneering advanced technology, focusing on the vision of a single, software-based automated network that runs on any cloud. As the industry's only end-to-end, cloud-native network software provider, Mavenir is transforming the way the world connects, accelerating software network transformation for 250+ Communications Service Providers in over 120 countries, which serve more than 50% of the world’s subscribers.

For more on Mavenir Solutions please visit our website at www.mavenir.com

