



White paper

The growing market for OSS-as-a-Service in telecommunications

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1. Executive summary

As communications service providers (CSPs) move towards offering more non-traditional, digital services and new business models to become digital service providers (DSPs), they need to make their networks and software platforms more open and programmable. CSPs are starting to evolve their networks and to consolidate their operations in a move towards more agile operations models. Telecoms software delivery models are changing and we are starting to see more innovative service-led models aimed at CSPs' business outcomes as vendors seek to become the CSPs' partners in their move to this new operating model.¹

In order to start the move to this new operating model, CSPs need to first rationalise their OSS deployments using best-of-breed or best-of-suite solutions that can provide operational efficiency and reduction of costs, through standardisation and automation. Group CSPs are also looking to centralise and consolidate their operations to reduce costs and provide a standardised environment across all operating companies (OpCos) that they can then use to standardise their operations and then develop use cases for deployment across all OpCos. In the process, they reduce costs and also improve operational flexibility and service agility to become more competitive in their markets. Telefónica's ambitious transformation programme that is expected to transform its operations and position it as a digital telco is a prime example.²

This has led to the emergence of OSS delivery engagement models that are often services-led OSS solutions delivery in different business and pricing models. Cloud subscription models and Software-as-a-Service (SaaS) delivery models are popular for IT environments, and OSS solution deliveries based on this are starting to emerge. OSS solutions can now be deployed in private clouds and delivered with consumption-based or multi-year pricing that also moves capex to opex, leading to a characterisation of innovative models that can be classified as 'OSS-as-a-Service'. Centralised models are also becoming a possibility. Using these models, Group CSPs can deploy their OSS as a hosted solution in regional clouds, and standardise operations environments and use cases for their OpCos.

CSPs are embarking on OSS transformations of varying degrees starting from rationalisation of systems and legacy decommissioning, to consolidation and centralisation of systems, processes and organisational divisions. Group CSPs are leading these efforts and need long-term partners who can provide them with a large portfolio of solutions and experience with managing services and large-scale transformations. CSPs also need vendors capable of providing a wide range of professional services from business consulting, design consulting, customised development for new features and use cases, systems integration and hosted managed services in addition to the standard product-related services.

CSPs are also looking to move away from a large capex spend at the beginning of a project and suppliers are moving to service-led engagements which involves providing the hardware, software, service-level agreement (SLA) management services, other professional services, custom development of specific use cases, etc. to cater to the CSPs' needs for their transformation plans. There are also many delivery options for the software within that package: traditional on-premise deployment, SaaS, hosted service and leased models. The licences and services may be paid for using a subscription-based model or via a multi-year contract with spread-out costs, following an extended service model where suppliers can add several features, use cases and services to add value to the operations environment on an ongoing basis.

¹ Analysys Mason's [Telecoms software professional services: new services and virtualisation will drive CSP-supplier partnerships](#) by Glen Ragoonanan and Anil Rao

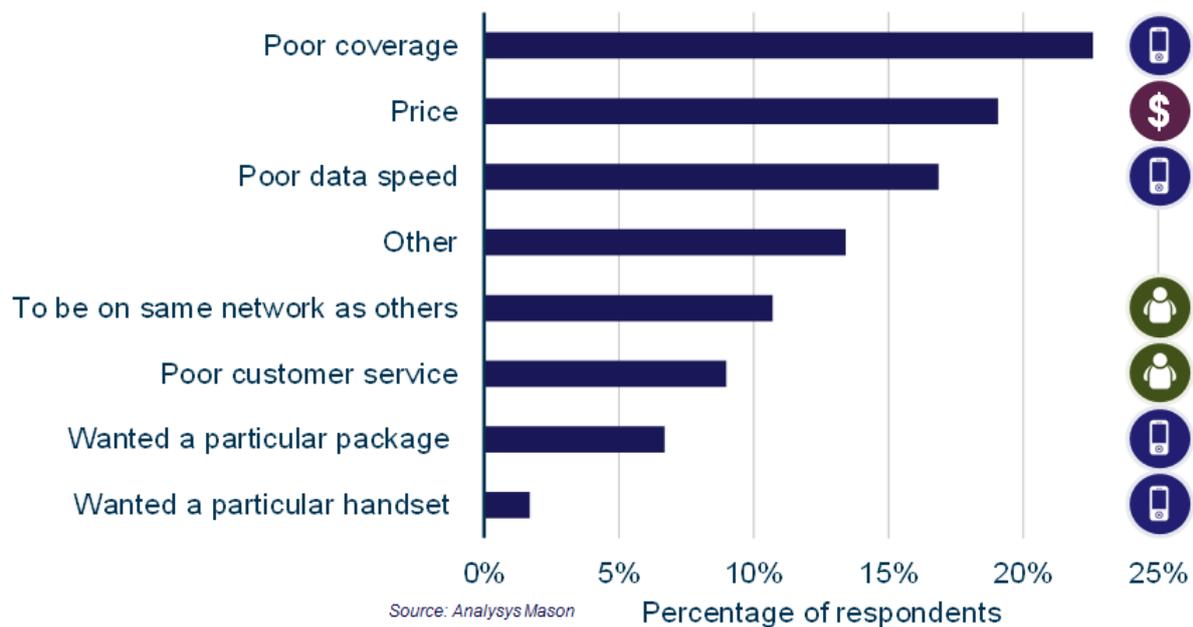
² Analysys Mason's [Telefónica's transformation programme heralds its evolution towards becoming a digital telco](#) by John Abraham

This also provides the foundation for CSPs to move their networks towards virtualisation, because there is need for a large design, system integration and custom development efforts to support software-controlled networks.

Network is CSP's important asset and is key to customer retention and acquisition

Our connected consumer survey shows that consumers rate network coverage (performance), data capability and customer service as key criteria for moving to an operator or staying with an operator. CSPs need to ensure maximum customer experience and maintain their networks and services at the minimum cost. Service assurance and service fulfilment systems are key for ensuring that network quality is maintained. This is one of the main reasons why CSPs are transforming their operations to next-generation architectures, solutions and topologies.

Figure 1: Reasons why customers join/leave operators [Source: Analysys Mason, 2015]



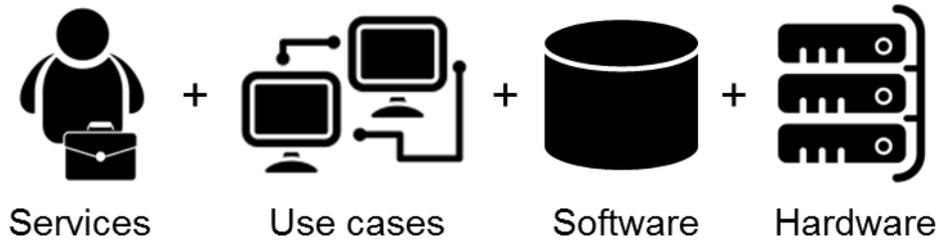
The trend towards services-led ICT transformations

SaaS and service-oriented delivery have been growing in popularity in the global IT industry for several years. CSPs have built local and centralised private clouds and even used external clouds provided by vendors to house their internal IT systems. But concerns about security and scalability to support SaaS in the telecoms domain have prevented strong adoption of the delivery model for network IT-like OSS systems, especially using remote and public clouds.

However, the success of these models has given CSPs and suppliers the confidence to follow similar models and move to private cloud-hosted models for OSS. These have presented CSPs with the opportunity to transform their OSS solutions from on-premises deployments to a cloud-hosted service delivery model and services-led approach and review the way the whole operational ecosystem is provided. The clouds may be the CSPs' private cloud or a cloud provided by the vendor in the vendor's network operations centre (NOC), which is typically used to provide managed services and has high reliability. Once the OSS platforms are deployed in the cloud, the CSPs have the flexibility to support centralisation and standardisation on the OSS and change their organisation and processes around these platforms to reduce their capex and opex. They can also take advantage

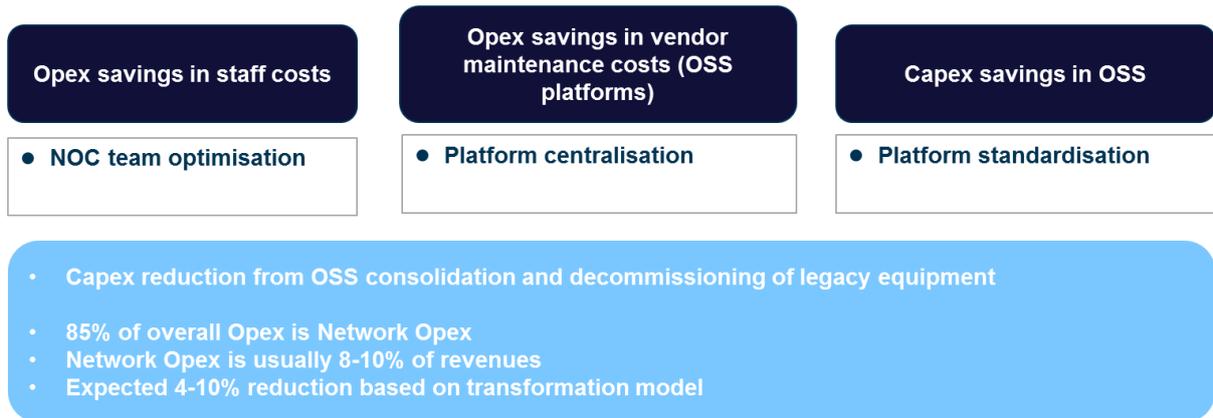
of vendors’ new features, use cases and services like optimisation that can be deployed across their operations quickly and to maximum effect to provide service agility and maintain competitiveness.

Figure 2: OSS-as-a-Service bundle [Source: Analysys Mason, 2015]



CSPs may undertake several types of transformation, for example centralisation, standardisation and rationalisation. Our studies indicate that we would expect to see a 4–10% reduction in costs based on the specific transformation models used (see Figure 3).

Figure 3: Potential savings from centralisation [Source: Analysys Mason, 2015]



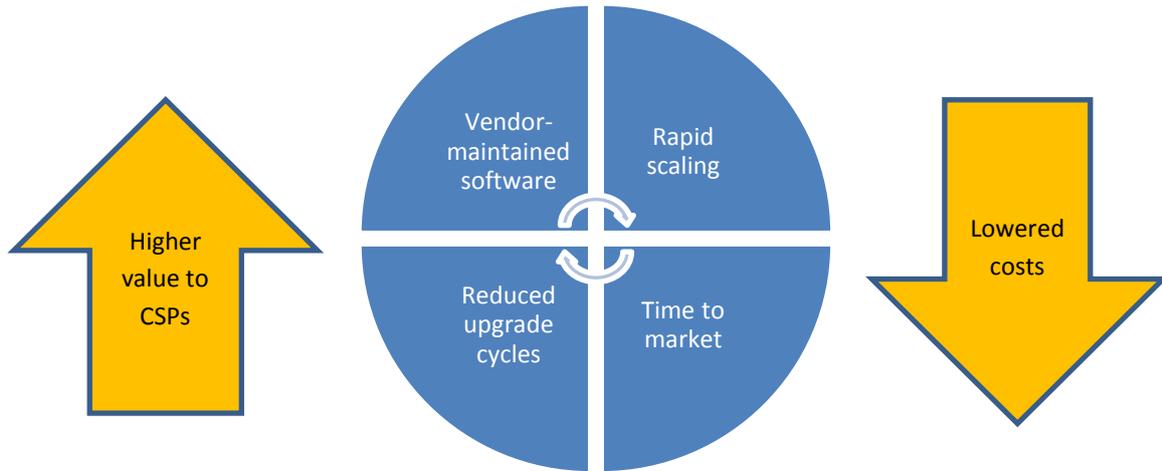
2. The key benefits of OSS-as-a-Service for CSPs

As the need for transformations increases and as the cloud deployment methodologies become easily usable, CSPs are actively investigating the business benefits as well as operational advantages and cost-saving benefits. What are the benefits of OSS-as-a-Service in telecoms and what problems will OSS-as-a-Service solve for CSPs in the highly competitive communications market?

- Higher value to CSPs – increased operational efficiency as a result of pre-integrated components of the OSS-as-a-Service package and common processes will be a tangible, measurable benefit to report back to the business. Use cases co-created with the CSP client and with ecosystem partners will significantly streamline operations procedures, improving experience, efficiency and time to market, as these are created with the combined solution expertise of the vendor from global deployments and the specific operations expertise of the operator.
- Increased ability and flexibility to cater to new service requirements quickly through a process- and service-driven approach.
- Maximum synergy potential for ‘galaxy’ CSPs rather than running separate architectures and systems for each individual OpCo, allowing capex reductions from centralising hardware and software. There is also the opportunity to use replicable global best practices from a centralised management hub.
- Predictable investment – the last five years have seen all large CSPs engaged in organisation-wide cost-reduction projects to maximise operational efficiency and reduce the large capex bills associated with network upgrades and expansions. A multi-year pricing model spreads out the spending over the lifetime of the network, with scaling to suit the individual deployment. Initial studies suggest that a 15–20% overall cost reduction can be realised by using OSS-as-a-Service.
- Greatly reduced upgrade cycles – upgrades to the software are handled in the vendor’s servers or cloud, and users are switched over to the latest versions in a matter of hours or days. This compares very favourably to the weeks and months the process would take in the context of a legacy model.
- Rapid and elastic scaling – OSS-as-a-Service allows CSPs to expand their OSS architecture along with an ever-expanding network, and to do so quickly and cost-effectively.
- Adoption of new technology – CSPs experimenting with new digital services will need to quickly instantiate new network and OSS functions to support these services without a large capex investment. OSS-as-a-Service allows the CSP to quickly bring a new digital service to market for PoC testing and, if needs be, to efficiently scale up the operation or fail the service at a minimum cost.
- Software maintained by the vendor – the software remains in the hands of the experts that built it, which allows the CSP to access the invaluable expertise of the systems architects.

Analysys Mason research shows that CSPs can cut overall costs by a significant margin when compared to legacy business models, due to the removal of initial installation costs, ongoing integration work and operational costs (see Figure 4).

Figure 4: The principal benefits of OSS-as-a-Service [Source: Analysys Mason, 2015]



3. Market environment

The current OSS-as-a-Service market

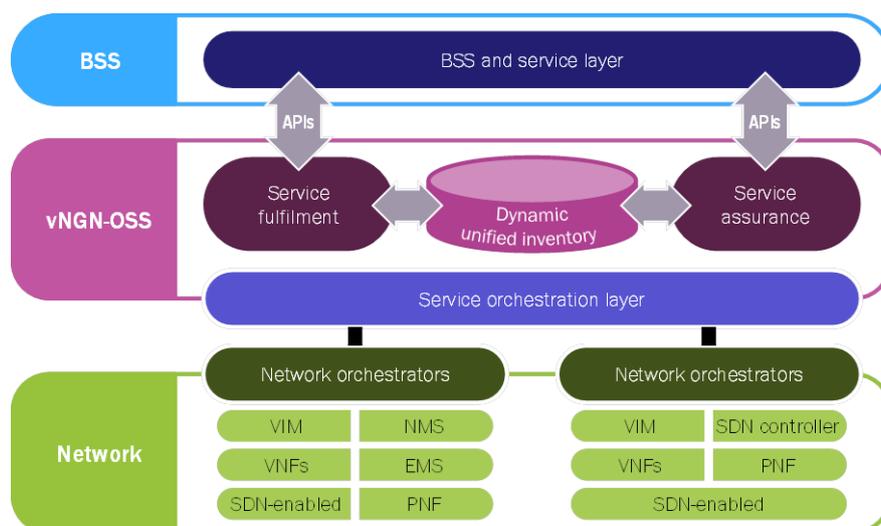
Several of the large OSS vendors and some niche players are now offering their solutions by means of an OSS-as-a-Service model with bundles of services and, in some cases, hardware. However, the predominant OSS delivery model in the CSP domain is still an on-premises deployment where the software is run from the CSPs' data centres and an ongoing maintenance contract is agreed with the software vendor. But CSPs are investigating how they can reduce costs and increase flexibility with new techniques such as data centre virtualisation (private cloud), public cloud and hybrid environments. The last two serve as a “bridge” to considerations of deploying OSS-as-a-service.

This is leading to a trend where new software deals involving OSS-as-a-Service are deployed in certain areas of OSS, especially the service assurance and service fulfilment markets. We are seeing OSS-as-a-Service being chosen over an on-premises delivery in areas such as service performance management, fault and event management and service activation because of the requirements of the software to be constantly upgraded to stay in synchronisation with the new software in the network elements, and the capability of the OSS-as-a-Service to be centralised to manage all the network elements. In addition to this, CSPs that are looking to add value to their existing OSS architecture by implementing optimisation services can do this from a centralised point, with consistency across the business using standardised methods such as use cases and open application programming interfaces (APIs).

Increasing agility in preparation for network functions virtualisation

One of the current key themes in the OSS world is the need to prepare for the coming virtualised networking revolution with the introduction of virtualised network elements into existing commercial networks. The subsequent hybrid environment presents many new challenges for OSS systems, and vendors are tasked with evolving their solutions to not only meet the functional requirements of these networks but to also maximise the benefits offered by the new techniques.

Figure 5: The introduction of orchestration layers in next-generation OSS [Source: Analysys Mason, 2015]



Orchestration layers in the OSS and network management systems are being introduced: these layers mediate and control the provisioning flow between the various software systems in order to enable ‘zero touch’

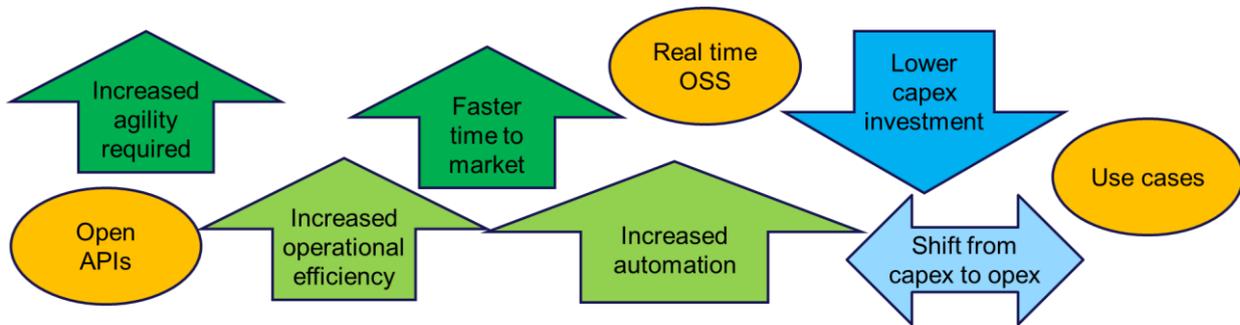
automation on network orders, as well as to facilitate customer service orders (see Figure 5). In addition, systems that were previously not required to work in real time are being moved to a real-time state to allow provisioning flows and dynamic network changes.

For many CSPs, the proposition of entering this phase of architectural upheaval with an experienced partner with a broad portfolio of services handling the OSS in a service model is an advantageous position to be in. Being prepared for this change by having agile business process management and partners with experience of network functions virtualisation (NFV) techniques is highly beneficial. The vast majority of proof-of-concept trials that we have seen for NFV/SCN have involved high levels of collaboration from the relevant hardware, software and operator stakeholders. This is a specific transformation scenario in which OSS-as-a-Service proposition with its possibility of continual integration and engagement in a multi-year service engagement can be valuable to the CSP.

4. How OSS-as-a-Service meets the modern CSP's needs

The changing business needs of CSPs buying OSS systems means that vendors are constantly evolving their solutions, and the industry is currently in a period of great change where many of the long-held best practices are being superseded. With its highly flexible nature, OSS-as-a-Service is in line with many of the new mantras of modern networking and OSS.³

Figure 6: The new demands of modern CSPs [Source: Analysys Mason, 2015]



The changing characteristics of software technology

The modern software market has a new set of characteristics that make it more suited for OSS-as-a-Service delivery models:

- Modern software systems are configurable during run time, allowing them to be adapted to the particular data models, processes and preferences of a modern CSP, without customisation of the source code.
- For some areas – particularly ‘greenfield’ operations – some CSPs have shifted from buying best-of-breed systems (even configurable ones), and then paying to integrate them, to buying best-of-suite, multi-function systems. This change in buying behaviour is driven by the need to reduce costs and, more importantly, time and risk.
- CSPs are often demanding that not only software be delivered, but also the operations processes that work with the software.
- Most modern software systems are built with support for multi-tenancy and multiple languages already included.

Software vendors find the OSS-as-a-Service model appealing for several reasons:

- Software vendors have to support just a single version of the software – the current version. This reduces development and support complexity, which decreases costs and increases the quality of support.
- Vendors share in the value-add of the hardware platform, instead of only the software.
- Multi-year revenue is higher overall, although lower at the beginning than the sale of a software product.

Customers of OSS-as-a-Service find it appealing that:

³ Analysys Mason's [vNGN-OSS: an architectural framework for virtual network management and orchestration](#) by Shanthi Ravindran, Dana Cooperson and Glen Ragoonanan

- it is globally replicable
- delivery times are drastically shorter
- administrative support costs are lower – particularly in systems that require frequent updates
- professional support is constant
- best-practice use cases are in constant use
- up-front costs are lower.

Greatly reduced time to market for new services

One of the classic business benefits that cloud-based software systems have used to win favour in the CFO's office has been the ability to reduce the overall implementation time of projects, allowing the business to generate value from the project much quicker than traditional on-premises deployments.

Once the service is live, the OSS-as-a-Service vendors have their own operations teams to fulfil customer requests and often have a suite of self-service tools for more routine functions and procedures. Internally developing a service delivery process as streamlined as this would often take CSPs several years, so having this level of efficiency straight 'out of the box' is considered a great benefit to the CSPs' operations.

The shift in telecoms investment from capex to opex

In the CSP market most operators still buy software solutions as an initial investment with a large financial commitment before the installation of the solution. Telecoms CFOs traditionally prefer capex spend for technology investments because this reduces the total cost by using amortisation and depreciation over the total period of the investment. However, the industry is now moving to an opex-preferred model for the following reasons:

- Technology developments are speeding up – increased operational agility is required to stay on top of the leading-edge technology, and cloud-delivered software fits this profile perfectly.
- The CSP pays for only the optimum usage it needs at that moment for more prospective service trials in new next-generation digital services.
- Financial agility is increased as large budget deployment programmes, which tie up fluid cash, are eradicated.
- Budgeting processes are greatly expedited as initial costs are significantly reduced.
- IT spend is made more predictable and less lumpy in the subscription opex model.

The importance of an open API ecosystem

Creating and nurturing an open API framework and ecosystem for developers to use the same toolset as the vendor is vital in order to support the model-based operation processes of the OSS-as-a-Service system. A consistent developer environment and language will ensure maximum reuse of common business processes and careful maintenance of best practice throughout the OSS environment. Combined with the vendor's own 'out-of-the-box' applications, the CSP will be able to build a powerful collection of applications for all business requirements.

How is OSS-as-a-Service different from legacy deployment methods?

The components in an OSS-as-a-Service solution are the key to realising the benefits, but the delivery method of the software itself can enable a host of service-oriented benefits. It is important to note that several of these options may be combined to deliver specific models that the CSP requires and that can be delivered in a business-outcome oriented, risk-sharing/benefit-sharing model for maximum benefits to the CSPs. We are starting to see these innovative schemes being offered by vendors in specific environments:

- Traditional on-premise deployment in CSP cloud-using generic software, with some standard use cases, standard software licence pricing, supported by product-related services and professional services.
- SaaS deployment in vendor NOC using generic software, and managed service for SLA management.
- On-premise deployment in the CSP cloud or vendor cloud, using generic software supplemented by use cases developed for the CSP, co-created with vendor, CSP and other ecosystem players. Use cases may also be available from a global library. Pricing is periodic, based on multi-year contracts.

The last model mentioned in the list above provides the most benefit for the CSPs as they can benefit from global expertise and use cases, and can also enable a continuous improvement model that is useful for current transformation scenarios like centralisation, as well as future scenarios for virtualisation and digital services.

5. Huawei Technologies’ OSS-as-a-Service solution

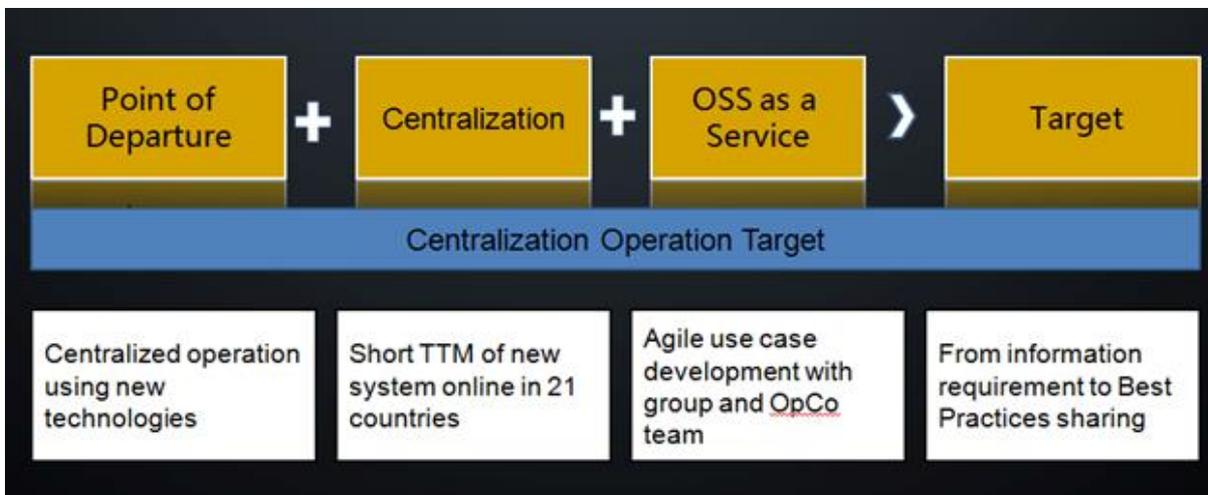
Huawei’s OSS-as-a-Service comprises three layers. The Business Model layer outlines the potential business values that will be generated and defines how those values will be manifested in terms of operational efficiency, customer satisfaction and capex and opex reduction. The Use Case layers elaborate business applications that will address the CSP’s pain-points, so as to create the values defined in the Business Model layer. Each Use Case provides the means of resolving one or more pain-points and is based on a series of componentized logic that will be delivered through a centralised delivery process. The Cloud OSS layer delivers the OSS software capabilities through private, public or hybrid cloud.

Figure 7: Huawei OSS-as-a-Service solution and value proposition [Source: Huawei Technologies, 2015]



Huawei OSS-as-a-Service has already been offered and deployed globally to several large telecoms groups on different continents. A leading telecom group with 20+ OpCos has selected the Service & Network Performance component of Huawei’s OSS-as-a-Service for all its OpCos across the Middle East and Africa. In this OSS-as-a-Service offer, Huawei, applying its comprehensive global practices and use cases, has transformed the customer’s legacy systems to a centralised private OSS cloud that is managed by Huawei. OSS-as-a-Service helps this global CSP customer to improve efficiency and service quality throughout their regional OpCos, reducing capital and operational expenditures while completing the multiple-site transformations in less than 12 months.

Figure 8: Huawei OSS-as-a-Service solution – use for centralisation [Source: Huawei Technologies, 2015]



This deployment methodology brings significant business benefits to Group CSPs, as demonstrated by the solution deployed for a Group CSP, replacing all performance management systems in 21 OpCos, through centralised systems in two hub locations. This resulted in a capex saving of USD5.1 million and an opex saving of USD4.3 million per year. Some other specific use cases are listed below.

Problem resolution automation	Automate the process from problem occurrence till resolution. Business value: Save opex Improve operation efficiency Improve SLA fulfilment Reduce mean time to repair
Proactive assurance	Identify potential issues and solve it before it becomes a real problem. Business value: Save opex Improve network quality
Key event assurance	Traffic forecast and assessment before event, performance monitoring and troubleshooting in event, adjustment and summary after event Business value: Increase risk control Improve network quality and customer experience
Service self-optimisation	Sense the change of service KQI and realise service optimisation with SLA. Business value: Improve customer experience and reduce churn
Fulfillment automation	Automation E2E service provision from ordering to activation. Business value: Increase revenue Reduce time to market

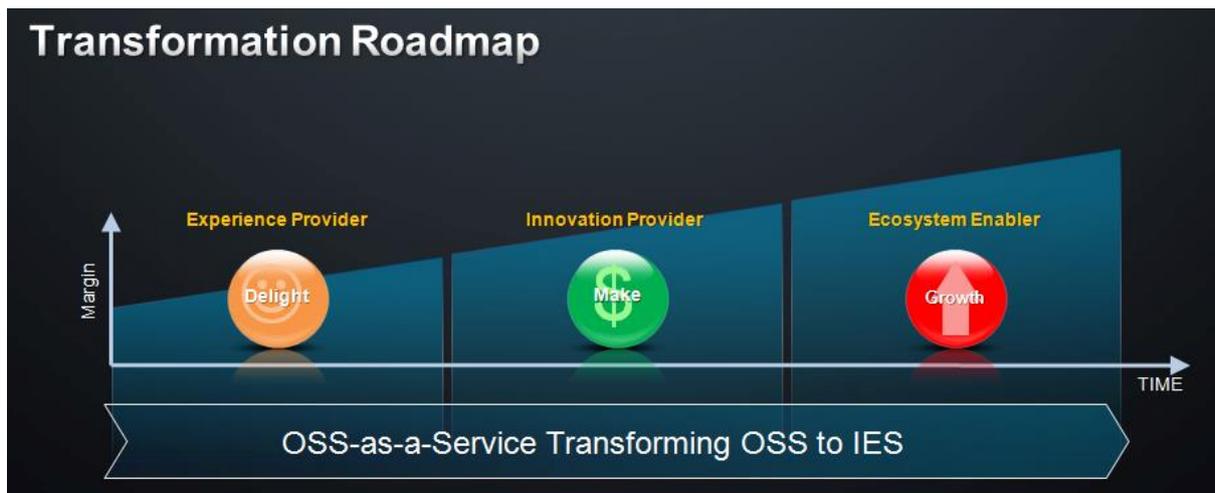
What more can be done?

Huawei has created its OSS-as-a-Service solution to cater to CSPs' requirements for lower total cost of ownership. Deployed as a centralised solution and offered on an OSS-as-a-Service model, it provides end-to-end service-level management, enabling CSPs to optimise performance on their networks. The solution also features a development platform on which CSPs can build their own use cases, allowing for a more flexible use of OSS platforms to facilitate the broadening of their services portfolios.

Huawei's OSS-as-a-Service model provides CSPs with new operational capabilities. Furthermore, its service-driven approach is well suited to accelerate the transformation of OSS to an infrastructure-enabling system (IES), the next-generation OSS. This is because the intermediate step to OSS-as-a-Service will have already put in place most of the IES' prerequisites in terms of OSS features, processes and skill sets, including:

- deployment of DevOps methods for service development and operations
- ongoing SOA integration of OSS/BSS and IT management systems
- ongoing network integration of existing and virtualised service operations to use common, virtualised ICT infrastructure
- acquisition of new enterprise architect and development skills.

Figure 9: Huawei OSS-as-a-Service solution – Future roadmap [Source: Huawei Technologies, 2015]



Huawei has the capabilities to provide OSS-as-a-Service services on the large scale required by CSPs and has a current deployment with a Group CSP. Its large enterprise cloud data centre network and NOCs, extensive experience in the area of managed services, large installed base of OSS and BSS customers and experience in several Tier 1 Group CSP networks in emerging and developed markets serve as the base for Huawei to develop and support this service.

About the authors



Dean Ramsay is a member of Analysys Mason's Telecoms Software research team. He leads the Service Fulfilment, Telecoms Software Forecasts and Market Shares programmes, and project manages and contributes to the CSP IT Strategies programme. He has 15 years' experience in the telecoms industry, working initially in network and inventory management with a major Tier 1 carrier and, subsequently, as a service delivery manager with Tier 2 carriers, focusing on order management, revenue management and service delivery systems. Dean joined Analysys Mason in 2011 following two years working as an analyst in the mobile sector. He holds a BA in English from Anglia Ruskin University.



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- design winning strategies that deliver measurable results
- make informed decisions based on market intelligence and analytical rigour
- develop innovative propositions to gain competitive advantage.

We have more than 230 staff in 12 offices and are respected worldwide for the exceptional quality of our work, our independence and our flexibility in responding to client needs. For 30 years, we have been helping clients in more than 100 countries to maximise their opportunities.

About Huawei

Huawei is a leading global information and communications technology (ICT) solutions provider. Its aim is to build a better connected world, acting as a responsible corporate citizen, innovative enabler for the information society, and collaborative contributor to the industry.

Driven by customer-centric innovation and open partnerships, Huawei has established an end-to-end ICT solutions portfolio that gives customers competitive advantages in telecoms and enterprise networks, devices and cloud computing. Huawei's 170 000 employees worldwide are committed to creating maximum value for telecoms operators, enterprises and consumers. Its innovative ICT solutions, products and services are used in more than 170 countries and regions, serving over one-third of the world's population. Founded in 1987, Huawei is a private company that is fully owned by its employees. Please visit www.huawei.com for further details.