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Systems integration: from tax to benefit, the importance of the right-sized systems integrator

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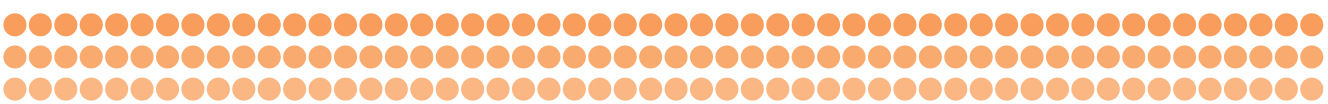
Getting the industry thinking

SUMMARY/ABSTRACT

By referring to systems integration this paper understands the term to mean the process and means by which telecoms infrastructure projects are managed end-to-end across their life-cycle: from planning, design, engineering, installation, acceptance, to maintenance, training and 24/7 support activities for these systems.

This white paper describes the current drivers and demand for telecoms equipment systems integration, and outlines the options for selecting a suitable systems integrator partner.

It finds that many operators are faced with the need for a "right-sized", independent partner that can act in an end-to-end manner as a systems integrator. It proposes that, if done correctly, systems integration can move from being a "tax" on invested capital to an operator benefit, saving time and money and resulting in more efficient ongoing operations.



INTRODUCTION

Across fixed, cable and wireless networks, operators are faced with a deepening interconnectedness between their access, transmission and core networks and the service platforms that deliver services across the networks to end users.

IP transformation projects, and the flattening of network architectures, have brought with them the evolution of a converged service architecture that must deliver services in a uniform manner independent of the access network to which the end user devices is connected.

This flattening of the network architecture has, in turn, brought about this deeper interconnectedness, meaning that any network project must take into account its impact in an end-to-end manner across the network.

Additionally, increasing competitive pressures, both from other telcos and from OTT providers of communications and content services, necessitate that any project must take note not just of the technical parameters such as increased downlink or uplink speeds, or sessions per second on core elements, but of the impact on end user experience during and after the project's duration.

Systems integration, the process by which network and systems changes can be planned, implemented and managed, used to be regarded as a "tax" on infrastructure systems spend. The ideal was to be able to install "plug and play" network elements, without spending additional money on integrating those elements into the surrounding environment. However, recent high profile network outages and E2E system performance degradation that resulted shortly after network upgrades or introduction of new systems have placed greater emphasis on the need to account for system changes right across a network. Similarly, structural changes within telecoms operators have also meant that the requirement for an external, independent view the whole network is vital to the success of network rollouts. Systems integration, far from being an extra expense brought about because vendors would not design common element management and control interfaces, has become a key tool in the rush to design and operate the most customer-responsive, intelligent network in a given market.

Recent examples of major network integration projects include:

- Mobile network access upgrades to HPSA+
- LTE network rollouts
- Migration of access and transmission networks to IP
- The upgrade of legacy TDM voice infrastructure to IP
- The evolution of the data packet core

WHY WORK WITH AN EXTERNAL SYSTEMS INTEGRATOR?

A good systems integrator will be able to manage the entire process of the network migration, transition, upgrade or new build. Operators are faced with a key range of decisions to make, and must decide whether in-house expertise or a third party, independent partner, will give them the best results in the following areas:

- Best fit technology
- Increased operational efficiency
- Competitive advantage
- Time to revenue (from a new service)
- Risk management and risk profiling
- Protection of customer experience

For many of these areas, or often all of them, operators are not best placed to drive the same benefits from internal teams that they could by working with an external partner. The costs of internal training and support required to bring staff up to speed on new technologies, across a range of different domains, can be prohibitive. Allied to this is an uncertain risk profile from project cost or time over-runs, that can delay time-to-revenue from new service rollouts, impacting on the return on invested capital.

THE DOWN-SIZED OPERATOR

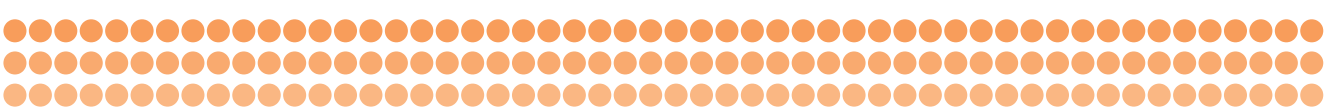
One trend that has driven the need for an independent, right-sized systems integration partner has been that operators have increasingly moved part or all of their network operations function to a managed service model.

In recent years many telecoms operators have outsourced resources and people, typically to the services arms of the major international network equipment manufacturers. This has led to a great deal of knowledge and skill flow from operators into these large service arms. Ericsson, for example) stated publicly that it took over the employment contracts of 20,000 telco employees between 2009 and 2011. That growth is likely to be mirrored in companies such as Huawei, NSN and Alcatel-Lucent, who all maintain that their services divisions are drivers of future revenue growth. Informa Telecoms & Media forecasts that network managed services revenues will show a CAGR of 6.6% in Europe from 2012 to 2017, with European telcos spending $6.9 billion in 2017 on network managed services. Globally, Informa estimates the network managed services will be worth $17.9 billion in 2017, a CAGR of 7.2% from 2012.

Network managed services account for about half of all telecoms operators managed services revenues, with the other half accounted for by managed OSS/BSS services, and managed data and applications services.

Departments and division that are outsourced include, in the network area, planning and design, operations and maintenance teams, as well as core network teams. Even for a major national Tier 1 or international group operator, that outsourcing of talent can have an impact on internal capabilities. For a smaller operator that does not have a group function, or transferrable personnel and knowledge, to draw on, the impact can be more severe.

The movement of large amounts of personnel can become a double hit if, when an end- to-end systems integrator is required, the largest human resource available is effectively sitting within the employ of one of the vendors bidding for the central infrastructure contract. In other words, it becomes very difficult for operators to ensure the independence of their systems integrator if that integrator is also holding a large managed services contract, and bidding on tenders for the supply of equipment.



This question of vendor independence does not just apply to operators with outsourced network management teams. Even within operators that have retained control of their services and network infrastructure, the danger of trusting the key vendor supplier with systems integration is that advice, design, and end-to-end management may never be truly independent.

Often, on a large contract, the lead vendor will act as a de facto systems integrator. The vendor, typically one of the large global vendors of telecoms infrastructure will be responsible for the bulk of the capital investment. The operator will trust that NEP to lead on supplying the supplementary elements of the build. So a NEP may win the tender to supply the radio and core nodes that support an upgrade of a mobile network from 3G to HSPA+. There may be a densification of the network, or realignment of key links that requires at the same time the addition of key transmission and backhaul elements. Rather than go to the market to request tenders for microwave backhaul vendors, for ethernet switch providers in the backhaul, and so on, the operator will ask the radio access provider, where the bulk of the investment is being made, to take care of that element. Here is where the core vendors' existing OEM or reseller agreements will kick in. The operator is left with Core Vendor + Core Vendor's Preferred Partners, rather than a best choice fit of supplier or technology for the deployment.

Trusting a managed services partner, or key vendor, with the end-to-end systems integration role might expose the operator to the relatively crude mechanism of the leading NEP recommending its own equipment, and that of its core partners, even if they do not offer the optimum products for the required purpose. But there is a more subtle implication - that the overall network design is slanted to highlight the performance of those units supplied by the core vendor. One example might be a vendor ensuring that its own elements are configured and resourced to always work at optimum performance level. Yet a holistic design might allocate resources to other elements to ensure the overall network operates more effectively as a whole. The metrics of that vendors' switch or core element might not look as impressive, but the body of the network is working more efficiently overall as a result and the E2E network performance and customer experience is improved.

Another danger of working with a non-independent NEP or managed services provider is that it cannot provide a true end-to-end view of the project. A complex systems integration project, perhaps one planning the transition of part or all of a network from TDM to IP, is about more than just the central swap out or addition of key network elements. Network entities are affected end-to-end across the network, as are monitoring and reporting capabilities, ongoing fault management and trouble-shooting, the training requirements of staff and so on. Legacy as well as new interfaces still require support, and the integrator must have a deep knowledge of the protocols that support communications across all such interfaces. An independent, right-sized systems integrator will be able to provide that holistic view, rather than be focused on a solution sale, or even being unaware of the wider environment.

RIGHT SIZING

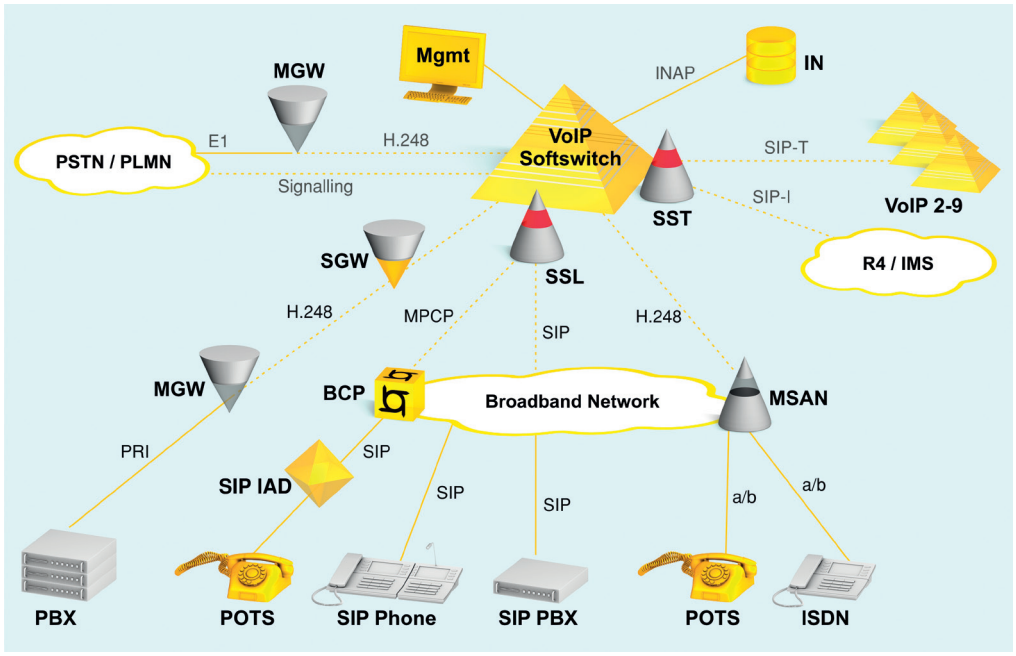
Finally, many T2 and T3 operators are pushed, for obvious reasons, into working with a vendor that might offer the lowest cost equipment, but has no resource for providing a wrap-around systems integration service. In this instance, an external systems integrator will be required to provide technical pre-sales and after sales support to the vendor. Additionally, the major NEPs can also be geographically limited in the support they can offer. The big NEPs may act global, but in fact lack language and on-the-ground support in a host of countries. In this instance, an integrator that can act locally, providing local language support, can be invaluable.

Another aspect of smaller operators contracting with bigger suppliers is that the suppliers can view the smaller T2/T3 operators as less of a priority. A strategic partner of one of these vendors could get better conditions, maybe be taken more seriously as a negotiating body than a small operator in a small country, because it is running under the terms of a global contract with the supplier in question.

Another route is to go with one of the large, international consulting and systems integrating companies. Although the brochures and gleaming offices of large, international consulting companies may look attractive, their management fees are often out of the range of mid-range telcos. Additionally, many of these companies come from a strong IT systems background, but lack the telco-grade networking knowledge required to drive and manage major operator projects.

As well as a scale mis-match where the integrator is effectively too big for the T2 operator, local resources may be too small. In-country IT resellers and distributors may be able to

Interfaces and Protocols of the VoIP Softswitch



offer local language support, knowledge of a local market, 24/7 service availability and the like, but can often simply not be equipped to support an operator in network projects that cross different networking domains. They can also be too much associated with a single vendor, again lacking the broader range of knowledge and relationships required.

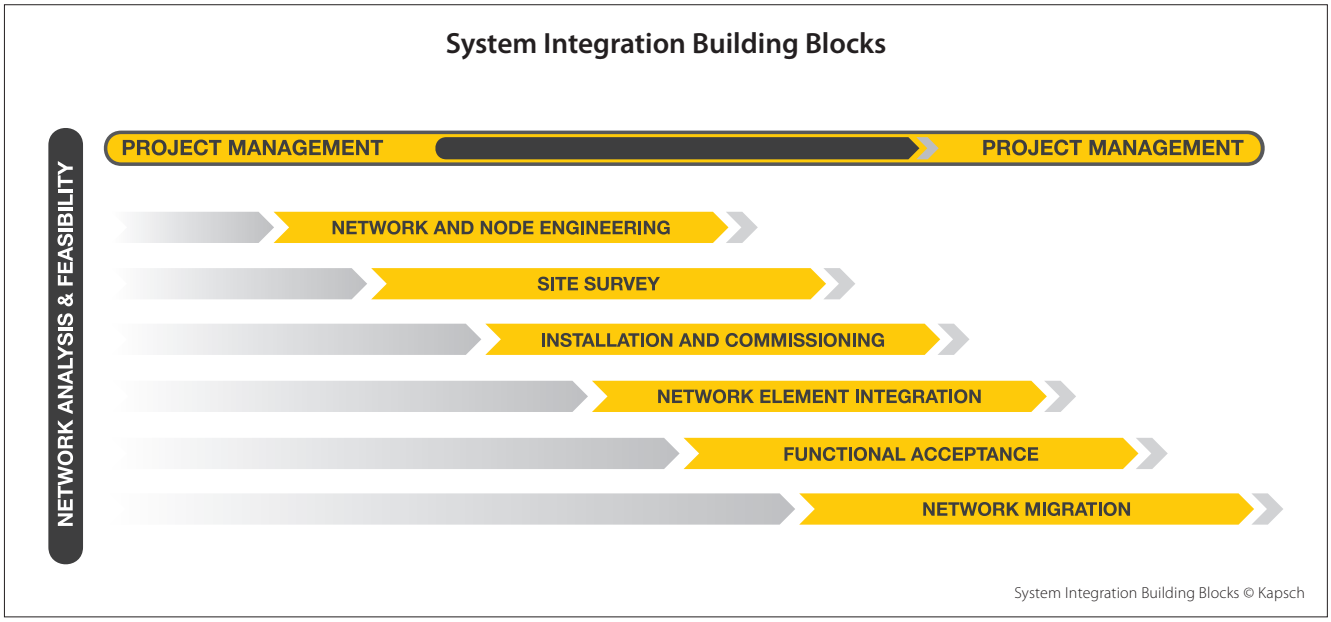
There is clearly and often a need then, amongst T2 and T3, or smaller national carriers, for a systems integrator that can act on a multi-domain, multi-vendor project, advising and consulting on a strategic-level, whilst still being able to offer local support and appreciation of local market dynamics. The integrator must also be aligned in terms of budget with the host operator, and benefit from not having to meet the strict operating margins that come with servicing the high overhead costs of a major international systems integrator or managed services provider.

Such an integrator can also bring benefits to the majority of vendors in the supply chain that are not attached to large managed services and consulting arms. Vendors without local support, or sales teams, can benefit from the local knowledge of an integrator that is large enough to think globally, but act in accordance with local demands.

KAPSCH CARRIERCOM

So what might the right-sized systems integrator look like? One example is Kapsch CarrierCom. Kapsch CarrierCom has workforce of 700 people, with a presence in 27 countries. It is particularly strong in markets such as Central and Eastern Europe and is expanding especially into Southern Europe and North Africa, making it a fit for several markets where major vendors do not see the value in investing in local support teams. The company has successfully supported major network rollouts in Austria, Bulgaria, Croatia, Slovenia, Hungary, Ireland and many more countries.

In product terms, it can combine independence, providing flexibility of choice, with a deep knowledge of the capabilities of certain key partners. That means it can benefit from global supplier contracts, passing on benefits to its carrier customers, whilst retaining an independent view of the network. Its 30+ year knowledge of the telecoms market means it has a knowledge of the key interfaces in the network and between different vendors. This means an operator is tapping into pre-integration services and capabilities, with Kapsch already aware of the different protocols to support



System Integration Building Blocks © Kapsch

on those key interfaces. The company also boasts a testing and integration lab that can model service and network performance, bringing to bear its experience in other projects - affording the smaller operator a depth of knowledge that is usually only available to operators that benefit from a central Group technology function.

For many upgrades, existing interfaces need to be maintained, along with new interfaces to the upgraded network. That means that the systems integrator must have knowledge of TDM-SDH legacy as well as the IP domain.

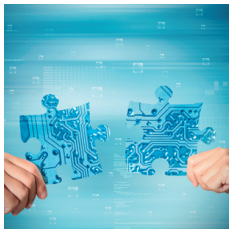
Capabilities include:

- Network analysis and feasibility to define and analyse objectives
- Project Management to make sure that the rollout is completed on time, and within financial and quality objectives
- Network and Node Engineering, the first step in the network deployment
- Installation and Commissioning and testing
- Network Element Integration, ensuring all call types are supported by the subsystem
- Functional Acceptance that verifies the performance of the system against agreed parameters

In one recent upgrade project Kapsch completed the migration of a packet core network for a multinational European carrier to an all IP architecture, moving TDM switches to an Advanced IP Softswitch platform. This project was a good demonstration of the the complexity of integrating a VoIP switch into an existing complex network, where all the existing interfaces and existing data needed to be kept/transferred. Kapsch's knowledge of the existing architecture and interfaces, as well as the IP domain, meant that it could manage the transition of a 75 switch digital core to a network with 9 georedundant softswitches and 7 TDM Media Gateway Sites on a scale that could support the migration of 2.6 million subscriber ports without the end subscriber being aware or any changes, due to Kapsch CarrierCom ensuring 100% feature parity before and after upgrade.

CONCLUSION:

For many de-skilled operators their managed services provider, or main NEP, cannot also act as an independent, end-to-end systems integrator. Some external NEPs cannot provide the necessary in-country support, and many will not offer the smaller operator favourable terms or support. Large international systems integrators are often too big to match the requirements of T2/3 operators, and in-country resellers are too small. These operators require the expertise of a mid-sized systems integrator that has deep telco and IT systems knowledge combined with global relationships with large vendors, but whose size and local knowledge enables it to act locally, providing in-country and local language support.



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ABOUT KAPSCH

Kapsch CarrierCom is a global supplier and independent system integrator of telecommunication solutions for providers of access, core and transmission networks. In seven R&D centers in Europe and Asia, Kapsch CarrierCom develops applications and services for next generation networks and innovative OSS / BSS solutions. In addition, Kapsch CarrierCom provides an end-to-end service spectrum, which ranges from consulting, designing, installing and integrating, to maintaining, operating and supporting entire networks.

In the public operator segment, Kapsch CarrierCom's customers include service providers such as the companies of the Telekom Austria Group, eircom in Ireland and Chunghwa Telecom in Taiwan. Kapsch CarrierCom is part of the Kapsch Group and has its headquarters in Vienna, Austria.

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