White Paper

The Agile Business Architecture

Creating Service Provider Value Through Smart Sourcing

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Introduction

The service provider industry has experienced rapid and significant transformation over the past five years as broadband has proliferated, networks have enabled ubiquitous mobility, and IP has become the de facto technology standard. Over-the-top (OTT) providers such as Google, Apple, and Amazon, the rising stars of this transformation, are now challenging service provider value creation by developing competing applications.

As a result, service providers are bearing the cost of ever-growing traffic while seeing limited potential for monetizing traffic growth with customers. Motivated by these challenges, service providers must rethink their business strategies and enhance their service production capabilities to remain industry leaders.

> "The telco Industry has not delivered strong returns for investors. Over the past 20 years, returns have been only 5 percent per annum, which is the same as government bonds. Moreover, the secular issues facing any telecom company make the current cyclical challenges look trivial. Operators need to invest in a new model."
>
> Goldman Sachs, 2008

The Cisco Internet Business Solutions Group (IBSG) believes service providers have two choices: 1) evolve toward becoming providers of "low-cost, me-too" services or 2) use their end-to-end value chain integration skills to deliver unique, differentiated services that can be offered to customers at a premium. Fortunately, service providers can achieve profitability and growth with either strategy, just as Southwest Airlines, a low-cost, utility-oriented airline, and Singapore Air, a unique and differentiated carrier, do in the airline industry.

Key to service providers' success is the development of customized services that best support the strategy selected. Yet, service providers are hindered by siloed operations, legacy systems, and outdated operating models that slow the development and distribution of new services. Also missing are the necessary skills and expertise required to develop competing services.

Breaking down these barriers requires an agile business architecture that rebuilds service providers' businesses based on principles of modularity and end-to-end control, regardless of legacy systems and silos. Once the agile business architecture is established, it then serves as a structure to guide interactions with suppliers through smart sourcing.

In this paper, Cisco IBSG shows how the migration to an agile business architecture can help service providers overcome the challenges presented by OTT providers. The paper also describes how smart sourcing strategies in the fast-growing,[1] $60 billion telecom professional services market can help service providers evolve their production capabilities to achieve profitability and growth.

The Challenge of Legacy Systems and Outdated Operating Models

Most service providers' IT departments and network organizations have been "organically grown," resulting in a lack of integrated structures and few common design processes. Often, these groups are "companies within the company" and lack efficient, end-to-end processes across network, IT, fixed, and mobile domains.

New service capabilities, however, require ever tighter integration of these domains. On the cost side, the domain separation has resulted in process duplication and cost inefficiencies, as both scarce capabilities and operational tasks can be reused and standardized across domains. At the same time, service providers may consider separating some of their legacy and innovation capabilities to spur the launch of new services without the burden of complexity from a previous generation of services.

Finally, service providers often use their legacy network, IT, fixed, and mobile divisions to structure the sourcing of capabilities and equipment from suppliers, which further limits cross-functional innovation capabilities. For example, Cisco IBSG is familiar with a mobile operator that developed services with limited coordination and collaboration between the company's IT and network departments. This led to multiple, parallel, and competing push-to-talk implementation efforts.

These types of situations make it difficult for service providers to adopt the new production principles needed to bring services to market quickly and cost effectively. In fact, the cost of inefficient process design in IT departments frequently absorbs the benefits of new technologies. For example, server management costs will be 2.5 times the speed of new equipment by 2010.[2] Instead, IT and network departments should follow clear principles that make it easier to reduce complexity, speed time to market, and lower costs. Cisco IBSG believes service providers can accomplish these goals with an agile business architecture.

The Agile Business Architecture

An agile business architecture alleviates the problems caused by the separation of fixed, mobile, network, and IT operations. It does this by defining modules that follow the logical architecture of network and IT assets, independent of the access technology. This approach allows service providers to minimize the complexity of their technology operations while maintaining end-to-end control to create new and differentiated services. To design an agile business architecture successfully, it is important to understand two main principles—modularity and end-to-end control.

Modularity

Modularity, as applied to an agile business architecture, is the process of identifying clusters of interdependent business activity—people, processes, and technology—and combining them into self-contained "modules." Individual modules are then separated from other modules at "natural points of modularity,"[3] where interaction complexity is relatively low.

This separation becomes critical when service providers assess whether to continue supporting a given module in-house or to source it from a third-party vendor. By designing modules that minimize interdependencies with one another, service providers can transition a single module to a third party with little or no disruption to the business. When modules are outsourced, it is still important for service providers to maintain proper control of the module in-house.

In general, a natural point of modularity must meet three criteria. First, the interface must be specifiable so that internal service-level agreements (SLAs) or module characteristics can be easily defined. Next, it must be verifiable so that the attributes of the module interface can be measured. Finally, there can be no unpredictable interdependencies with other parts of the business system.[4]

In the telecom industry, a good example of a module is the design and construction of a mobile access network in which the quality of the rollout is described by the level of coverage and the capacity offered to a given area. This complex production process can be specified and measured with a few simple key performance indicators (KPIs), and without any unpredictable interdependencies with the rest of the mobile core and edge technology infrastructure.

Modules should also be defined independently of current organizational boundaries. For example, an integrated service development capability should include both IT- and network-focused service development teams.

While generally serving to reduce complexity and facilitate sourcing transitions, modules can be further divided according to their business relevance. Business activities are described collectively as those activities that contribute to competitive advantage (core) and those that do not (context). For example, TDM voice network infrastructure and operations are classified as “context” activities since they generate critical cash flow yet no longer differentiate one service provider from another. On the other hand, management of the innovation pipeline for future IP-based services is listed as a “core” activity since it relates directly to sustainable competitive advantage.

End-to-End Control

End-to-end control[5] is the second important principle of an agile business architecture. End-to-end control refers to all relevant module interfaces that enable service providers to fully shape the customer experience at all relevant touchpoints. Control of the customer experience is evident in products such as the Apple iPod and Cisco TelePresence.

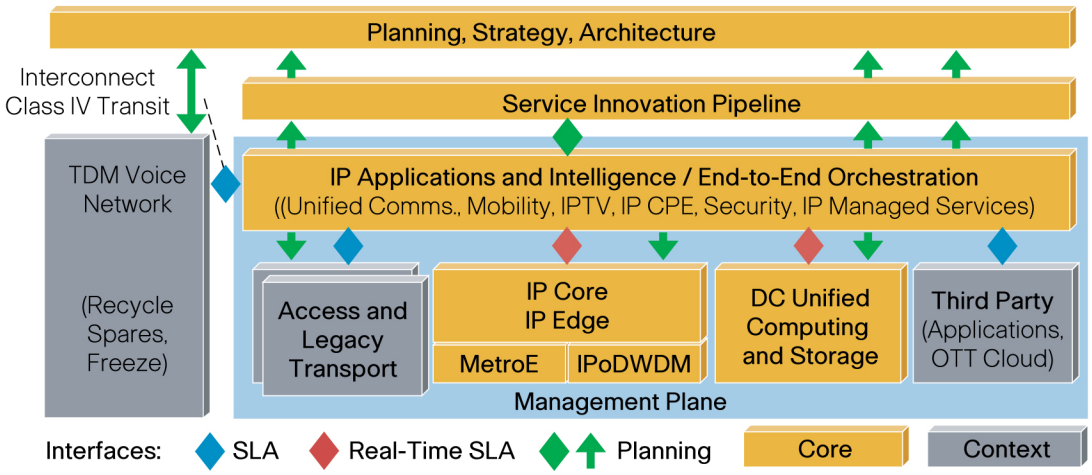
A good understanding of the relevant customer experience control points allows service providers to focus their efforts in the areas of innovation and quality. Applying an end-to-end perspective will also facilitate optimization efforts in non-differentiating context modules. Personal computers and Internet broadband connections are good examples of context modules in Apple’s iPod / iTunes ecosystem.

Modularity and end-to-end concepts have been applied in complex manufacturing processes for many years. In the automobile industry, for example, passenger cars need to be assembled from standardized components (engines, chassis, wheels, etc.), delivered from a value chain of self-contained factories (modules) that have limited interdependency with one another. The manufacturer's business strategy—"low-cost, me-too," or differentiated—drives the degree of end-to-end control in the value chain exerted by the manufacturer as well as the sourcing decisions of individual components.

Using an Agile Business Architecture for Converged Network and IT Service Production

An agile business architecture can be used successfully to address the challenges of service production between network and IT organizations (see Figure 1).

Figure 1. An Agile Business Architecture Addresses the Challenges of Network and IT Service Production



Source: Cisco IBSG, 2009

The diagram above shows the modularization of a typical service provider's service production capability. Voice network, access, and legacy transport, as well as third-party modules, are classified as "context" activities since they do not contribute to competitive differentiation. On the other hand, strategy, service innovation, IP-centric modules, and end-to-end orchestration are listed as "core" activities because they provide growth opportunities and give service providers a competitive advantage.

On average, innovation-driven core modules carry only about 15 percent of an operator's cost base, while utility-oriented context modules represent the remaining 85 percent.[6] Maintaining financial transparency between these two distinct investments is crucial to succeeding with a differentiated service strategy. And, while context modules are interlinked through standard, simple SLAs, core modules connect using real-time interactions. This approach enables service providers to differentiate themselves and deliver on-demand services.

In addition, previously siloed structures such as fixed, mobile, network, and IT have been removed in the diagram while access modules (integrated service providers may have several) are connected into the same IP service environment. This allows service providers

to execute on the vision of "any service, to any device," removes resource duplication, and helps accelerate the development and distribution of new services.

Sourcing for the Agile Business Architecture

Value creation for service providers depends heavily on supplier interaction. In fact, less than 20 percent of a typical service provider's cost base is from in-house expenses.[7] Most service provider procurement is still sourced using the classical model where suppliers provide hardware, software, and level-2 support. Business arrangements that involve suppliers in broader terms, however, are on the rise. This trend is being driven by the quest for greater cost efficiency, the need to have greater business flexibility, and the desire to reduce risk by tapping into proven capabilities and skill sets.[8]

Lower Costs

As suppliers develop greater flexibility in shaping the scope and type of their deployments, they can offer service providers more cost-efficient engineering and operations services. This will reduce staff duplications in maintenance and deployment processes. In addition, single-vendor environments can offer shorter innovation cycles since fewer configuration permutations will need to be tested and validated.

Vendors can also consolidate operations in a given geography across multiple service providers or in a global operation across multiple geographies. Vendors appointed to focus on lower costs often will have "toolboxes" and best practices that can be used as well as the advantage of having a clear focus on cost reduction.[9]

Increased Flexibility

The deployment of a new infrastructure often requires a short-term increase in the number of resources needed to complete the task. Because of this, it is often more economical to delegate this type of work to a supplier that can more easily adjust its operations and logistics process chains to accommodate for the projected growth trajectory. This has been used effectively by service providers in the outsourcing of mobile access networks and operations in emerging markets that are experiencing rapid growth.

Reduced Risk and Improved Focus

In deployments where new technology requires complex integration, suppliers are usually willing to take on more execution risk if given the opportunity to apply their unique skill sets, proven solutions, and next-generation architectures. This enables service providers to concentrate their in-house resources on customer satisfaction and market dynamics.

It is important to note that the trade-off between these drivers for advanced sourcing is different in mature versus emerging markets. In mature markets, there are often legacy technologies and processes to contend with in terms of cost efficiency. In emerging markets, "greenfield" situations and local skill shortages often lead to emphasizing greater risk and flexibility.

Types of Sourcing

Sourcing between service providers and vendors can be characterized in terms of its scope across two key dimensions: 1) process lifecycle (plan, build, run) and 2) network-IT infrastructure. Broadly scoped or "umbrella" sourcing deals frequently span the entire process lifecycle and extend across large portions of infrastructure.

In the most extreme case of umbrella sourcing, service providers entrust the entire network infrastructure, operations (including headcount), and architectural evolution to a single supplier. Typical examples of this sourcing model can be found in small mobile and fixed-line operators that lack scale to compete cost effectively against larger players.

With umbrella sourcing, service providers decide to leave detailed control of the various SLAs' interconnecting modules (and, potentially, the task of finding suppliers for each module) to the outsourcer. This sourcing approach also tends to lead to a less-differentiated competitive position since service providers can issue only broad guidance for intermodule SLAs.

While suppliers will generally be in a good position to optimize individual modules (access, IP, services, and go-to-market strategies), they are not qualified to optimize all services in order to accomplish a comprehensive, differentiated market strategy. Umbrella sourcing, therefore, is better suited to a "low-cost, me-too" business strategy.

In contrast to umbrella sourcing, other models exist that involve more narrowly scoped sourcing commitments. These types of arrangements typically focus on the ability of a supplier to support specific processes and / or infrastructure areas such as designing, building, and operating a particular service like unified communications or the turnkey deployment of a mobile access network.

With modular sourcing, service providers can affect the SLAs that link modules and choose the most appropriate sourcing approach for each. While this creates greater management complexity, it also opens more opportunities to differentiate products and services.

Modular sourcing is best suited for situations where significant value can be gained from the integration of specialized modules to create unique customer experiences. Service providers can also tightly control module integration and steer the functionality of individual modules directly. The tradeoffs between umbrella and modular sourcing are summarized in Figure 2.

Figure 2. Comparison of Umbrella and Modular Sourcing

Sourcing Attributes	Umbrella Sourcing	Modular Sourcing
Cost Reduction	Applies general approaches across a broad range of in-scope activities Lower potential to reduce costs	Can apply targeted business models to specific functions High reduction potential for in-scope expenses
Flexibility	Single interface Complexity "concealed" (not accessible to optimization by service providers) Service provider may benefit from ability to focus on demand side	Coordination of multiple interfaces and entities to deliver end-user experience Service provider must orchestrate collaboration
Supplier Risk	Greater responsibility and risk for supplier	Limited supplier risk Narrowly focused on expertise
Competitive Differentiation	Limited competitive differentiation toward lowering costs and customer-related factors (customer intimacy) Cannot differentiate core and context modules	Greater opportunity to differentiate through offer, product, or network by applying best-of-breed implementation of individual capabilities Can link differentiated offerings with customer intimacy
Financial Transparency	Invites cross-subsidization of context versus core areas and reduces financial transparency	Clearly defined modules force high financial transparency and allow for direct management of individual cost components
Shareholder Value	**Indication**—Acquisition EBITDA[10] multiples of Virtual Mobile Network Operator (an extreme form of umbrella outsourcing) have been 25–35% lower in Europe than for mobile operators with their own infrastructure. **Assumption**—Umbrella-sourced providers will suffer an EBITDA-multiple "penalty."	

Source: Cisco IBSG, 2009

Service providers that want to pursue a "low-cost, me-to" business strategy need to control at least some of the integration functions to ensure services are not imitated by other service providers using the same supplier or supplier practices. In other words, if the goal is to develop services at the lowest possible cost, a modular approach will still be required. In the car industry, for example, Tata chose to partner with a select group of suppliers to produce the ultra-low-cost Nano car.

Modular Sourcing for the Agile Business Architecture

After understanding the differences between umbrella and modular sourcing, the next step is to select the most appropriate sourcing approach (see Figure 3). Sourcing strategies are most effective when they are well-aligned with the underlying business architecture of the service provider. Cisco IBSG believes modular sourcing will be the most common approach since it gives service providers the ability to differentiate their service offerings. In some situations, however, umbrella sourcing will be the most appropriate strategy for service providers that are taking the "low-cost, me-too" approach.

Figure 3. Mapping Core and Context Modules with Sourcing Drivers

Sourcing Drivers	Core	Context
Cost Reduction	**None**—Small cost pool and limited cost reduction potential	**High**—Large cost pool and utility nature of module; significant cost reduction potential
Flexibility	**High**—Tap into supplier innovation potential	**High**—Delegate management of variable workloads to suppliers
Risk Management	**High**—Apply proven, end-to-end solutions for specific offerings; manage complex integration	**Medium**—Delegate operations / execution risk to suppliers within the constraints of a standardized operating environment

Source: Cisco IBSG, 2009

Sourcing drivers in both core and context modules must support service providers' chosen business strategy. To create differentiation in core modules, service providers must stay in control. They can, however, add flexibility and reduce innovation risk by involving suppliers more often. Cost considerations will play a smaller role, as core modules are less capital intensive. In most cases, partnering will be the best strategy.

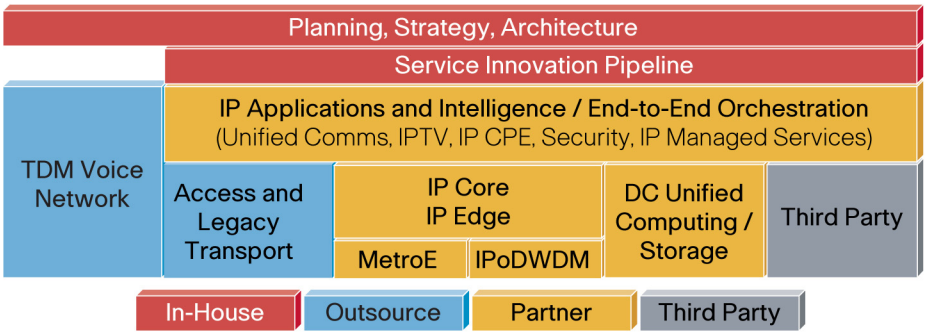
For context modules, cost management becomes the main consideration, while flexibility and risk reduction are less important. For example, service providers can manage risk by linking an SLA for mobile access outsourcing to the successful rollout of a service. Planning and service innovation processes should be kept strictly in-house as a core capability. This ensures end-to-end control and a unified product roadmap across the integrated network-IT environment.

High-investment and low-innovation context modules such as PSTN, access networks, and legacy transport are best sourced from suppliers that can manage these legacy assets. This approach will ensure maximum cost efficiency and improved productivity. Well-defined SLAs for these modules should be used with suppliers to help ensure financial transparency.

Although all-IP and data center modules require relatively low investments compared to utility modules, they have a high impact on future service innovation and associated revenue growth. Consequently, these innovation modules are considered "core" activities and require a sourcing strategy that includes a combination of in-house control plus specialized partnerships.

As shown in Figure 4, the application of the core versus context framework to the agile business architecture diagram results in clear suggestions for the best sourcing approach for each type of module. Service providers with a differentiated business strategy can apply the modular approach to choose the best supplier and type of relationship for each module. They can also govern the overall supplier strategy in line with their differentiated SLA requirements. Risk sharing through differentiated SLAs and pricing modules increases innovation and creates a long-term, "win-win" relationship between suppliers and service providers.

Figure 4. Applying a Modular Sourcing Strategy



Source: Cisco IBSG, 2009

In contrast, service providers with a "low-cost, me-too" strategy can relinquish control of modules and module interaction by appointing an umbrella partner to perform these functions. In this scenario, competitive differentiation through innovation is limited since control of different module types and interfaces is not available to the service provider.

Impact on Current Transformation Plans

Some service providers may already have a transformation roadmap to bulk-migrate from a time-division multiplexing (TDM) environment to an all-IP service development approach. Even so, Cisco IBSG does not recommend this approach since it tends to import PSTN complexity into the IP environment without creating significant business value.

From a business point of view, it is preferable to "pull" customers onto the new, all-IP service environment using advanced offerings and forego the PSTN-to-all-IP migration cost when customers are not interested in these new services. In making this choice, service providers need to consider their overall business strategy, impact on customer churn, cost of operating two networks during the transition, and the residual value of the TDM network.

A recommended approach—in line with the modular sourcing strategy—is to outsource the legacy TDM network module to a TDM supplier under a strict cost-optimization SLA. New IP, orchestration, and / or applications capabilities can then be independently developed without constraining future innovation capabilities by reapplying paradigms from the past.

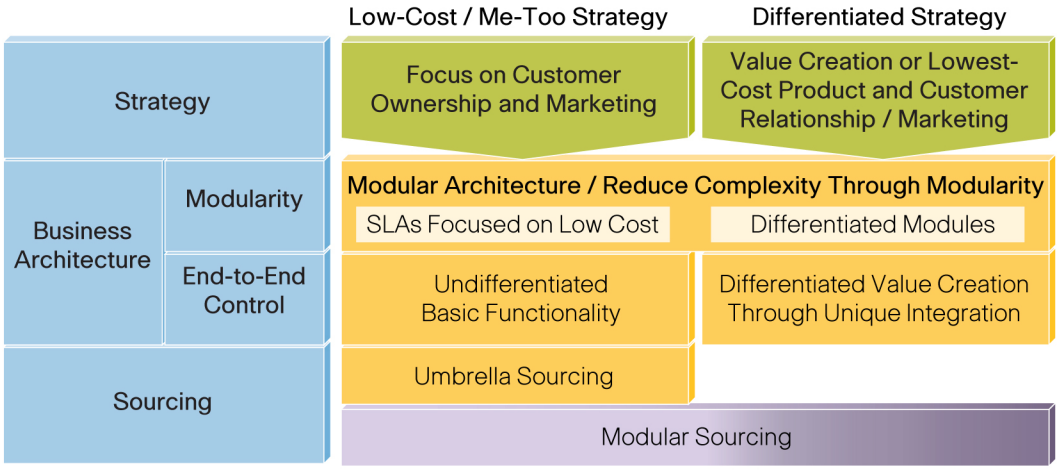
Implications for Network-IT Convergence

Modular sourcing also needs to consider network-IT convergence. If service providers want to operate differentiated IP services using on-demand, real-time interactions among applications, data centers, and core networks, they should not use an umbrella sourcing strategy that typically gives network and IT silos to different suppliers. This is because the service provider must be in a position to control interactions between network and IT domains on a detailed level—for instance, when launching a next-generation service like three-screen video content delivery.

Next Steps

Regardless of their strategic business direction, service providers need to move to an agile business architecture to reduce complexity, lower costs, improve service development, and increase quality. Figure 5 summarizes Cisco IBSG's position on business approach, architecture, and sourcing strategy to help service providers determine their next steps. Depending on the business strategy, service providers will either force modules to be low-cost and utility-oriented, or custom-design them for a differentiated business proposition.

Figure 5. Business Approach, Architecture, and Sourcing Strategy Summary



Source: Cisco IBSG, 2009

Service providers focusing on differentiated services will also need to implement tailored, end-to-end control across module interfaces to create additional value. In terms of the underlying sourcing strategy, "low-cost, me-too" providers can apply umbrella sourcing since detailed control of the network and IT assets is not required (other than for running at low cost, in line with general quality requirements). And while modular sourcing can play a role for service providers with a "low-cost, me-too" business strategy, this approach works best for differentiated providers.

As service providers deal with the challenges of today's rapidly changing telecom industry, understanding their business approach and implementing an agile business architecture with smart sourcing strategies will enable them to be more competitive as they deliver services customers want.

Endnotes

The term service provider, as used in this white paper, refers to telecom companies that manage end-to-end networks and information technology (IT) service delivery across fixed-line, mobile, and / or cable access networks to end users. Companies that deliver services over best-effort, Internet broadband connections are referred to as over-the-top (OTT) players.

1. Infonetics, 2008
2. "Peak IT—The Network Industry's Core Challenge," Gregory Ness, Seeking Alpha, January 28, 2009, http://seekingalpha.com/article/116903-peak-it-the-network-industrys-core-challenge)
3. "The Architecture of Complexity," Herbert A. Simon, 1962
4. "Integrate to Innovate," Michael Raynor and Clayton Christensen, Deloitte Research, 2001
5. Ibid.
6. Cisco IBSG, 2009
7. Ibid.
8. Telecom Industry Survey, IBM, 2007, www.scribd.com/doc/3741199/Telecom-Industry-Survey-2007EIU-IBM
9. Tatacars.blogspot.com, January 20, 2008
10. Note: EBITDA stands for earnings before interest, taxes, depreciation, and amortization.

More Information

The Cisco Internet Business Solutions Group (IBSG), the global strategic consulting arm of Cisco, helps CXOs and public sector leaders transform their organizations—first by designing innovative business processes, and then by integrating advanced technologies into visionary roadmaps that address key CXO concerns.

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