Core Capabilities for Competing in Mobile

NEW MARKETS

Teleport operators share insights in the technology, operational capabilities and personnel needed to move into mobile backhaul and networking.

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Core Capabilities for Competing in Mobile is made possible by the financial support of WTA's Industry Leaders...

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Introduction

Extending mobile communications via satellite is one of the bright spots of the satellite services business. Euroconsult estimates that the number of sites leveraging satellite backhaul surged between 2007 and 2012, tripling to reach 16,000 sites and consuming 15.5 GHz of satellite capacity. Serving regions where terrestrial options for connecting base stations and hubs are cost-prohibitive or inadequate, satellite bandwidth for cellular backhaul in developing economies could total as much as $1.1 billion in 2023, up from $500 million in 2012, for a 7 percent compound annual growth rate.

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The Four-Nines Project

The Four Nines Project is an ongoing effort by World Teleport Association to promote best practices in teleport business, operations, technology and management. It is named for the technical standard

The opportunity for satellite capacity is clear. But how can managed service providers best seize the opportunities created by demand for mobile services? This is the level at which all the complexity of flexible bandwidth management, traffic optimization, protocol management and network interconnection comes into play, not to mention in-depth knowledge of regions and customers. These require substantial expertise, the right technology and facilities adapted to deliver high-quality service at very competitive rates. Cost of service has major impact on demand, particularly in emerging economies where most of the growth will take place. Managed service providers must know how to optimize their solutions to get the most out of satellite bandwidth, whether using fixed capacity to provide the international gateway for a country or region, or managing a network of satellite-connected base stations sharing a bandwidth pool. Reaching deeper into the niche, some service providers are even becoming providers of hosted switching and delivering a complete outsourced solution for customers.

Core Capabilities for Competing in Mobile explores the factors that produce success for satellite service providers operating in the mobile communications sector, including technology, expertise, and facilities. It identifies unexpected opportunities, the hot spots for growth in the business and the commitment required to tap that growth.

Methodology

Through interviews with the senior executives of large and small teleport operators as well as technology and satellite executives, *Core Capabilities for Competing in Mobile* investigates themes including:

- Technology and facilities requirements for serving mobile carriers via satellite, from gateways to base station networks and the provision of outsourced switching

- Skills sets and operational systems required to service the business

- Sales and marketing resources needed to sell successfully in this market

- Market conditions, customer characteristics and technical hurdles that can lead to failure if not managed properly

- How high-throughput technologies will impact the evolution of the business and what service providers are doing to position themselves for it

- Additional opportunities outside the core mobile business that leverage the same technology for new revenue growth

Contributors to this report include independent teleports, satellite owner-operator teleports, and key equipment and systems suppliers. The companies interviewed provide satellite-based services or technology to mobile operators ("mobile carriers," "cell carriers," "cellcos," "wireless carriers") across the Asia and Pacific, Europe, Mideast and Africa, as well as North and South America. They include leading suppliers of VSAT systems and ground equipment. Individuals interviewed represent organizations that are estimated to provide a piece of the value-chain that includes over 80% of satellite circuits used by mobile telecoms operators around the world.

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Executive Summary

Competitive Advantages for Teleport Operators

When teleport operators enter the market for mobility, according to our contributors, they bring competitive advantages that traditional mobile companies cannot match. "One reason the operator came to us is because they didn't want to spend $1 million buying dishes, a hub, UPS and satellite bandwidth, but wanted the services," says an Asian executive. If properly engineered and optimized, satellite links can offer connectivity to base stations that is cost-competitive and offers quality voice and data links.

What Service are in Demand?

The best-known mobile market for satellite service providers is trunking: providing international backhaul circuit for terrestrial mobile networks in areas poorly served by long-haul terrestrial circuits.

Many teleport operators go beyond backhaul to provide turnkey solutions for connecting base stations (BTS) in low-density service areas. For markets with adequate terrestrial connectivity between base stations, satellites can still provide a unique service. The ability to share bandwidth across multiple sites can provide much more cost-effective backup to the terrestrial network than any other option. Packaging a rapidly deliverable, and re-deployable network extension solution is another way to help a mobile operator deploy service.

Many service providers specialize in meeting the needs of maritime and offshore energy markets, as well as other moving objects from trucks and trains to airplanes. In some cases, service providers are able to open opportunities for mobile tech companies and carriers, or to partner with them.

One teleport provider has found that a smaller regional wireless carriers need switching and core network services in addition to backhaul. Core network infrastructure is capital intensive and lends itself to economies of scale. By outsourcing core switching and provisioning to the teleport provider's platform, these wireless carriers save capex and scale the growth in operating costs to growth in their revenue.

Where Are the Hot Spots for Growth?

The global demand for bandwidth from mobile carriers is expected to be huge, with increasing subscriber penetration in developing regions as more of the world's population can afford services. "Traditionally backhaul over satellite has been about rural coverage in remote third world countries trying to provide 2G type coverage, with ultra-low average revenue per subscriber (ARPU) of US$2 or less, for services that can work in Sub-Saharan Africa," says one

executive. "But the business in the last two years has greatly expanded, so now we see operators wanting to deploy straight into 3G and occasionally 4G."

Carriers are increasingly adopting a variety of "small cell" technologies, with names like picocells and femtocells. The resulting expansion in the number of cell sites can create opportunity for teleport operators. They design satellite networks to connect many small cells in remote locations, in which all remotes to share a pool of satellite bandwidth and take advantage of variable traffic patterns across sites.

By several accounts, Asia is the leading region for growth. "We're looking at South East Asia," says one executive, "with its huge population but less developed cable and terrestrial infrastructure."

Africa is also a growth market for satellite companies. Mobile operators have signed several large ($200M plus) contracts for satellite-based services in Africa and the Middle East in recent years.

A major provider of teleport service in Latin America finds the mobile market changing in the region: "In South America up till now it was about connecting parts of the network. Now increasingly we are carriers deal with the huge increase in data bandwidth required for the network."

Technology and Service Requirements for Mobile

At the core, say several operators interviewed, there is not a lot of technology difference between mobile networks and robust VSAT enterprise networks. In most cases, the satellite service provider will not be asked to provide the base station equipment for the network. Mobile networks using 2G and 3G/HSPA technologies require Abis optimization, statistical multiplexing, bandwidth management/traffic shaping and header/payload compression to decrease the cost of static voice, among other technologies. A common theme echoed by supplier and operators is that TDMA is the base technology for competing, because SCPC services for cell backhaul consume too much bandwidth and limit flexibility.

Skill and Human Resource Requirements

Selling to mobile carriers requires a deep understanding of their challenges, say operators. As a service provider, you have to encompass a broad range of technologies and applications and demonstrate how they can work over satellite to deliver real value to the business. "You cannot throw a satellite engineer on this and expect a bunch of mobile business," warns a teleport executive. "It really requires skilled operations and engineering teams that are schooled in mobile networks.

The art of serving mobile customers is fine-tuning the interactions between the configurations of the mobile and satellite networks. "Just saying 'it works,'

without tuning your network to the mobile carrier's traffic, is not likely to result in it actually working," explains a systems engineer.

In the cellular network transport network there are two elements, Core, and Backhaul. Understanding Core Transport and Backhaul Transport is important because they give you a common basis to engage in technical dialogue with mobile carriers.

Technologies that help you reduce bandwidth requirements, better manage bandwidth and enhance the user experience are critical to a successful satellite implementation. By increasing the mobile operator's profitability and reducing churn, they increase your competitive advantage with the customer.

Mobile carriers, unlike enterprise networks, have strict compliance requirements imposed by regulators. Security and reliability are not just technology requirements but legal ones.

Unique Challenges in the Mobile Market Vertical

Respondents unanimously reported that the first challenge in selling to mobile carriers is educating them about the comparative advantages of satellite networks. They are unlikely to understand the advantages satellite can deliver and the comparative cost of bandwidth vs. the total cost of ownership of microwave links.

What sales strategies have proven effective? Microwave involves fixed infrastructure that adapts poorly to market changes. One operator advises stressing the flexibility of satellite for entering new markets, meeting surges in demand and adapting to population shifts.

"Our challenge is to show them that they can get affordable service to a cell to serve 100, 500, or 1,000 people," says another executive. "The winning strategy involves convincing them that satellite can enable their service expansion."

Navigating the local licensing and regulatory environment is another key market challenge. "Satellite is highly regulated in emerging countries," an Asian operator points out, "and so you may need the right partners to show that you have the equipment license, VSATs and landing rights to operate." Domestic voice traffic may be need to remain in-country, or within a specific carrier's licensed territory. Local partners can be critical to success.

Operating as a "carrier's carrier" requires a very high level of reliability delivered at a competitive prices. That can be a tough combination to achieve. "You need not only to convince them that satellite can do the job," advises an executive, "but also that you will properly integrate with their network. You need good fiber, good engineering and tools that provide the customer with insights into the network."

How HTS May Shape the Mobile Market

High-throughput technologies are expected to give a big boost to satellite in the mobile market, because of their potential to make more satellite implementations cost-effective, particularly for carriers with low ARPUs.

Since higher frequencies are more susceptible to rain fade, respondents voiced concerns about the ability of Ka-band to meet mobile carrier needs. "We have seen great reluctance in sub-Saharan Africa for mobile operators to take up Ka and Ku capacity for backhaul services," says an operator. Nevertheless, Ka-band HTS satellite systems are executing contracts for mobile trunking and backhaul in many places around the world, and claim to have optimized architectures and networks to deal with rain fade.

Broadband HTS service can be a very controlled ecosystem, without room for the independent teleport operator to add the value they contribute to traditional FSS solutions. According to its proponents, the planned new satellite system, Intelsat EPIC, has made a leap in architecture by opening it for independent operators to have access to transport services through their own gateway. Independent teleport operators say there are also opportunities to work with other "open systems. Newsat of Australia with its Jabiru satellites over Asia is one example. Another is UK-headquartered Avanti, with coverage to Europe, the Middle East and Africa at Ka-Band.

Leveraging Mobile Capabilities for New Growth

Once you have made the investments in technology and people needed to serve this market, does it open additional opportunities in related markets?

As a teleport with a TDMA VSAT network running services for mobile telcos, the most common add-on opportunity is to provide enterprise VSAT services over the same infrastructure platform. Satellite networks for mining, oil and gas organizations are another opportunity. "A mobile operator with a base station at a remote mine controls all traffic," explains a teleport provider.

Your mobile carrier customer may have enterprise needs best served by a satellite service provider. "Once a backhaul is sold, there are lots of remote sales points in a mobile network, such as shops selling mobiles, that could piggyback retail traffic on the back of it," explains one executive.

Some mobile carriers want to focus on their core business and are open to opportunities to outsource the technology side of the business. Some enterprising service providers offer a hosted provisioning and switching solution that interconnects with the carrier's sales, customer service and billing platforms. In other cases, the carrier prefers not to be in the tower management business and expects an outsourced vendor to provide this infrastructure.

The full report is available for purchase from the World Teleport Association Web site at www.worldteleport.org.