SK TELECOM:
The perfect balance of cutting edge innovation and pragmatism

Getting out in front of the market – known as leapfrogging – is a tricky business. To be sure, it takes innovative and winning technology. But is also requires a sound business case that accounts for the investment, go-to-market timeline and management of existing assets. Not to mention ability to achieve return on investment through operational efficiencies and development of new revenue streams. SOLiD empowers leapfrogging.

As a global provider of Distributed Antenna Systems (DAS), Optical Network Transport and Passive Optical LAN solutions, SOLiD was founded on the principle of innovating technology to solve industry problems in new and pragmatic ways. This was evident when SK Telecom deployed its LTE network with an innovative fronthaul-backhaul architecture from SOLiD. Rather than build a new backhaul network from scratch, SKT was able to leverage the existing 3G backhaul network to support the new LTE deployment, thereby cutting capital expense and the time to launch LTE services. SKT calls the new architecture SCAN which stands for Smart Cloud Access Network.

What is unique?

Enabling sophisticated all-IP communication services such as joyn.T (RCS) and HD Voice (VoLTE) requires an equally sophisticated and robust network infrastructure capable of addressing LTE and Mobile Internet Application traffic data surges.
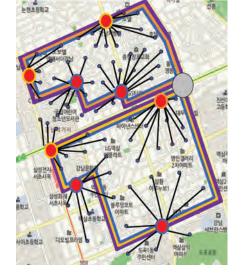
"Deploying Remote Radio Heads (RRH) makes maximum use of existing fiber infrastructure to reduce time to market and capital costs," says Saeed Anwar, CTO at SOLiD. "Because RRH architecture physically splits the radio from the baseband, operators benefit greatly from the flexibility to provide capacity and coverage in specific locations."

A key underlying concept is fronthaul which is relatively new in commercial mobile network deployments architectures: it connects Remote Radio Heads to the aggregated base band units which may be located in a central office or data center. The traffic is then backhauled from the base band units to the IP core or EPC. Multiple RRH and small cells can be fronthauled on a fiber ring to provide redundancy.

Why SOLiD?
ENABLING FRONTHAUL

Because the cost of laying additional fiber runs can be cost-prohibitive, the use of existing strands is paramount. SOLiD is an innovator of DWDM (Dense Wavelength-Division Multiplexing) technology which channelizes a single fibe r strand into multiple bi-direction channels. With a single strand from

the hub site, where all the heavy equipment is, SOLiD transports the signaling and transmission over a distance span and facilitates linear add/drops from the single fiber to Small Cell site locations. The linear add/drop simultaneously handles both backhaul and fronthaul.

SOLiD's flexible optical transport solution ensures that changes are made quickly by adding ONTs to the fiber rings to support additional RAN capacity as needed. The SOLiD fronthaul architecture supports a broad range of services including Ethernet, CPRI and OBSAI so operators can deploy both licensed and unlicensed RAN solutions – for instance, LTE and WiFi RAN – on the same system.

COST-SAVINGS

By doing more with existing fiber assets, multiple small cells can be supported by a single fiber strand. And since small cells must be placed exactly where they are needed to address capacity 'pain points', the link between the cell and existing fiber runs can be minimized because a new fiber strand is not required to support each and every cell. As such, both capital and operating expense savings can be achieved since the need for new real estate is reduced.

What was achieved?
SCALE

Across South Korea as a whole, SKT has used SOLiD fronthaul architecture to support approximately 12,000 base station nodes and 80,000 remote radio heads. The base station nodes (or 'digital units') are located in centralized COTs (Central Office Terminal) or DU Centers. This centralization reduces the complexity of the network as well as maintenance and operating costs.

QUICK FACTS – GANGNAM STYLE:

Benefits:

Reduced time to market and capital costs

Support for multiple small cells on a single fiber strand

Reduced operating expenses

Increased reliability

Flexibility to support both licensed and unlicensed RAN solutions

A single fiber ring simultaneously supports 2G/3G, 4G and WiFi traffic: CPRI/OBSAI is used to support LTE traffic, Ethernet supports WiFi, and E1/T1 is used for the legacy 2G/3G network. Up to 30 remote radio heads can be supported per base station node.

TIME TO MARKET

SK Telecom's SCAN network took approximately 12 months to deploy. The company attributes the accelerated time to market to the ability to reuse part of the existing 2G/3G fiber network. Officials estimate that it would have taken three or more years using a traditional architecture with new fiber.

COSTS

Operating expenses having been reduced in the first year by approximately five percent and by 2014, SK Telecom expects 50 percent savings. Savings have been realized through reduced building lease and rental costs, reduced utilities, reduced maintenance and fewer truck rolls.

Through innovation and pragmatism, SOLiD enables leapfrogging.