

DCME Bandwidth Optimization and Compression The Best Kept Secret in Mobile Networking and Telephony

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It's no secret that voice traffic is still expensive to carry in many regions of the world. And even though the related transmission costs are decreasing with the introduction of network entities such as 2G-3G media gateways, many operators are still struggling to deliver consistent OPEX reductions while evolving their networks to support ever-increasing traffic levels that now consist of voice, data and video content.

But even while multimedia traffic continues to grow, the fact is that voice services are still the core revenue stream for the majority of operators worldwide. Whether deploying cellular or satellite infrastructures or some combination of both, operators must optimize voice trunks in order to offer price-competitive services including pre-paid calling cards, private business lines and call centers. And, with the telecom bubble of the late 1990s long gone, brute-force bandwidth provisioning is no longer a viable option. Now more than ever operators must plan the evolution of the transmission network pragmatically and look at enhancements that are available at low cost and deliver immediate ROI.

Want to know a secret?

Adding bandwidth capacity is not the only solution to relieving network congestion or increasing service capacity. Used in telephony networks for many years, DCME (Digital Circuits Multiplication Equipment) solutions have earned a solid reputation for providing advanced PCM (Pulse Code Modulation) voice compression over transmission media such as satellite and microwave links.

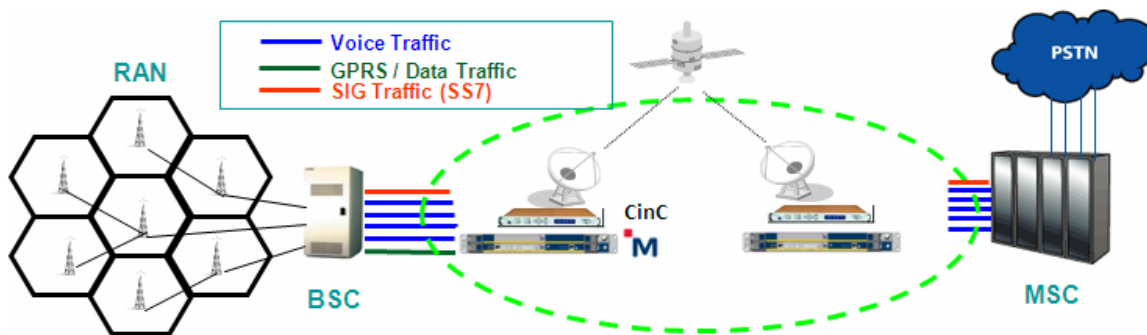
Driven by standardization advancements in the ITU-T, DCME technologies have continued to evolve and now achieve impressive compression ratios, allowing operators to provide extra bandwidth without provisioning additional capacity. Adopted and valued by thousands of operators worldwide, DCME optimization and compression technologies offer time-tested, field-proven results that drive more bandwidth from existing assets while sustaining — or in some cases even improving — voice quality in networks where media gateways are deployed, resulting in substantial OPEX savings and improved profitability.

The secret to cost savings without sacrificing voice quality

Many operators are still carrying voice across plain PCM [G.711] 64 kbit/s channels or Adaptive Differential Pulse Code Modulation ADPCM [G.726] 32 Kbit/s channels over satellite links (even though the link costs are substantial), simply because they believe more aggressive voice codecs will cause a degradation in voice quality. But advances in today's DCME technologies have resulted in codecs that offer up to 16:1 bandwidth reduction on voice trunks while preserving quality of service.

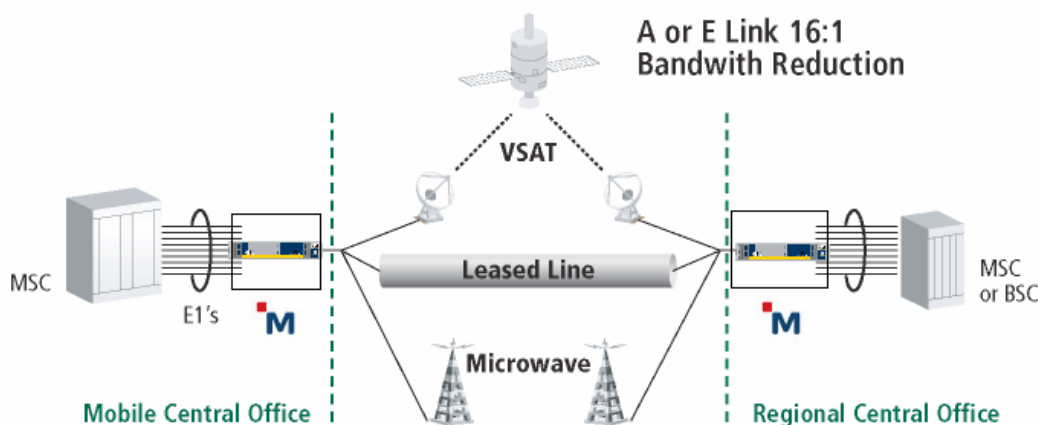
For example, consider a link consisting of 8 x E1s, carrying 240 voice channels and 8 x SS7 signaling channels. Assuming a conservative 35% silence ratio, today's DCME solutions will reduce the bandwidth required on the satellite link from 4,300kbit/s to less than 1,000 kbit/s. This translates into substantial yearly savings with a payback period of only a few months.

A similar scenario can be repeated for leased line backhaul or congested PDH (E3) microwave links. The above example would significantly reduce the backhaul capacity from 8 x E1s (or a single E3) to a single E1.



In an Ater link configuration, voice traffic is carried between the BSC and the MSC in a compressed format (usually 16kbit/s per voice channel). But as traffic increases it typically becomes necessary to migrate voice traffic from the Ater link to an A link where it is not compressed, requiring at least four times more transmission capacity and significantly increasing network OPEX.

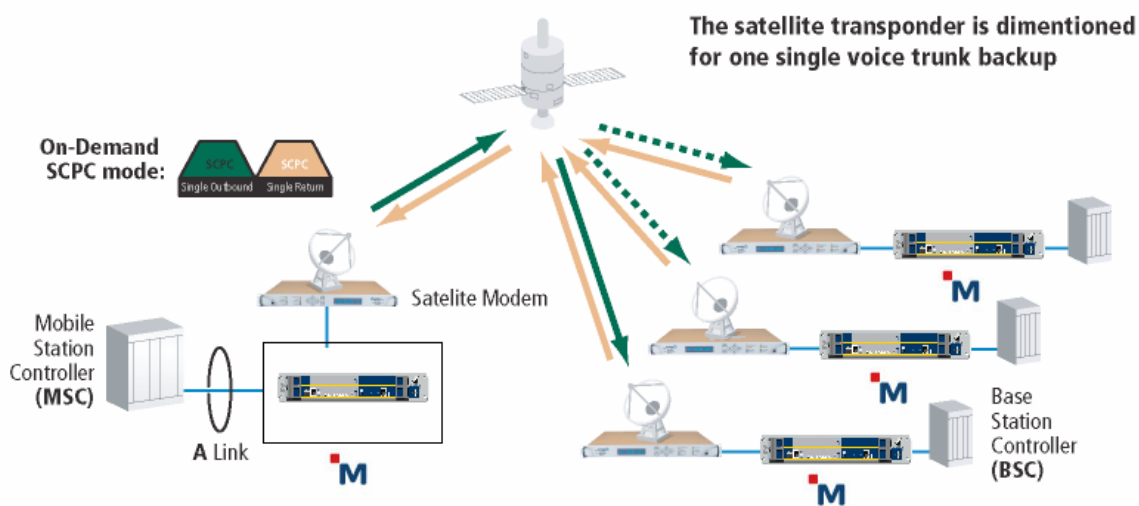
However, by equipping the A link with a DCME solution transmission bandwidth requirements are reduced by up to 4:1, thus delivering significant OPEX savings and liberating existing bandwidth assets to support additional backhaul capacity for future growth and new services.



The secret to cost-effective, secure disaster recovery

Mobile networks are being incorporated more and more into public disaster response plans, further emphasizing network availability as a critical component of any network planning. Network outages – which can account for 30% to 50% of all network faults and hundreds of thousands of dollars in lost revenue -- are particularly sensitive for operators using third party leased lines or unprotected fiber links.

DCME technologies offer a cost-effective, reliable A/E link back-up solution that uses satellite backhaul on an as-needed basis to tightly control OPEX budgets without sacrificing reliability and security requirements.



DCME – the secret is out

Word is spreading that DCME solutions have come a long way from their humble beginnings as PCM voice compression solutions. Today's advanced solutions offer a vast range of interfaces as well as varied processing capacity allowing connectivity in diverse environments, from STM-1 to large trunks, or even E1, STM-1 or IP/Ethernet connecting to an MPLS core over Fast Ethernet or Gigabit Ethernet interfaces (electrical or optical).

But while there is a vast array of solutions available, operators must research vendors carefully to ensure the solution supports key criteria such as bandwidth management, a crucial component helping revenue continuity with carrier grade voice quality in traffic congestion situations. Other criteria can include, 16:1 bandwidth compression (20:1 for telephony), 8:1 SS7 optimization, high-quality mobile codecs, voice and data aggregation, backbone protocol independence, integrated traffic monitoring and versatile connection capability. The checklist might seem exhaustive, but it is only with this complete feature set that a DCME solution can deliver the bandwidth efficiency, OPEX savings, exceptional voice quality, and network reliability demanded by today's mobile operators.