

Sevis 6000 Series

Mobile Backhaul Optimization Solution



DEPLOYMENT WITH KEY RAN VENDORS

Ericsson, Nokia-Siemens, Huawei, Alcatel-Lucent, Motorola, Nortel & ZTE

LARGE INSTALLED BASE

Over 2500 BTS connections worldwide

GLOBAL INSTALLATIONS

Asia, Africa, Europe, Middle East & Latin America

The **Sevis 6000 Series** enables mobile operators to reduce bandwidth, increase revenue, create new services and establish a clear migration path to 3G. Developed to significantly reduce satellite bandwidth consumption and lower microwave and leased line operating costs, the Sevis 6000 Series employs field-proven GSM A-bis, 3G and CDMA optimization algorithms to reduce backhaul bandwidth. The result is a dramatic reduction in bandwidth requirements across the Radio Access Network (RAN) without degrading voice quality or network reliability, while lowering both operating (OpEx) and capital expenses (CapEx). The Sevis 6000 Series is specifically designed for rural areas in the developing world where a lower concentration of subscribers limits mobile coverage due to prohibitively expensive operational costs. The Sevis 6000 Series allows wireless operators to provide affordable mobile services to subscribers in developing markets who do not have such access today.

Features	Benefits
Carrier-class solution	Reduces backhaul bandwidth by 50% or more
Supports 2G, 2.5G and 3G networks	Lowers network OpEx and CapEx
Optimization for any codec: HR, FR, EFR, AMR	Field-proven solution with worldwide installations
Optimizes all GSM protocols: A-bis, A-ter and lub	Suitable for satellite, microwave and terrestrial connections
Wide range of interface choices for alternative backhaul: serial, digital leased lines, satellite or IP	Voice quality and data services (GPRS, EDGE) are preserved
Interoperability with equipment from major GSM switch vendors	Converts traffic from TDM to more efficient packet-based IP

Innovating the Mobile Backhaul Network



OVERVIEW

In today's mobile networks, operators typically handle their BTS-to-BSC connections via time-division multiplexed (TDM) links. These links are often leased from incumbent fixed-line providers and represent the largest recurring expense for the mobile operator. The expense is dramatically higher in developing nations where often the only alternative is a satellite connection, which costs 5 to 10 times more than a terrestrial link. It is the recurring cost of these links that often determines whether or not an operator is profitable in a given market.

The 6000 Series mobile backhaul solution allows mobile operators to achieve a bandwidth reduction of 50% or greater, while providing them with the capability to leverage less expensive, IP-based transport services.

THE CHALLENGES

Network operating expenses represent 30% to 40% of total OpEx for a mobile operator. Keeping these expenses under control is a priority in today's competitive and cost-sensitive business environment.

Challenged with decreasing ARPU and increasing competition, mobile operators must meet their customers' demand for better coverage and new services while reducing capital costs and operational expenses. These challenges are compounded by the fact that widespread adoption of data services and 3G technology means even greater bandwidth requirements. The ability to expand network capacity without incurring additional OpEx is thus a competitive advantage that cannot be underestimated.

THE SOLUTION

The 6000 Series (Models 6116-DC & 6104-DC) offers several advantages to mobile operators seeking to reduce network operating costs, increase capacity and provide new services to their users. These products support all GSM protocols on A-bis, A-ter and lub interfaces.

The 6000 Series delivers industry leading bandwidth savings because it can be deployed across all locations in the network to include links between the BTS and BSC, Node B and RCN or between the BSC and MSC. The solution eliminates any redundant and unnecessary data, suppresses silence to further minimize bandwidth consumption and packetizes all traffic for transport over the most appropriate, cost effective infrastructure available. The result is a truly end-to-end bandwidth optimization solution.



The Sevis 6000 Series was designed and built to specifically address the GSM backhaul market. Unlike other backhaul products that were designed for different applications, the 6000 Series addresses the immediate need for GSM optimization in a platform that will evolve with enhanced mobile applications in the near future.

GSM BACKHAUL BENEFITS

In a mobile network, bandwidth optimization translates into OpEx savings on links between BTSs, BSCs and MSCs. Operators that deploy Sevis optimization solutions also benefit from improved network performance and the ability to converge multiple technologies including 2G, 2.5G and 3G onto a single network infrastructure.

Another benefit of optimization is that it frees up bandwidth, allowing operators to introduce IP services on the cell site, deliver advanced services to mobile customers and create new revenue-generating opportunities such as WiMAX or WiFi.

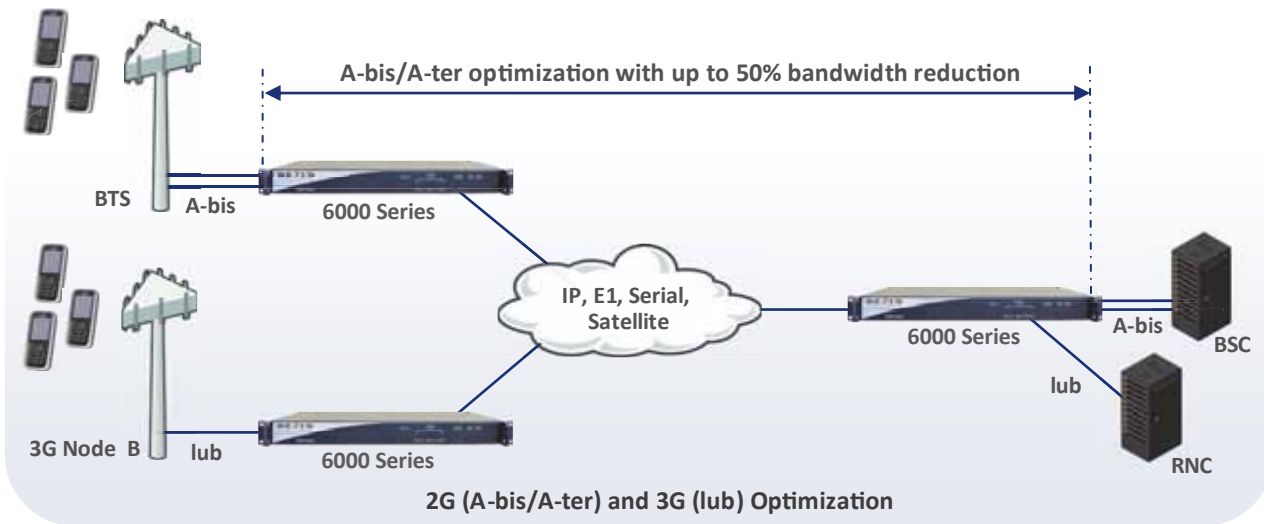
GSM BACKHAUL SOLUTION FOR A-BIS, A-TER

On A-bis and A-ter interfaces where voice is already compressed, the 6000 Series is still capable of optimizing these channels by a factor of up to 2:1. The 6000 Series starts by converting the traffic from TDM to a more efficient packet-based format without any GSM codec transcoding that would otherwise affect voice quality. Next, it analyzes the traffic and suppresses silence frames that are typically transported across the network. Finally, the solution optimizes the signaling channel through compression, and transmits only the data that is required end-to-end.

MIGRATION TO 3G AND WAN OPTIONS

While optimizing the bandwidth required for mobile networks, the 6000 Series also provides a path of convergence and optimization for 3G using a common network infrastructure, thus ensuring seamless 3G migration.

The 6000 series also allows operators to run traffic across a variety of WAN infrastructures including serial or digital leased lines, satellite or IP. This flexibility allows operators to use alternative IP-based backhaul networks such as Satellite Broadband, Metro Ethernet, xDSL, Cable or WiMax where appropriate to further reduce operating costs.



CARRIER-GRADE PLATFORM

The 6000 Series is built to be truly carrier-grade, providing redundant power supplies that are field-replaceable. Each of the two power supplies is capable of powering the entire chassis, allowing the Sevis solution to continue providing full service in the unlikely event of a power supply failure.

HIGH-AVAILABILITY (HA)

The 6000 Series provides High-Availability (HA) for carrier-grade deployment and redundant configurations for added service assurance. An HA cluster uses a highly reliable HA port with advanced monitoring software to switch units automatically in case of hardware or software failures. HA clusters are configured with active and standby policies. The standby unit monitors the health of the active unit while also staying in perfect data synchronization through advanced replication software. In case of a failover, the standby unit seamlessly assumes the identity of the active unit to maintain service and connectivity.

ENHANCED SATELLITE CAPABILITIES

The 6000 Series is interoperable with major satellite vendors and provides support for SCPC, TDMA, and IP broadband satellite technologies, reducing VSAT bandwidth costs by 50% or more. Wireless operators can install a hybrid satellite/terrestrial network over a single platform, further reducing cost and complexity. Specific features have been developed for the satellite market such as Bandwidth Limiter and Disaster Recovery .

NETWORK MANAGEMENT

The 6000 Series supports open standard SNMP and can be integrated with the operator's existing NMS for performance monitoring of Sevis backhaul network elements and management of all areas vital to efficient operation. Service providers gain unprecedented control over their backhaul networks, ensuring network efficiency and subscriber satisfaction.

Sevis' unique Network Reporting function provides a broad range of features to expedite network troubleshooting and minimize the time required for onsite or remote access. Data from all Sevis devices in the network can be viewed, collected and saved to a single file for later reference and analysis. The Network Reporting function collects data from all accessible Sevis devices, including their network topology, runtime traffic statistics and in-depth traffic analysis.



SNMP Monitoring System



Model 6104-DC



Model 6116-DC

Technical Specifications

	MODEL 6104-DC	MODEL 6116-DC
AVAILABLE E1 PORTS	4	16
TRX'S	up to 48	up to 192
ETHERNET PORTS	2 x 10/100 & 1 x 10/100/1000	1 x 10/100 & 2 x 10/100/1000
POWER CONSUMPTION	22W	30W
GSM A-BIS/A-TER OPTIMIZATION FEATURES		
	<ul style="list-style-type: none"> Voice: FR, EFR, HR, AMR 16K, AMR 8K Signaling: 16K, 32K, 64K SMS & MMS Dual Rate 	<ul style="list-style-type: none"> Data: GPRS, EDGE Fax & Modem Auto-detection of timeslot assignments DS0 Cross connect
GSM A-BIS/A-TER OPTIMIZATION RATIO		
	<ul style="list-style-type: none"> A-bis optimization up to 3:1 	<ul style="list-style-type: none"> A-ter optimization up to 2:1
3G & CDMA FEATURES (ATM & HDLC-BASED RAN)		
	<ul style="list-style-type: none"> ATM cell concatenation ATM AAL0/AAL2/AAL5 	<ul style="list-style-type: none"> Idle cell removal Iub & CDMA
WAN LINK		
	<ul style="list-style-type: none"> Voice: FR, EFR, HR, AMR 16K, AMR 8K Ethernet (IP, up to 1G) 	<ul style="list-style-type: none"> Serial (up to 10Mbps)
E1 INTERFACE		
	<ul style="list-style-type: none"> Connector: RJ45 Signal support of E1-120 Ohm. E1-75 Ohm support with RJ45-to-BNC cable Framed, Fractional, Channelized TDM 	<ul style="list-style-type: none"> Drop/Insert Physical layer/Link layer protocol: HDB3/AMI/B8ZS, ITU-T G.703, ITU-T G.704 Frame Mode Rate: n*64kbps (1≤n≤31)
SERIAL INTERFACE WAN (MODEL 6104-DC)		
	<ul style="list-style-type: none"> Connector: Smart Serial (V26 Female) Interface Protocols: RS422/V.11, RS530, RS449 and V.35 	<ul style="list-style-type: none"> Data Rates: Up to 10Mbps
ROUTING PROTOCOLS		
	<ul style="list-style-type: none"> IP RIP V1/V2 or Static NAT TOS bit/ diffServ PPP 	<ul style="list-style-type: none"> OSPF V2/V3 DHCP server & client Firewall
NETWORK MANAGEMENT		
	<ul style="list-style-type: none"> Remote Telnet Access TFTP/SCP upload and download of software and configuration 	<ul style="list-style-type: none"> Open SNMP with MIB Web Interface & Auto-Upgrade
INTERNAL INTERFACE REFERENCE		
	<ul style="list-style-type: none"> Stratum 2 	
OPTIONAL MODULE (MODEL 6104-DC)		
	<ul style="list-style-type: none"> GPS Clock 	
POWER SUPPLY - REDUNDANT INTERNAL POWER MODULES		
	<ul style="list-style-type: none"> DC: -48VDC (-36 to -72 VDC) 	
SIZE & DIMENSIONS (W x H x D)		
	<ul style="list-style-type: none"> 1U, 19" rack mount chassis 	<ul style="list-style-type: none"> 17" x 1.71" x 6.62" (43.2cm x 4.34cm x 21.9cm)
TYPICAL WEIGHT		
	<ul style="list-style-type: none"> 3.4 lb (1.5kg) 	
TEMPERATURE & RELATIVE HUMIDITY		
	<ul style="list-style-type: none"> Operating: 0°C to +55°C Relative Humidity 0 to 95% 	<ul style="list-style-type: none"> Storage Temperature -40°C to +70°C
REGULATORY / COMPLIANCE		
	<ul style="list-style-type: none"> EMC: EN55022:2006, EN55024:1998 + A1 + A2 Safety: EN60950-1:2006 + A11 	<ul style="list-style-type: none"> Environment: RoHS Directive 2002/95/EC Telecom: TBR12, TBR13

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