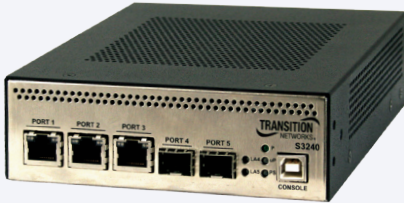


Mobile Backhaul



S3240 NID

Industry

Service Provider

Application

4G/LTE Mobile Backhaul

Business Challenge

Migration from legacy 2G/3G network to an all IP-based 4G LTE mobile backhaul network.

Solution

The S3240 is a multi-service, multi-port NID that provides SLA-assurance and advance fault management that is compliant with MEF and IEEE standards. The S3240 is designed for business Ethernet and mobile backhaul deployments.

Benefits

The S3240 provides the following benefits for 4G LTE deployments:

- SLA-Assurance
- Advanced Fault Management
- Supports latest OAM Standards
 - IEEE 802.1ag
 - IEEE 802.3ah
 - Performance Monitoring
 - VLAN
 - Bandwidth Allocation
- Offers Wide Range of DC Voltage Inputs
- Competitively Priced



Transition Networks S3240 NID Selected for 4G/LTE Mobile Backhaul Deployment

When two national Service Providers recently called on EATEL, an independent telco in the Gulf South, with plans to upgrade their existing 2G/3G cell towers to an all IP-based 4G (4th generation) mobile broadband solution, it was a commitment that EATEL was ready and willing to meet. After all, for over 75 years, EATEL has remained committed to meeting local consumer needs with the most advanced fiber optic communications network in place today. Located in Gonzales, LA, between Baton Rouge and New Orleans, EATEL's service area encompasses 500 square miles of fiber optics reaching 95% of all homes and businesses with residential triple play (voice, data, video) and business class Ethernet services.

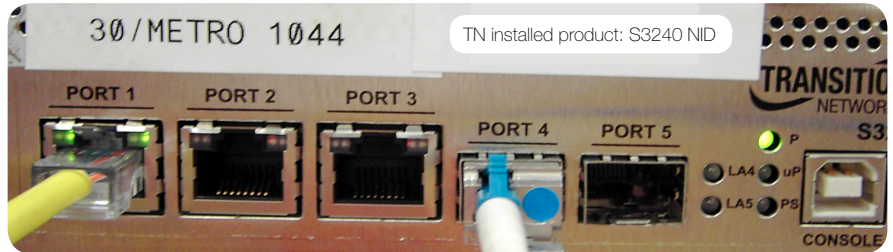
"Our mission is to consistently offer exceptional, high quality services that improve the user experience while also maintaining the best possible customer support." explained Harris Miller, Director of Network Services at EATEL. "Being the local mobile operator for the very first commercial 4G deployments in the State, compliments our commitment to offering the latest improvements in technology."

With the move to a new 4G LTE mobile backhaul network, comes the transformation to an end-to-end all IP architecture. Most operators "core" networks are completely Ethernet/IP based, but 4G also utilizes IP for both the radio and backhaul network elements as well. Unlike circuit-based 2G/3G mobile switching centers that transport voice/data traffic on two separate networks, 4G deployments allow the convergence of voice and data together over one IP network. This reduces network management and operations while also allowing much simpler service creation. Most importantly, this convergence offers bandwidth speed improvements that can be more than two times as fast as existing 2G/3G mobile services.

A 4G all packet network requires the network to be fault-resilient, similar to traditional TDM or SONET based networks where high availability/uptime is a must-have requirement. Service faults must be rapidly detected and reported before they impact the user. In addition, voice and data



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packets must be measured for throughput and any latency. For EATEL's 4G tower build-outs, diverse network routing that included both physical and logical failover/redundancy was put into place. "We went through an exhaustive and very detailed 5-6 week evaluation, the most thorough analysis we've ever gone through to comply and meet the 4G service requirements of the Service Providers," explained Miller. "In addition to being the first/last mile operator for the new 4G roll-outs, our transport network had to meet very robust operations, administration and maintenance (OAM) policies including stringent throughput and packet latency requirements. We are quite excited to be involved in one of the 1st 4G/LTE commercial deployments in the state."

“ After a very detailed test/evaluation which included certification of OAM reporting capabilities approved by our Providers, we selected Transition Networks S3240 NID. It had all of the OAM functions we needed and it was attractively priced. ”

Harris Miller, Director of Network Services, EATEL

Selecting an “Intelligent” NID (Network Interface Device)

Making a call or accessing the web using a mobile device is so common today, that it is easy to forget the networks that power those activities. Wireless backhaul connects information (phone calls, texts, video, web access) traveling from a wireless tower to a mobile switching center. In a mobile network, there are really two separate types of networks. There is the radio equipment (wireless) and network router/switch “wired” equipment (fiber/copper) that provides the interface between the two. For the 4G access network, there are several critical components. The MME (Mobile Management Entity) is the key control-node. It is responsible for call management, basically roaming and mobility between 4G mobile switching centers and other 2G/3G networks. There is also the eNodeB which

is an all mobile broadband device. It controls call hand-offs and radio resources and is normally interfaced via fiber to a SGW (Serving Gateway) that routes and forwards user data packets between other eNodeB devices and 2G/3G BTS's (Base Station Transceiver Systems).

Of critical importance in a 4G mobile environment is the “wired” IP/Ethernet portion of the network. This is the main “backbone” or “core” for enforcing subscriber policies including: QoS, VLAN tagging, bandwidth allocation and other network management functions. Nearly all network routers and switches support these functions today. What was missing and required for a successful 4G roll-out was an intelligent NID (Network Interface Device) that supported all Layer 2 functionality but also included the latest Carrier

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Ethernet standards. These standards include IEEE 802.3ah (L-OAM) for remote fault detection of link failures, loss of power, and remote monitoring. Additional fault management, supported in IEEE 802.1ag, was also required for loop back and link trace capabilities as well as performance management and monitoring of the network devices. The NID was required at the tower locations and would serve as the demarcation point, or hand-off between EATEL and the Service Provider Network.

"Earlier in the year we began a vendor selection and test evaluation process where we looked at several different vendor's products." said Miller. "We needed a device that could support the latest OAM standards as well as give us the Layer 2 functionality needed. Several of the vendors we looked at did not have all the OAM standards or, they planned to have them but were not yet available. We also needed a NID that supported wide DC voltage inputs because power at the towers can vary. After a very detailed test/evaluation which included certification of OAM reporting capabilities approved by our Providers, we selected Transition Networks S3240 NID. It had all of the OAM functions we needed and it was attractively priced. We also had to certify power consumption and of all things, how the NID would sustain EMI pulses. Transition's engineering team was very helpful in providing this test documentation which greatly aided in gaining final approval from our Providers."

Conclusion

Transition Networks S3240 NID is now deployed and operational at (7) different Metro-Ethernet 4G towers with several future ones planned. The S3240 is providing E-Line/ E-LAN services with a combination of copper and fiber 1G port connections to the Provider networks. "We're very happy that EATEL selected our S3240 for one of the first 4G deployments," said Patrick Schaber, Director of Marketing at Transition Networks. "The S3240 provides a cost-effective way to meet Service Provider demands and address wide-scale deployment challenges while providing the latest Carrier Ethernet standards. We look forward to continued successful deployments and achieving best-in-class Ethernet services with our new S3240 product."

The S3240 operates in an extended temp range of -10°C to 65°C for backhaul applications using AC or 18-57VDC power redundancy. It also utilizes a fan-less design to increase reliability over the product's lifespan. In most cases EATEL deploys the NID in a hut or a controlled environmental cabinet at the towers.

The S3240 supports up to 10k jumbo frames and bandwidth allocation to limit upstream and downstream traffic. It offers IEEE 802.1p Quality of Service (QoS) and IPv4/IPv6 DiffServ. It also offers full VLAN (IEEE 802.1Q) support, including double tagging (Q-in-Q – IEEE 802.1ad).



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