

Date: October, 2nd, 2008

It's the busy time of year for the industry again - with a number of key events in the past few weeks and some very important vendor announcements.

Views on the News

Nokia Siemens Networks as we anticipated has leveraged its key acquisition of **Atrica** to good effect in the Carrier Ethernet Transport market. They have made a number of announcements around Carrier Ethernet World Congress, including their testing of 100G with **Verizon**, the **new A-2200 switch**, and technology enhancements to the Atrica portfolio. But we think the biggest news is the test results they have achieved with partner **Symmetricon** for their 1588v2 implementation, and in particular NSN's strong innovation in mobile backhaul applications and opex. NSN is showing leadership in driving stronger and more meaningful integration of cellular radio technologies and transport at the cell site in ways that provide operators with stronger opex optimization, particularly as it completes some of its current development projects in microwave.

NSN's "**zero footprint**" solution has been a strong differentiator; rather than deploying cellular radio equipment in racks within the cell site hut, they have hardened equipment that mounts in enclosures to the outside of the hut itself...providing savings in air conditioning and rack space requirements. NSN will also offer a Flexi packet microwave solution to complement hybrid microwave offerings and provide a solution cost-optimized for all-packet links.

What is particularly interesting is NSN's plan to offer microwave that connects the ODU directly to a feature-rich Ethernet switch over electrical GbE, eliminating the need for a separate IDU (effectively integrating Carrier Ethernet features with microwave IDU functions).

We discussed this type of integration in the microwave and access alternatives section of the last update of Telecom Strategy Partners' Mobile Backhaul service, identifying it as a key emerging trend and potential source of differentiation for Tier

1 operators that have their own cellular infrastructure - and think NSN is on the forefront here and will force other vendors to respond in 2009.

The A-2200 is also targeted at Enterprise requirements, and is deployed in collector rings and in MTU basements in conjunction with access platforms in the solution like the A-100 and A-210.

NSN's Atrica portfolio supports synchronous Ethernet and the ASPEN NMS end-to-end, and leverages the new A-2200 switch. Multiple A-2200s can sit on a 4 Gbps packet ring, and the A-2200 supports Y.1731 OAM, G.8031 protection, and 802.1ad provider bridging.

Nokia Siemens Networks is working also on their [next gen access solution](#) now - having foregone GPON development. NSN positions that GPON is going to be a too short-term development opportunity, and is working on a passive solution that will provide 100G to the home. NSN took the LIFO strategy to GPON...they were very late to enter the market, then decided to exit because the technology had such a short window of opportunity! But this time, they are taking a much more proactive approach in an attempt to be among the first on the wave of the next generation of access technologies. If NSN is right, we could transition from FTTC deployments and FTTH in North America to wavelengths dedicated to the home.

In the short-term, [FTTN/FTTC solutions are hot](#) - with upgrades to ADSL2+ continued and those for VDSL2 ramping up. **Alcatel-Lucent** announced a 3-year deal with **KPN** this week for FTTH and VDSL2 Fiber to the Node (FTTN) solutions (the 7302 ISAM and 7330 ISAM FTTN). With respect to the economy, we think the rate of FTTH builds could potentially be impacted by the economy.

Nortel's announcement that it will divest its Metro Ethernet Networks and Optical groups surprised the industry - more for how it was done than for whether it was really necessary. Why was it announced? It seemed to be an open invitation for operators to defer making further investments in Nortel equipment pending Nortel finding a new home for these divisions. They could have shopped around for a buyer without doing that. Maybe they thought openly discussing it would appease Wall Street concerning Nortel's overall direction? Or that it would cause more personnel to seek opportunities elsewhere, reducing the potential number and cost of any potential severance packages? We have no idea, but wish them the best of luck in finding a new home. Nortel has had some significant engineering expertise in optical over the years in particular, did a good job with the 6500, has developed some

strongly innovative Long Haul technologies recently, and in addition to its own accomplishments served as a training ground for many of the industry's startups.

We guess this decision to have been more of a board-level move. Nortel has been making some strategic longer-term product investments lately, in hopes doing so would help it reassert its former dominance areas like long haul transport by giving a strong migration path from 40G to 100G - and was showing some very positive signs with that. And Nortel had foregone 3G development to pursue LTE - a high growth area but one that could have little short-term payoff. Unfortunately this strategic development involved short-term expense to create longer-term revenue opportunity, and Nortel has not had very deep pockets to fund this gamble unless spending was strong. They probably were not expecting the degree of impact of the U.S. economy on spending in the home region. Nortel will be looking for buyers. The degree of overlap with established telecom vendors will be one of the factors making a sale to them a big challenge, but we expect they will be shopping these groups around in venues outside of traditional telecom vendors as well.

Speaking of access technologies, [ADVA has announced WDM PON and is positioning it as a new strategy for FTTX](#). BT brought the topic of WDM PON to the forefront of discussion a couple of years ago, based on their interest in consolidating the number of central offices enabled by its distance capabilities. But it was much too early cost-wise for WDM PON then. But a lot has happened technology-wise since then, and the time to start developing solutions for future deployment may be at hand.

[ADVA's](#) new Flexible Remote Node (FRN) is being rolled out in the portfolio as an extension of the ADVA FSP 3000, offering WDM PON over distances of 100 km or more to combine WDM technology for both the access and backhaul network, enabling traffic separation based on wavelengths to enhance security and scalability. It can be deployed as a purely passive device at the curb, or can be deployed at street cabinets where they can be combined with Ethernet switching for aggregation or optical amplifiers to extend reach.

Advertising has been a hot issue - with [Ericsson](#) having announced an important milestone this week - signing its first hosted mobile advertising contract with [KPN](#). Advertising is critical to mobile operators, and it is smart for infrastructure vendors to focus on it - because advertising revenues may well be a critical factor in proving in the business case for some mobile broadband services. Innovations in advertising

format and design will no doubt also be required, but that can be left to the advertisers themselves. Ericsson is not the only Tier 1 vendor pursuing this area.

Ericsson also recently opened a new Global Service Delivery Center in Pakistan. Ericsson's focus on emerging markets is interesting to watch. We think the emerging markets rather than "catching up" to the networks in more established regions will have opportunities to simply follow very different evolution paths - and that this is going to represent significant services opportunities in addition to the opportunity for infrastructure.

The **IETF** and **ITU** dispute over **T-MPLS**, and the subsequent replacement of that standards effort with **MPLS-TP**, has been causing some controversy. Those with a huge stake and investment in MPLS like Alcatel-Lucent are positioning T-MPLS as a stepping stone to MPLS-TP and a great learning experience to prepare them for it and making the transition will only be a software upgrade in future.

If they can convince operators to deploy T-MPLS, then development on that technology will not have been a sunk cost, and this potentially increases the marketability of new platforms offered that include the option of T-MPLS support. But if operators decide to wait for solidification of the MPLS-TP standard, then that could introduce some potential delay in sales. So there is a lot at stake here. Alcatel-Lucent will have to convince operators that the T-MPLS to MPLS-TP transition is really going to be easy, despite the fact that the MPLS-TP standard still has a long way to go.

We've seen recent statements from the press supporting the concept that T-MPLS is just a natural stepping stone to MPLS-TP. We think that in fact there are really more substantive changes involved in MPLS-TP than this, and that the benefit will to the market ultimately will be a strengthened standard offering better OAM / interoperability with MPLS. The cost, of course, is not having earlier availability of a fully standardized transport-focused "MPLS lite" such as T-MPLS had promised.

Operators might gain some experience from deploying T-MPLS. But we think they will carefully weigh the cost of taking on that learning experience, and be far more willing to consider doing so if the vendors suggesting it see to it that the operators themselves do not end up having to incur much extra software cost to make the ultimate transition to MPLS-TP when available.

Alcatel-Lucent announced an expansion of its packet/optical transport platforms, including the commercial availability of T-MPLS for the 1850 TSS-320 plus several enhancements to the 1850 TSS product family.

Enhancements announced included:

- **1850 TSS-320/160, Release 3**, Alcatel-Lucent announced the availability of a new compact chassis version of the TSS-320 (the 1850 TSS-160), the support of T-MPLS, lower order switching (VC12/VT1.5) for additional network flexibility, and enhanced Ethernet OAM - 802.1ah Ethernet in the first mile and 802.1ag, connectivity fault management.
- **1850 TSS-100, Release 3**, the availability of the first release in the ETSI market, lower order switching, EFM, and enhanced Ethernet OAM
- **1850 TSS-40, Release 3**, the availability of 10G trunking, aggregation of STM-1/STM-4 access rings and TDM support
- **1850 TSS-5, Release 5.0 & 5.1**, the availability of increased port density for TDM, TDM/CES and Ethernet, some resiliency enhancements and enhanced Ethernet OAM - with MEF certification promised on the roadmap.
- **1850 TSS-3, Release 2**, the availability of new hardware model variants, including DC power, resiliency enhancements and enhanced Ethernet OAM, in particular the Hardware-based Y.1731

The broadening range of available models is a competitive advantage for Alcatel-Lucent, though we are not yet sure how successful the company will be in getting operators interested in T-MPLS as a migration path to MPLS-TP, particularly given that T-MPLS is available only for the 1850 TSS-320.

Alcatel-Lucent has stated that more than 10 large operators are trialing its T-MPLS capabilities, so we wonder if those potential customers are interested in T-MPLS only for the core part of their network and to which extent this will fit with the migration to the new technology.

Of course, the final decision is in the hands of the operators, and those operators that have been interested in potential T-MPLS deployment as a learning experience, can consider negotiating with the vendors to ensure that there is no undue expense or risk to the operator associated with undertaking this learning process while waiting for the MPLS-TP standard to mature.

Alcatel-Lucent also rolled out enhancements to its Triple Play Services Delivery Architecture (TPSDA) this week, effectively a "2.0 release on an architecture" - a move designed to help operators insert local or community-driven advertising into programming, support fast channel changing, and support the roll out of Alcatel's new **Targeted and Interactive IPTV solution** which was rolled out this week.

Alcatel-Lucent already has an installed base of 55 TPSDA deployments to sell into in addition to new market opportunities.

Fujitsu Telecommunications Europe has announced availability for the European market of the Flashwave 9500 Packet ONP. This converged packet/optical transport platform incorporates a switch fabric that allows both SDH and packet-based traffic to be switched and managed in **native format**, without any circuit emulation penalties (as does the Alcatel-Lucent 1850 TSS).

Important features include:

- Connection-oriented Ethernet transport in the form of **PBB-TE**, while MPLS-TP can also be supported if any customers request it.
- Plug-in ROADM-on-a-card
- High density multi-service, multi-rate TDM interfaces.
- 40 Gbps/100 Gbps-ready ROADM in one-quarter of a shelf.
- 480 Gbps TDM or packet bandwidth in only one-half of a rack.

In spite of the good traction obtained with the Verizon contract, Fujitsu is quite late in the European market, as rival optical vendors (particularly Alcatel-Lucent) have been proposing this class of platform to European carriers for years. Moreover the Flashwave 9500 platform won't be available for lab trials until the first quarter of next year, with **general availability** by the **second quarter of 2009**.

But we think Fujitsu is missing the boat on its entry into the European market given its availability of only a single, large 480 Gbps version. The installed base of SDH in Europe that operators are slowly migrating away from as they increasingly embrace packet technologies still has tiered layers of aggregation - and the introduction of the Flashwave 9500 into Europe on its own - though a very competitive platform in many respects - in this region seems early. If Fujitsu is finally becoming serious about the European transport market, we expect they will have to follow this announcement up with more development and the availability of a greater, more cost-optimized portfolio.

RAD announced its new **LA-210 DSL Network Termination Unit**, part of RAD's EtherAccess® product suite that leverages SHDSL.bis technology. It is targeted at letting service providers leverage LLUs where available, using wholesale DSL services over both ATM and IP DSLAMs as the access technology for delivering EPL and VPL services with multiple EVCs to customers not served by fiber over Layer 2. The platform operates in VLAN-unaware bridge mode or can support VLAN tagging and QinQ stacking, provides smart Ethernet demarcation, and is hardware-ready for future support of service emulation using pseudowire to provide support of E1/T1 services over Ethernet.

The LA-210's smart Ethernet demarcation capabilities enable carrier-grade management of differentiated services and SLA performance guarantees with enhanced QoS and automated, proactive monitoring over the entire service path. Advanced monitoring and diagnostic tools reduce operating expenses. Offering maximum flexibility, it can operate as a VLAN-unaware bridge or in VLAN-aware mode with VLAN tagging and VLAN stacking (Q-in-Q) attributes.

The LA-210 is also hardware-ready to support pseudowire, which it will be able to do with a simple software upgrade. This will allow the LA-210 to extend E1/T1 over Ethernet as well.

The economy is on thin ice right now. Were it not for the housing crisis in the U.S., things would be OK soon enough. But the U.S. government bail out of errant financial institutions will simply rob future economic prosperity to subsidize increased prosperity (*defined as a less painful down cycle*) now. It may have been necessary, but it was far from ideal. The theoretical differentiation between the U.S. government from admittedly socialist countries decreases once again. Did we learn nothing from the bust of the telecom bubble? Given all the expense dedicated to government oversight, it would be nice to see some payback and accountability for market oversight.

We liked Alcatel-Lucent CMO Tim Krause's recent statement about the housing crisis and its impact on the economy, which he made in opening remarks at their recent analyst conference in Orlando: "At least it was not us this time." (Meaning at least it was not the *telecom industry* that dragged down the market).

Nonetheless, while telecom may not be at fault, the fact that the government allowed the banking industry to replicate the kind of dangerous gold rush mentality of the telecom bubble such a short time afterwards was truly amazing

- as is Alan Greenspan's apparent interest in serving as an expert commentator on how we should get out of a situation that not only *arose under*, but was *encouraged by* the government under his watch at the Federal Reserve. Looking tongue-in-cheek at the bright side, there may be some good economic opportunity now as a result: builders can consider turning the large number of 5,000 square foot (roughly 520 square meter) mansions that were built for owners that could never have afforded the mortgage payments into multi-tenant apartments (flats) for 4 or 5 tenants. Once interest rates rise in future, there will be a glut of housing in this stratum on the market - and not enough buyers qualified remaining to purchase them. And that is going to prolong the housing slump, and make it difficult for the government to repay all this bad debt that they have acquired as an "investment". In a global economy, this will have some impact on us all.

Consolidation will accelerate in a down economy, and we still are facing an uncertain economic future in the coming year. We think the economy will simply hasten the same process of consolidation that was already coming, affecting the same vendors for the same reasons, just reducing the amount of opportunity in terms of the amount of time that these vendors have left to figure out (and develop) their way out of their current situation.

Questions / comments /

Want to schedule a meeting in Paris, Research Triangle Park, or an upcoming conference?

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