June 28, 2007

Monthly Update

An investment publication with a focus on Telecommunications, Technology, Industrial and Small Cap stocks.

By Ted Moreau, CFA

NXTcomm Telecom Trade Show - June 2007

Welcome!

On June 19th - 21st, The Cardinal Group attended the NXTcomm telecom trade show in Chicago. Over the course of the show we had a chance to walk the show floor and meet with various corporate management teams in the communications equipment space. Companies visited include: ADC Telecom (ADCT), Alcatel Lucent (ALU), Adtran (ADTN), Aware (AWRE), Ceragon Networks (CRNT), Ciena (CIEN), Ditech Communications (DITC), Tellabs (TLAB), Tekelec (TKLC), and Tollgrade (TLGD). Our investment opinions are highlighted in parenthesis and reflect our views on the stocks after the meetings.

While the show seemed to administer a somewhat lack of industry energy through what appeared to be lower attendance levels, several notable themes emerged. Themes included the continued push towards IP-centric networks, specifically IPTV / video content and the convergence of services. While IPTV has been an industry topic for several years and has been tempered by integration challenges and quality assurance concerns, the industry appears poised to make more of an impacting mark on the U.S. market. As end users now have several options for their TV experiences, telco carriers need to be assured that the users experience will not be compromised relative to expectations or face a losing battle with the cable companies. In summary, many of the new product (and product upgrade) announcements at the show are intended to expand capacity / bandwidth in order to support carrier IPTV / video services.

Other notable technology initiatives supporting the bandwidth expansion for video thesis were:

- Wireless backhaul
- Broadband Wireless - WiMax
- VoIP
- FTTx / GPON
- Carrier Ethernet services for Enterprise
- Optical Transport / Switching

ADC Telecom (ADCT): Investor expectations heightened - $18.90 (Neutral)

- Since ADCT recently announced earnings, we have no material update for the July quarter. We believe guidance remains conservative due to the lack of clarity at AT&T, relatively flat spending by Verizon, and the international regulatory environment, but is likely incorporated into investor expectations.
- At the show, ADC announced a partnering agreement whereby Novera Optics will deliver a new access transport platform based on Passive Optical Network (PON) and Dense Wave Division Multiplexing (DWDM) technologies, likely the next technology after BPON and GPON. The product aims to provide cost-effective access to the enterprise over a shared network infrastructure without sacrificing security or limiting bandwidth.
- From a top line guidance perspective, the company previously maintained that there are a few things in 2007 that represent large incremental opportunities due to timing; including a BellSouth related spending recovery. To give a more illustrative impact of customer delayed spending, in 1H07, Verizon was up 11% y/y, AT&T (less BLS related) was up

69% y/y, BellSouth was down 29% y/y and Cingular down 73% y/y. Regarding Verizon, management remains cautious in an expectation to return to traditional deployment seasonality, with any upside to be positive upside to outlook, but again is likely baked in to current investor expectations.

- ADC recently posted healthy gross margin of 34.5% in the MRQ, which came in well above expectations. Elevated gross margin was mostly driven by the increased sales figures and product mix with some assistance in corporate supply chain initiatives such as consolidation of logistics and distribution networks and the transfer of manufacturing to lower cost operations in China, the Czech Republic and Mexico. We believe cost savings initiatives will begin to materialize and offset potential pricing pressure from larger customers and competition in the industry.
- Acquisition opportunities remain available, but will not lead to a huge company transformation in the near term (as the Andrew transaction would have) and it doesn't appear large scale discussion opportunities are taking place at this time. The company appears more focused on competitive cost transformation initiatives internally and smaller acquisition opportunities (important as valuation may have been compressed due to previous Andrew attempt), which could translate to margin growth. Larger scale acquisitions appear unlikely in the short or intermediate terms. Within the international scope, areas of interest include opportunities to provide more access to channels in China whereby management continues down that path to explore those opportunities, but is treading carefully in that direction.

Alcatel-Lucent (ALU): Highlights End-to-End Triple Play Service Delivery Architecture: $13.95 (Neutral)

- Notably, on June 12th, Alcatel-Lucent hosted its Capital Markets day in which it reiterated its 2007 revenue guidance to grow in line with the carrier market. After a weak March quarter, this suggests fairly strong sequential growth for the remainder of the year largely driven by the Enterprise and wireline segments.
- The Alcatel-Lucent Analyst meeting at NXTcomm focused around service providers offering blended services rather than bundled services. Bundling reduces churn, but also results in lower ARPU. Blending services reduces churn while offering premium-priced services enabling the service provider to maintain ARPU.
- To offer blended services, Alcatel-Lucent highlighted their Triple Play Service Delivery Architecture, which largely consists of platforms from the original Alcatel business. The company noted early stage GPON and VDSL2 activity, which follows the recent announcement by AT&T that it will deploy GPON FTTP gear from Alcatel-Lucent and Ericsson (Entrisphere acquisition) in greenfield opportunities (keeping FTTN architecture from Alcatel-Lucent in brownfield opportunities however).
- Many of Alcatel-Lucent's announcements at the show revolved around this Triple Play Service Delivery Architecture including new functionality and capacity for its fiber platforms, and capacity enhancements for its LambdaUnite optical cross-connect switch and 1850 Transport Switch (which includes ROADM capabilities).

Ceragon Networks (CRNT): Compelling Growth Story - $11.39 (Favorable)

- Ceragon is a pure play in wireless backhaul, with the driver being the shift of the cellular backhaul network towards IP. Carriers spend approximately 15% of their capex budgets today on wireless backhaul, which is expected to rise to 25% as wireless Internet and video applications increase, resulting in greater demands on wireless bandwidth.
- Ceragon conducted a very well attended analyst presentation by both the buy-side and sell-side, especially considering the market cap is below $300m and trading volume is relatively light. The company is clearly a growth story generating significant investor inter-

est stemming from their position in the wireless backhaul market.

- CRNT is also benefiting from the migration to all-IP networks, which is beginning to grow, and broadband connectivity via WiMAX. A modest amount of today's revenue can be attributed to the IP backhaul opportunity, which Ceragon sees growing to 60% or 70% of revenue in the 2010 - 2012 timeframe.
- Microwave ethernet wireless backhaul driven by high capacity SONET / SDH supporting data traffic. SDH is a major growth driver today in emerging markets through new infrastructure build-outs and subscriber growth. Longer term, IP-centric growth opportunities in developed economies for 3G applications driven by data and mobile networks will provide future growth. The company notes APAC is the fastest growing region.
- CRNT highlighted their addressable market is anticipated to grow from $1.5 billion in 2006 to $3.5 billion in 2010. The bulk of that growth will come from the deployment of mid and high capacity Ethernet in the network, which is more efficient at delivering data services. According to market research firm Infonetics, Ethernet backhaul is expected to be 62% of the network by 2010.
- CRNT targets 50% of sales through OEM channels. Their largest relationship is with Nokia Siemens.
- Company expects 2007 revenue up 30% y/y, with growth contributions from emerging markets and the APAC region. Q107 revenue was $34m and EPS was $0.10. In the medium term, Ceragon sees Enterprise sales growing at a slower rate than Carrier sales.
- In the U.S. market, carriers are looking for differentiating services such as mobile broadband data and video. As the market is highly competitive, service providers must add extra services that stress the networks, especially backhaul requirements.

Ciena (CIEN): Interesting end markets, margin recovery likely, valuation elevated. - $36.70 (Favorable)

- The CN4200 has been available for 18 months and has generated strong customer interest, including deployments at BT (in the UK). At the show, Ciena introduced a larger scaled version of the CN 4200 capable of handling multiple applications, following one of the themes of the NXTcomm tradeshow as vendors introduced products with greater capacity as carriers will need to add bandwidth to support their video offerings.
- International customer contracts are more complicated, resulting in more lumpy revenue recognition as exhibited by sales to BT. As the company pushes for more international exposure this may become continually more material to quarterly fluctuations.
- The recent gross margin issues in the services segment stem from one large customer in Europe that switched project sites. Ciena was committed to expenses, but did not recognize related revenue. The deferred revenue impact is expected to continue over the next several quarters. After which, management expects services gross margin to return to the 15% level, more similar to historical periods.
- Over the past several years, management has been addressing cost cutting measures in response to aggressive pricing by Chinese companies. The company appears to exhibit a more flexible cost structure to compete through outsourcing of any relative commodity operation and has moved manufacturing and some engineering to low cost regions such as China and India. It does not appear that telco consolidation has impacted the pricing environment through expected concessions from larger customers. The existence of OEM consolidation actually presents an environment more favorable as customers desire multiple source suppliers.
- Ciena has made several acquisitions over the last 5 years and still appears to have some integration work yet to do. Ciena probably will not target large scale M&A activity in the next 12 months as the company doesn't want to hinder its progress of reaching 10% operating profit margins (targeted for the July quarter), although may consider smaller bolt-on opportunities with quick accretion.
- Company benefits from cable, telco (tier 1, 2, and 3 carriers), and enterprise (often bundled into telco) spend. Ciena is agnostic as to cable vs. telcos as they maintain similar “last mile” networks. Non-telecom markets are growing rapidly, but Ciena has a far lower

installed base there.

- Convergence of technologies is a major theme for Ciena, which is benefiting from the shift to more mesh networks vs. point-to-point, a move that's largely the result of carriers adding more services to their offerings.

Tellabs (TLAB): Still awaiting clarity surrounding Cingular - $10.91 (Favorable)

- Large cash position ($1.3 billion), which we believe could likely be used for a niche acquisition or more likely a significant share repurchase program, possibly in Dutch auction format. Could be larger than programs in the past and likely a possibility by the end of 2007. Despite a favorable interest rate environment, we believe its unlikely that future borrowings would be used for further repurchase activity. We note TLAB has repurchased $0.5 billion in stock over the past two years.
- Margins appear to be stabilizing and any recovery associated with AT&T / BellSouth / Cingular could likely begin in Q3 or Q4, although clarity at Cingular remains more difficult than at BellSouth. Any recover with Cingular will likely benefit Tellabs' higher margin products, which include the 5500 cross connect and 8800 routers.
- New 7100 Nano optical transport system will have better margins and lower cost than the original 7100 ROADM. The smaller 7100 will be available in Q4. The larger product version is deployed in Verizon with a significant amount of deferred revenue to be recognized in the June quarter at 0% gross margin. But the smaller 7100 likely is more applicable to a larger customer base with more flexibility. The 7100 Nano maintains 2 degrees of wavelength switching (up to 8 with larger product), which is similar to three-fourths of ROADMS deployed today according to Current Analysis.
- Tellabs wireless backhaul opportunity has largely rested with their 5500 cross connect in the U.S. to date, although Cingular splits off data traffic with the Tellabs 8800. As Ethernet is deployed out to the base station, Tellabs will push their 8600 and 8800 products, but carriers transitioning to Ethernet will take a long time as at least 90% of the base stations in the U.S. are connected via copper T1 lines. We note the international wireless backhaul opportunity utilizes the Tellabs 6300 and 8100.
- Tellabs data products (8600, 8800) have more traction in international markets than in the U.S. and the 8600 is gaining momentum. The data products have stronger gross margins.
- Tellabs targets increasing international penetration, which will result in lengthening DSO's
- Longer term Tellabs could return to 50% gross margin (low 40% now) and 20% operating margin and targets 15% annual growth, although achieving the strong growth could be difficult due to the highly competitive industry. More aggressive investors appear to be buying the stock due to a prospective buyback program, expected capital spending recovery (especially Cingular) and related margin recovery or even a potential buyout.

Tekelec (TKLC): More favorable longer term - $14.69 (Neutral)

- Products deployed in more than 300 networks around the world serving more than 1 billion telephone customers. Focused on signaling equipment, with majority market share in Americas and significant global market presence (54% revenue in North America MRQ). Focused on session control and subscriber management through low latency and high transaction applications. Focused on a seamless transition to IMS networks, which is likely 1 – 3 years away. Company believes IMS (IP Multimedia subsystem) adoption will occur through a transitional strategy based on the control layer.
- Overall business grows mid single digits, but we believe margin improvement is the larger story.
- Market drivers are more focused on wireless still than wireline applications. Overall factors pushing signaling growth include growing global wireless subscribers, increasing

MOUs (Minutes of Use), increasing text messaging and new applications and Number Portability. There are a few upcoming number portability mandates including India, China, and Brazil, but the international opportunity won't be as large as the US has been. We believe transition to mobile Internet and video is a significant phenomenon as the number of signaling transactions to download a web page is 10x that of a 2G voice call. 3G wireless applications have approximately a 5% global penetration presence today. As penetration increases, signaling traffic increases significantly and maintains a volume driven model.

- Favorable longer term, but more neutral in the short term. Book to bill ratio currently less than 1, but looking to exceed in the coming quarters. Backlog driven business, so revenue recognition provides material impact to quarterly results. Backlog TO is generally within 1 year, but could be as short as 6 months or as long as 18 months depending on product. Expect lumpiness going forward. Under the residual method of accounting, the company expects revenues and DSO will be volatile.
- Sigtran pricing remains a headwind, but management believes likely near a bottom in pricing environment. Signaling volumes continue to grow so we look for stabilizing Sigtran pricing to benefit the top line.
- Restructure of company completed including the divestiture of the previously acquired softswitch businesses totaling $500m ($250m acquisition price plus $250m loss). Sold to General Bandwidth for a 20% ownership interest in the company and $1 million in cash. Tekelec won't shy away from future acquisitions, but they will likely target the software area. We also note lofty valuations are causing Tekelec to be patient.
- Remaining business SS7 Signaling maintains 55-60% gross margin from 75% chassis and 25% software applications. Tekelec is shifting R&D resources towards software development, resulting in increased software on their products and improved gross margins, although this might not be reflected until 2009 due to timing of shipments of potentially newer, higher software content platforms. Hope to improve margins from recent 12% operating margin to longer term in the 20% area. Although, likely several years away.

Tollgrade (TLGD): Compelling opportunities offset by project timing issues. - $10.60 (Neutral)

- Our meeting was a bit of a mixed bag during the show as TLGD negatively pre-announced revenue and earnings for Q2. The company expects results near the low end of both the revenue range $15m - $19m and EPS range $0.07 to $0.19. The disappointment was caused by international project implementation issues extending from Q1 that were expected to be resolved in Q2. It is unclear when this issue will reverse. As we have stated in the past, investors should be prepared for wide quarterly fluctuations with TLGD as disappointments have occurred several times in the past.
- On a more positive tone, the expected closure of the Teradyne business unit acquisition importantly provides initial entry into a strong European carrier base (includes BT, Deutsche Telekom, KPN, and others). Expected to close in Q3 and be accretive for the year with the addition of possibly $10m in revenue.
- TLGD is in the service assurance business, which becomes increasingly crucial to quality of service differentiators between competitive telephone and cable operators. New product introduced at NXTcomm includes the Digitest ICE. Easy to deploy and placed in the FTTN site or cabinet, which is close to the end user and allows for accurate real-time monitor of service experience. Simply, as triple play services complicate networks, subscribers will continue to remain intolerant of a comprised TV experience and testing becomes evermore crucial.
- TLGD maintains a cost effective IP Triple play product by prevailing to more compact test head solutions located at a remote FTTN site inside the DSLAM cabinet. Traditional test heads are not able to meet requirements of FTTN access points as they do not fit in smaller cabinets and do not meet more stringent ROI requirements of dedicated sites.
- TLGD has historically had a solid relationship with AT&T. TLGD isn't currently designed

into the carrier's FTTN project, but typically the network has to be built with subscribers ramping for TLGD to benefit. Additionally, TLGD introduced a new WiMAX solution for cable companies, but was not at the show.

- Still seems likely TLGD can earn $0.50 target for 2007 despite poor project related performance in 1H. Cash position remains healthy post acquisition.

Adtran (ADTN): Valuation reasonable, but visibility always a challenge. - $25.77 (Neutral)

- Overall, the company's business prospects remain very challenging to predict as visibility is very low. At the analyst session, management did not provide any additional color surrounding resurgence in customer spending, though potential for resurgence at AT&T remains intriguing. It sounded as though larger tier 1 spending opportunities will be more pronounced in 2008.
- Announced three new products at NXTcomm, but do not expect related revenue impact this year. New product introductions appear to demonstrate cost saving solutions for carriers and include:
  - Total Access 5006 (expected rollout in Q3 and additional features rolled out by year-end)
  - Total Access 1124P (expected rollout in Q4) - the 1124P is a flexible solution aiming to bring voice and DSL to remote areas without the costs associated with additional enclosures.
  - New applications for the Total Access 5000 multiservice access platform in Ethernet over Copper and Ethernet over TDM.
- The TA 5000 as an Ethernet over Copper solution allows carriers to leverage installed infrastructure to reach more of the network, essential for the addition of triple play services. This is a promising opportunity for Adtran, but will take time to play out. More generally, success for the TA 5000 to date has largely been with tier 2 and 3 carriers, while management sees the tier 1 opportunity ramping in 2008, which are anticipated to be much larger.
- The TA 5006 maintains all the functionality of the TA 5000 series, but in a smaller platform and has been enabled for retrofit of existing cabinets. TA 5006 competes with and is an upgrade to Advanced Fibre Communications' (now Tellabs) product aimed at independent telcos. Adtran believes this market may have lost attention as Tellabs focused more on Verizon. The product supports a wide range of applications and aims to reach lower-density service areas with triple-play services.
- In optical, the majority of deployments at AT&T are for cellular backhaul, a growing opportunity. Adtran noted recent enthusiasm over the wireless backhaul opportunity for fiber.
- Expect return to 25% operating margin (just under 20% area in MRQ due to lower sales volumes). Although, Q1 is typically a seasonally weak period.
- ADTN sees the greatest opportunity in S. America and Asia via its 5000 and 1100 series products. We anticipate rising DSO's and potentially lumpier revenue recognition as a result.
- Maintains over $4 net cash per share, which likely will be used for additional stock buybacks. Adtran repurchased 7.4 million shares in 2006, or approximately 9% of outstanding shares. Adtran also targets potential niche acquisitions, but we view activity as unlikely.

Ditech Networks (DITC): Potential drag on margins when sales shift to PVP, awaiting new product announcements over the summer. - $8.35 (Neutral)

- Ditech generated $22 million in sales for the April quarter, with approximately 80% of sales attributable to Verizon Wireless. Orascom largely drives international sales.
- Ditech sales are dominated by an echo cancellation product (assists with clarity and removes background noise during a call) fueling 70% company wide gross profit margins in the April quarter. Ditech has recently released, and is now shipping in low volumes, its Packet Voice Processor (PVP) product, essentially a next generation echo cancellation product for IP networks. Initial deployments of the PVP will likely carry lower gross margins, although Ditech believes future releases of the product adding functionality will return gross margins closer to their current levels.
- Shipments of PVP are largely dependent upon VoIP (Voice over Internet Protocol) subscriber uptake, which we see as a growing business, but question the timing of a more meaningful ramp. Notably, the PVP can be configured for Cable VoIP opportunities as well, where we have much more confidence in subscriber uptake. Unfortunately, we are unaware of any cable penetration by Ditech at the moment. A recent win for the traditional echo cancellation product at a US wireless carrier gives confidence Ditech's traditional revenue stream can remain stable while waiting for new PVP products to ramp up. PVP sales in fiscal 2008 should be material.
- July quarter revenue guidance is $21 – 22 million.

Aware (AWRE): Contract dispute holding back shares. - $5.36 (Neutral)

- As we have stated in previous notes, royalty revenue at the end of last quarter was artificially low due to a contractual disagreement with one of Aware's customers. We believe this is a significant contributing issue that is currently restraining share value. The issue is not a renegotiation in contract, but a disagreement around the appropriate royalty amount on a specified and significant number of units already shipped. Additionally, management stated that size is difficult to determine and that these contracts can be very complex, but believe they are close to reaching an agreement.
- Importantly, management does not plan on any type of mid-quarter announcement surrounding any contract resolution, but expects resolution in Q2 and continued uninterrupted business with the customer. Management did not give an indication at our NXTcomm meeting as to any resolution, but appeared that the issue either has or would be resolved shortly.
- Interestingly, Aware demonstrated interoperability between various industry-leading VDSL2 DSLAM central offices (CO) and a customer premise equipment (CPE) device. The demo featured an Aware based customer premise equipment (CPE) platform interoperating with three different DSLAMs, each utilizing a VDSL2 chipset from a different supplier. Before Aware's demonstrated interoperability solutions, the DSL related chipsets needed to be deployed from the same manufacturer on both the CO and CPE sites, which can now be used with competing manufacturers and reduces complication for interchangeability in the future.

758 N. Broadway • Suite 1224
Milwaukee, WI 53202

Phone: (414) 228-4630

Email:
tmoreau@cardinalgroupllc.com
cmoreau@cardinalgroupllc.com
tm@cardinalgroupllc.com

Please visit our website:

www.cardinalgroupllc.com

Biography

Theodore J. Moreau, CFA-Principal
Ted Moreau was previously Robert W. Baird's Senior Analyst covering Network Technology (1985-2005). Ted has been nationally recognized by the Wall Street Journal and Institutional Investor Magazine. Ted was named to the Wall Street Journal "All-Star Analysts Team" in 1994, 1996, and 1997. He was honored by Institutional Investor Magazine as a "Home Run Hitter" in 1994. Ted was also named to the Institutional Investor's regional "All-American Team" in 1997. He received a BBA and an MBA from the University of Wisconsin-Madison.

Charles R. Moreau, Associate
Charles Moreau has over three years experience in the securities industry and is a candidate in the CFA program. He started his career at Robert W. Baird & Co. as part of the Equity Capital Markets Group. Charles has a degree in Finance from the W.P. Carey School of Business at Arizona State University.

Ted J. Moreau, Jr., Associate
Ted Moreau has over six years experience in the telecom industry. He started his career at Artesyn Technologies, later acquired by Emerson, as a telecom equipment market analyst. Ted has a degree in Finance from the University of Wisconsin-Madison.

Disclosure

The Cardinal Group LLC is an independent research, investor relations, and institutional portfolio consulting and research company providing a suite of services designed to enhance value of under-followed smaller capitalization companies for shareholders and portfolio managers.

Cardinal Research LLC is an independent research and institutional investment consulting company specializing in several key industries and focusing primarily on medium, small and micro capitalization companies. Cardinal Research provides a variety of services, including a number of research initiatives. Essentially, Cardinal Research includes any research originally emanating from its affiliate The Cardinal Group LLC including research on its corporate investor relations and independent research clients. Additionally, Cardinal Research provides industry research and consulting, primarily for corporate entities in the telecommunications industry.

The senior research analyst certifies that the views expressed in this research report and/or financial model accurately reflect such senior analyst's views about the subject securities or issuers and that no part of his compensation was, is, or will be directly or indirectly related to the specific recommendation or views contained in the research report. The Cardinal Group, LLC may be compensated for its research by individual companies mentioned and in some cases recommended in this report. The Cardinal Group LLC may have a position in and/or may act as an investment banker or advisor to such. This is not a complete analysis of every material fact regarding any company, industry or security. The opinions expressed here reflect our judgment at this date and are subject to change. The information has been obtained from sources we consider to be reliable, but we cannot guarantee the accuracy.

This material and any information from its use is provided for informational purposes only and should not be regarded as a solicitation of an offer to buy the securities mentioned in it. No representation is made that any returns will be achieved. Past performance is not necessarily indicative of future results. This information is subject to change without notice. The securities mentioned may not be eligible for sale in some states or countries, nor suitable for all types of investors. The Cardinal Group LLC does not warrant the accuracy, completeness, reliability, fitness for a particular purpose or merchantability of this information. The Cardinal Group LLC shall have no liability for the use, misuse, or distribution of this information to unauthorized recipients. This material is strictly for specified recipients only and may not be reproduced, distributed or forwarded in any manner without the permission of The Cardinal Group, LLC.