GILDER
TECHNOLOGY
REPORT

NetLogic's Coming CAM Summer

NetLogic design wins are mounting for second-generation CAMS, enabling 40 Gig networking for voice, IPTV, mobile multimedia, peer-to-peer networking, and IPv6 systems.

"**George**, what happened to your dumb network?" Nick asks in a kind but plaintive tone.

I am with our Silicon Valley editor Nick Tredennick at a Linley Group tech seminar on "Programmable Devices for Network System Design" at the Santa Clara Marriott and the PowerPoints are filigreed with schematics as the complexities mount in a combinatorial explosion up and down the software stacks and hardware cores of routers and switches and combo boxes and multi-service platforms. Coffee consumption soars. Everyone wants a programmable synaptic accelerator to keep up with the double data rate acronyms on stage. All we hear about is intelligent processing, knowledge bases, real-time pattern hashes and regular-expression matches in the midst of a network from Mensa.

Motivating much of this imbroglio of network intelligence is something called "security." Security functions proliferate at layers two, three, four and seven in the standard seven-layer network model (with physics at layer one and applications at layer seven). **Cavium** and **Raza Microelectronics** contest

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FEATURED COMPANY: Anadigics (ANAD)

Now may be your last opportunity to pick up Anadigics at bargain prices. This master of low-power amplifiers is sailing through its earnings inflection point with impressive incremental margins, and investors appear to be underestimating the company's earnings potential as well as its market opportunity.

After growing some 20 percent annually over the past two years, Anadigics is on track to surge more than 50 percent this year to about $168 million in sales. Following years of losses, the company finally broke through to profitability during the third quarter, earning 2 cents per share (ex options), and is forecasting a further rise to 5 cents during the fourth quarter. Much more important, the firm's incremental operating margin is running north of 40 percent, portending explosive earnings growth over the next two years.

Anadigics commands impressive incremental operating margins partly because its cutting-edge six-inch wafer fab in Warren, New Jersey produces more than twice the RF die per wafer compared to competing four-inch fabs. Built in 1999 and expanded in 2004, the structure for the most part has been depreciated. Since GaAs (Gallium Arsenide) fabs are similar to analog fabs in that they do not become outdated quickly, management believes it has sufficient capacity to continue growing its business for 2 to 3 more years.

Benefiting from the surging wireless LAN (WLAN), 3G wireless, and broadband markets, Anadigics has been gradually filling its fab to fuel its high incremental gross margin, adding a couple of percent to utilization each quarter. In fact, the company has been growing significantly faster than its end markets because with each new generation of devices, Anadigics roughly doubles the content per device. For example, 3G cell phones require multiple power amps (compared to one in each 2G phone) to support 2G and 3G air interface standards across multiple frequency bands. In broadband, demands on tuners are increasing as cable TV operators expand their services and as set-top boxes add more complex features. A major supplier of analog video tuners, Anadigics is expanding into

digital tuners in time for the rise of HDTV.

Buoyed the rabid ramp, Anadigics's fab surpassed 60 percent utilization during the third quarter, with 57 percent of the incremental sales increase falling to gross profit, thereby lifting gross margin to 31.8 percent from 29 percent sequentially and from 23 percent in the year-ago quarter. Management expects fab utilization to reach the low to mid 60s during the fourth quarter and the low to mid 70s by the fourth quarter of next year.

Also propelling margins is Anadigics's dogged drive toward higher integration and lower power across all of its product lines, from stand-alone power amplifiers to front-end modules that include power amps, passives, low noise amps, switches, semiconductor tuners, and support multiple networking standards. With its patented InGaP-*Plus* (Indium Gallium Phosphide) technology, Anadigics may have leapfrogged over its AlGaAs (Aluminum Gallium Arsenide) competitors by enabling some 20 percent to 25 percent longer cell phone battery life. To achieve this power savings, rivals need to add external dc-to-dc converters, increasing both the size and cost of their products.

On the strength of its technology, Anadigics is ascending quickly into 3G, enabling **Samsung**'s ultra-thin phones by offering a 30 percent space saving over competing products and burrowing deeper and deeper into **Verizon** (VZ) accounts, where Chocolate lovers can thank Anadigics for supplying all the power amps in the candy box. Anadigics is strategically positioned to benefit from all 3G technologies, including CDMA2000 and WCDMA.

Through partnerships with the likes of **Qualcomm** (QCOM), **Texas Instruments** (TXN), **Marvell** (MRVL), **Intel** (INTC), and **Cisco**'s (CSCO) Scientific Atlanta, Anadigics has been able to control operating expenses by leveraging R&D, sales and marketing, and manufacturing resources. Because of the increasing complexity of front-end modules, Anadigics requires advanced knowledge of its customers systems in order to incorporate its chips into them. This makes the partnerships even more critical and enables Anadigics to help set product standards with its customers, thereby creating barriers to entry for its competitors. For example, through its long-lasting relationship with Qualcomm, Anadigics's power amps have found their way into many of the wireless giant's reference designs. And at Intel, Anadigics has already completed 2007 designs and is now working on 2008 specs.

As Anadigics ascends into the untethered and digital broadband future, management is finding that its products are quickly gaining acceptance by an ever-expanding group of customers and range of applications. Based on its current ramp and margin prowess, the company could easily earn 50 cents per share next year and well over a dollar in 2008.

This will give management the opportunity to buttress its already ample liquidity; cash and marketable securities exceed current liabilities by $53 million for a comfortable quick ratio of 1.8. Anadigics carries two lumps of debt. The first, $46.7 million in convertible notes, comes due this month and can easily be paid in cash. The second set of 5 percent converts matures in three years when the $38 million in principal will easily be paid.

At its recent $7.82, the stock is trading at 15.6x our projected earnings for next year and under 7.8x its potential for 2008. If investors award it a 25x price-to-earnings multiple by then, Anadigics would triple from its current price sometime during that year.

— *Charlie Burger*

the security space with embedded multicore and multithreaded machines. **Hifn** (HIFN) crowds in. Encryption moves to **Seagate** (STX) hard drives under the Trusted Computing Group (TCG) with **Wave Systems** (WAVX) software. (I am on the board.) **ConSentry** uses a 128-core processor to implement the TCG standard in the local area network (LAN). As fast as security is consolidated, it metastasizes across the wide area and the web into virtual cities of beckoning high-rise chips and boards and boxes.

When are they going to figure out that with security everywhere at every interface, no one is safe? Hackers are now using unbreakable encrypted paths to invade your browser. The more security we get the more we worry about something called "privacy." Privacy is chiefly for crooks and terrorists and for people with an exaggerated notion of others' interest in them. Studies are alleged to show that computers protected by **Symantec** (SYMC) and **McAfee** (MFE) avoid virus attacks no better than unprotected machines, even with virtuoso users agile with every update patch and defiant of **Microsoft** (MSFT) popup claims of a conflict between a Symantec pro-

gram and one of its drivers.

SSL, IPSec, MACsec, RSA, Triple DES, AES, FIT, PGP all add up to paralysis in the core. Better to ride the light and let the bad guys chase photons through **Infinera** chips, while we move security to the edge where it belongs.

That evening Nick and I went off to dinner with Larry Boucher, best known as the inventor of SCSI (small computer storage interface) that first enabled the daisy chaining of disk drives. He started **Adaptec** (ADPT), which put this hard drive interface into hardware host bus adapters (HBAs), "building a hardware protocol processor for disk drives." This enabled real-time disk access. At **Auspex**, he created the first network attached storage (NAS) systems. Now as head of **Alacritech**, he has created "a hardware protocol processor" for the edge of the Internet, putting TCP/IP (transport control protocol/Internet protocol) offload engines (TOEs) in hardware and enabling real-time access of the network.

"As far as I am concerned," he said, "All packet processing, encryption authentication, and security should be at the edge." We need dumb as a stone all-optical networks, riding on the light. We need

security at the edge, not in the core router. We all have to accept the fact that the all-optical network will not come for a decade or so. Until then, we have to deal with the all-Mensa network. Intelligence is breaking out all over in security, intrusion-detection, seven-layer content processing, XML parsing, virus remediation, secure socket layer grooming, SOAP (simple-object access protocol), IP Sec authentication hashes, and regular expression (regex) pattern matching.

At the Linley seminar, speakers all vied to offer the fastest, smartest, most flexible and intelligent devices. This goal conforms to the needs of the dominant network customer, **Cisco Systems** (CSCO), which understandably wants to bring security into all its digital equipment.

The end-to-end principle is indeed breaking down. The chief success of the dumb network, ironically, is on the edge, where from **Verizon** (VZ) in the U.S. to **NTT** in Japan, passive optical networks (PONs) are prevailing. That's why we still like **PMC-Sierra** (PMCS) with its Passave acquisition. But overall the dumb optical network is receding into the next decade.

The next paradigm phase is the hollowing out of the computer and its redistribution across the network. In the end, Boucher contends, Cisco astride the network will become the leading computer company. In the datacenters of **Google** (GOOG), **Yahoo** (YHOO), and **Ask.com**, Cisco switches, with their 80 Gigabit per second (Gps) backplanes, are already interlinking the tens of thousands of processors that comprise the dominant search engines.

At the heart of Cisco are network processors (NPUs). Ultimately these network processors and their memories, interconnected by Cisco switched backplanes, will be the heart of the network as a computer.

For five or six years, however, a single chip will not be able to perform all the constantly expanding functions of networking. Among the various coprocessors still needed will be off-chip memories of increasing cost and complexity.

In general, these devices go counter to the industry trend of migrating all information to the cheapest memory, which is DRAM (dynamic random access memory). The problem is that memory access times have risen much more slowly than have memory capacities. As a result, computer boards become honeycombed with hierarchical memory schemes, caches, fast static RAMs, and content addressable memories called CAMs. CAMs use various hashing and filtering schemes that enable far faster access to particular needed information without using direct addresses. As these devices become more complex—the domi-

nant product is now called a tertiary CAM—they have given rise to a contrary paradigm, originated by computer architecture guru David Patterson, called IRAM (intelligent RAM). We have upheld this paradigm since the launching of the *Gilder Technology Report*.

Since as much as 80 percent of the silicon space on the average chip is devoted to memory, Patterson argues that the industry should adopt a storage-based architecture in which a little intelligent processing is embodied onto its memories rather than memory installed on its microprocessors. Calling these memory chips and search engines "Knowledge Processors," **NetLogic** (NETL) is the first company devoted almost entirely to the Patterson scheme.

NetLogic chips store databases and look up tables of information and combine this with innovative processor architectures to make complex decisions about packets traveling through the network. Until now, NetLogic's forte has been layer 3/4 processing of packet headers with its flagship NL5000 family of knowledge-based processors and more recently the advanced NL6000 line. Recently, the company has begun a trek down market after entry-level switches and routers with its NETLite line, and plans yet a third trip next year along the high road to layer 7.

Back in January we sang NetLogic's praises and then told you to hold your horses until it got cheaper. At the time the stock was selling for $37, only to spike to $45 in April before coasting down to the mid-20s for a summer chill. Then came the third-quarter cold front that drove the price down 22 percent to $19 the day after the inclement conference call. Having slipped below $18 over the ensuing days, winter has finally arrived at NetLogic, which means it's probably a good time to put some cold cash into this stock and watch the bills green up as the seasons change. While we can't be certain of the ultimate severity of the current downturn, we look more confidently for spring to return later next year followed by summer in 2008 and perhaps global warming in 2009. Here's our analysis and outlook.

NetLogic's first frost

Three chill winds blew in during the third quarter, bringing an end to NetLogic's first growing season. With large customers reducing inventories late last year and into the first half of 2006, the entire supply chain for NetLogic's processors grew tight, from silicon and package materials to test capacity. Notably scarce were the organic, multilayer substrates for the NL5000/6000 lines, with multilayer substrates used in more of NetLogic's offerings compared to its competitors', a supply chain crunch prompted customers to accumulate these CAM lines. Now that the supply

Corning (GLW)

PARADIGM PLAY: GLASS DISPLAYS, FIBER TO THE EXTENSION

NOVEMBER 9: 20.13; 52-WEEK RANGE: 17.50 – 29.61; MARKET CAP: 31.49B

Glass is about the only thing that's trending flat at Corning these days. Up over last year's third quarter were sales by 8% to $1.28b and net profit by 10% to $451m. Profit was also up a solid 7% sequentially along with gross margin, up to a robust 44% from 43% in the second quarter. On track for its third straight black year is free cash flow (cash flow from operations net capital investments), up some $200m year to date and helping to strengthen cash and receivables to 1.5x current liabilities from 1.3x a year ago. Topping company guidance by 2 cents per share were earnings of 28 cents before special items.

Not everything was up at Corning, but many of the downers were good also. Net debt (cash and receivables minus current liabilities and long-term debt) dropped dramatically to $465m from $1,136m last year, and the tax rate slipped under guidance to 13%. Corning will not return to a full effective tax rate for at least two years.

Corning's third-quarter catalyst was liquid crystal display (LCD) glass where net income increased 15% sequentially to $395m. Shipment volume rose 13% sequentially and more than 50% year-to-date to satisfy the demands of panel makers, who were shipping in record numbers. Notebooks account for more than one-third of all computers sold and LCD displays claim 82% of monitor sales. Shipments of LCD televisions are accelerating, up 11% sequentially to 21% on the way to a projected 25% of the market during the holidays and perhaps 33% next year.

The average size of LCD televisions is also increasing, with the largest sets now penetrating the 40" to 50" range. Jumbo-set panels must be made from the largest substrate sizes, helping to drive up Corning's gross margin. Half of the company's shipments are now made up of sizes greater than generation 5, with the largest size, gen 8, starting to ramp at Sharp. Corning is already working on gen 9 as it appears some panel makers are showing interest as a way to increase productivity on the largest sets. But don't expect that market anytime soon.

Orders for Corning's new "environmentally friendly" glass are outstripping the glassmaker's ability to fill them, and conversion to the new process continues apace. Look for the overall LCD glass market to grow 40% to 50% this year, with Corning's own volume up more than 50%, adding to its overwhelming market share.

Propelling its environmental segment forward is Corning's new catalytic converter technology for diesel engines. Based on current commitments alone from engine makers, Corning will be supplying more than half of the US heavy-duty diesel market with catalytic converters as manufacturers scramble to comply with stricter regulations to begin New Year's day. Engine makers are already building inventory in anticipation, and Corning expects diesel revenue and gross margin to ascend each quarter through next year. Meanwhile, sales of the small life sciences unit fell sequentially to $68m from $75m as Corning works on the launch of its high-throughput label-free screening platform based on its optical biosensor technology. Corning's initial product can perform 384 simultaneous cell-level experiments on a disposable microplate smaller than your palm, enabling drug companies to screen up to 40 thousand drug compounds per day, a light-year leap in speed.

Tormenting investors far out of proportion to its impact on the company is the telecom segment. Though sales decreased a mere 3% sequentially as expected and were up 15% over the year-ago quarter, the unit is expected to slide another 20% to 25% next quarter. Don't panic—it's not as bad as it seems, for at least two reasons. First and most obvious is that LCD glass, though fueling just a bit more of a third of sales, earns most of Corning's profits (85% of earnings per share) due to the segment's high margins.

Second, over the long term, more important to telecom earnings than price is Corning's ability to improve productivity. To connect homes to fiber in a standard aerial deployment, Verizon has had to open the cable at the pole, pull out the required fibers, and splice them to a terminal in a labor intensive and tedious operation. Now, Corning can preconnectorized in the factory, enabling VZ to merely plug customer fibers into the connector, lopping two-thirds off of the original time and cost.

None of the third-quarter results or projections surprised to us in light of our in-depth report on Corning in August. Our thesis continues to hold that for Corning, LCD glass could well repeat the 30-plus year run of cathode ray tubes (CRTs). The King of Glassmakers has just three serious rivals in a market with a Himalayan barrier to entry, and it continues to blaze the trail to larger substrates sizes and hence higher margins, in addition to other crucial process and structural innovations.

In the fiber-to-the-home front, Verizon is accelerating forward. After passing 1m homes in 2004 and 2m in 2005, it is poised to pass another 3m homes this year and a total of 18m by the end of the decade. If by that time management is able to reduce total lines to 25m homes, as planned, through sales and spin-offs, then an amazing 72% of Verizon's broadband network will be fiber-to-the-home ready in 7 years.

Looking ahead to Q4, Corning is expecting a repeat of last quarter's 28-cent earnings on flat to slightly up sales of around $1.31b, driven again by display glass.

The company's current earnings run-rate of about a $1.12 depresses its price-to-earnings multiple to 18x at the recent price of $20.14 per share. Yet Corning will likely be increasing earnings by some 27% this year to $1.08. If earnings grow 18% to $1.27 next year or just 13% over the current run-rate, it could keep its modest valuation with a price of $23. That's the likely downside. Another 27% increase in earnings to $1.37, or just 22% above today's run-rate, would push the price to $34 on a more likely EPS valuation of 25. Think of that as the upside scenario.

Longer term, Corning must move beyond a one-product company and succeed outside of LCDs with its other ascending technologies, such as in telecom where most of the world's carriers are still nursing aging copper connections. If it successfully transitions—and that would be consistent with the company's history—then today's valuation is cheap indeed.

Essex (KEYW)

REMOVED FROM LIST

With Northrop Grumman's planned acquisition, announced earlier this week, we remove Essex from our list.

Ikanos (IKAN)

PARADIGM PLAY: VDSL PIONEER

Last month we speculated that Ikanos might have become a Sunday driver. Between sales and deployment delays and production problems, the company had preannounced too many third- and fourth-quarter accidents to credibly blame it all on "bad luck." Then, two days before the third-quarter call, the board fired CEO Rajesh Vashist, the man who built Ikanos into the runaway leader in VDSL. He supposedly ruled from a bully pulpit, made technical blunders by jumping too quickly into VDSL2, and overestimated the ramp in Japanese deployments. Anyone who acts decisively will have his critics. Meanwhile, Ikanos has lost a visionary.

Ikanos earned a paltry $1.4m during the third quarter, but the real bomb hits next quarter, when sales are expected to sink 39% sequentially to $22.5m or 21% short of the year-ago quarter. Also expected to fall is gross margin, to 41.5%, setting the company back two and a half years in that metric. We estimate an operating loss of $7.3m, greater than any shortfall back through 2003.

During the quarter, Ikanos introduced its fifth generation chipset for telco central offices and a VDSL2 home gateway platform. To make the chipset announcement credible, interim CEO Dan Atler must solve production problems plaguing the product. At 90 nm, the chips are Ikanos's densest and are optimized for IPTV with symmetrical 100 Mbps capability. The product is vital if Ikanos is to keep up with rival Infineon. The gateway supports voice, video, data, wireless networking, Ethernet, firewalls, and interoperates with ADSL. It merges the Fusiv processor acquired from ADI with an Ikanos chipset and delivers symmetrical 100 Mbps throughput.

Prior to Ikanos's gateway announcement, TI introduced the first VDSL2 gateway processor on a single chip; competing solutions generally augment an ADSL gateway processor (Fusiv for Ikanos) with a VDSL2 chipset. But TI's accomplishment will not halt Ikanos's foray into the home. To cram a VDSL2 gateway on a chip, TI had to limit itself to low-end VDSL for a max symmetrical speed of 25 Mbps. Carriers looking for a path 100 Mbps are unlikely to accept a quarter-way solution only to have to quickly replace the modems.

Don't dismiss the TI chip. It's a crucial upgrade to an older ADSL solution which has been losing share. TI is the top supplier of gateway silicon and will continue to fight for the title.

Problems with power and density and standards testing have been cited as reasons for the slow adoption of VDSL. Space and power are key concerns in central offices, in neighborhood access multiplexers, and in basement installations where the need for external power adds to monthly cost. Why should carriers pay twice as much for these headaches? While VDSL beats ADSL in speed at distances under a mile, VDSL works optimally only in the last thousand feet, beyond which the bandwidth advantage may not be enough to justify deployment.

Ikanos's enterprise value based on a stock price of $8.43 and estimated net cash and diluted shares in December is $158m or 1.8x the yearly run-rate of fourth quarter sales. Though not a value for an accident prone company, it's a bargain for a company that claims the vast majority of VDSL2 design wins—but only if fiber marches apace toward the end user before Ikanos's competitors catch up. We tend toward the more optimistic scenario, but will watch it closely.

Online Bonus Material: For additional analysis on **Ikanos** (IKAN) log on with your subscriber ID at www.Gildertech.com.

Zoran (ZRAN)

PARADIGM PLAY: DSPs FOR DIGITAL CAMERAS & DVDs

The clock is ticking on Zoran. It's been four long months since this fabless designer of media chips began its review of stock options practices following the launch of an SEC inquiry (also ongoing) and after being subpoenaed by the U.S. attorney for northern California. The longer this takes, the more suspicious it looks. Let us hope it doesn't become Vitessish.

It's tough evaluating a company that communicates like a mummy. In a financial version of Chinese water torture, management has let drip a very few fiscal figures over the past two quarters. Sales, excluding a $36m bonus from a litigation settlement, have increased each quarter this year, from $109m last December to $129m by the end of September. Cash and investments rose over the same period to $280m from $149m, with about a quarter of the ascent attributable to the court award. The digital camera and HDTV product lines led third quarter growth; both sales and shipments of digital camera processors broke records and continued to gain market share according to the company.

Sounds good so far. What leaves us a bit uneasy is the forecast for a whopping 25% sequential slide in sales during the fourth quarter. True, the fourth quarter is usually weak, but Zoran has been building momentum over the past few years and this December could come in 11% below the year-ago quarter. Ouch. Management blames the slip on price pressures in the DVD market, in the rapidly declining CRT market (neither of which surprises us), and in low-end set-top boxes. Also, several TV customers have delayed product launches.

If Zoran resumes its rapid ascent next year into the emerging digital-media markets for cameras, handsets, TVs, DVDs, and printer imaging, then at the recent price of $14.52 the stock looks cheap. After the April call, we estimated earnings for 2006 of $1.12 (up 84% over 2005) based on sales of $469m for the year. It looks as though sales will just scrape our guess despite the fourth-quarter contraction. Assuming other relevant financials have held up (and who knows?), then the shares are trading at just 13x slightly forward earnings.

This stock could really pop once the inquiries blow over, but you may need a cast-iron stomach to survive until the smoke clears. Long-term investors will want to keep an eye on formidable competitors TI, Broadcom, STMicro, and Trident.

spigot has opened, customers have cut back orders originally planned for the fourth quarter.

Adding to the chill is a northwesterly flow from Japan where NTT has essentially frozen its infrastructure build-out as it awaits the results of field trials on next-generation technology, now scheduled to be incorporated into its network beginning late next year to increase support for VoIP and for the impending flood of IPTV bits. For NetLogic, sales into Japan essentially mean sales to NTT through **ALAXALA Networks**, which contributed to 11 percent of sales during the third quarter on its way to 2 percent in the fourth as NTT puts on the brakes. NetLogic CEO Ron Jankov believes he has been supplying 80 to 90 percent of Alaxala's CAM needs and that his massive market share at that systems house will not be eroded during the Japanese recess.

The final blow fell on NetLogic's low-end NETLite line, which sheds the deep pipelining (a technique to segment processing tasks) and parallel processing that speed up the NL5000/6000 families. This simplified chip architecture, combined with no multilayer wafer, fewer instructions and low-cost manufacturing, reduces the power and price of NETLite compared to the high-end header processors. Jankov had expected NETLite sales to start swelling late this year as voice and video put additional demands on Internet access boxes.

Then came the dissolution of **Greenfield Networks**—a powerful team from Cisco and **Marvell** (MRVL) devoted to creating an application-specific standard product (ASSP) solution for Ethernet switches. The shutdown vindicates our and EZchip's contention that network technology is moving and morphing too quickly to be caught in an unprogrammable chip (see box, "EZ Edges Up").

This generally positive event for EZ has sent NETLite into a cryogenic coma for about 8 months. Jankov had based his low-end board on a Greenfield design that will not be available, and he was last seen scurrying off to **Broadcom** (BRCM) and Marvell for entry-level packet processors. His stay there will be of some duration. That's because swapping NPUs between suppliers is a complicated procedure (also good news for EZ with its hundred design wins). Jankov must replace Greenfield software with Broadcom or Marvell software and merge that with his CAM software.

The arctic confluence at NetLogic has ushered in a cold snap likely to last through the first half of next year. Jankov expects to report his first sales slump this quarter—a 14 percent sequential slide to about $23 million with earnings eroding 27 percent to 24 cents per share for an annualized run-rate of 96 cents or a price-to-earnings multiple of 22 times at the recent

stock price of $21. That's a solid valuation for a company in winter, so why risk it? Because the coming growing season looks to be lush indeed.

Premium technology seeds

Once Marvell and Broadcom fill in the Greenfield void, NETLite should revive. Jankov has been watching his entry-level customers migrate to Marvell and Broadcom in anticipation of NetLogic solutions expected to sprout during the second half of next year. Jankov believes that this display of customer loyalty validates his claim that NetLogic has overtaken established competitor **Integrated Device Technology** (IDTI) in entry-level technology. After acquiring search engine technology from **Cypress Semiconductor** (CY) in February, Jankov was able to merge Cypress's Ayama line with NETLite, thereby eliminating his largest competing product down market and increasing his share of design wins from about 35 percent to 70 percent while revving his processing speed to 4 times that of competing chips.

Further validating NetLogic's down-market ascendancy is the recent win at Cisco of an even lower-power version of NETLite designed specifically for the networking giant. The new product, which targets cost sensitive equipment with very strict power budgets, will soon be offered to the rest of the market at low-end prices that still support gross margins only slightly below today's corporate average.

Moving to the high-end market where Jankov started out, NetLogic stands almost alone at layers 3/4 with its flagship NL5000 and NL6000 families of CAMs for advanced core/edge routers and enterprise/metro switches. But competitors have been gathering. Rival IDT has been working its way up market and recently claimed a design win for a high-end CAM with Cisco, where it hopes to take share from NetLogic. (Cisco is currently a 63 percent customer for NetLogic.) And then there are the stealth startups lurking in the shadows, such as **SpansLogic**, which is attempting to whip Jankov on cost. In his battle with newbies, Jankov has time on his side—two-year design cycles, typical in this business, raise high the barrier to entry into these markets.

Eyeing his rivals through the rearview mirror, Jankov is putting his foot to the floor in the high-speed processor race. Why the need for speed? Network processors such as EZchip's NP-2 offload more complex packets to layer 3/4 CAM workhorses from the likes of NetLogic to search packet headers for addresses, classify the packets, assign priorities, change counters and other signaling bits, shape traffic, and manage queues. The convergence of voice, video, data, and mobility applications (quadruple play) onto the Internet along with advanced proto-

cols such as IPv6 (Internet protocol version 6) leads to longer packet headers and more complex routing decisions requiring more processing at each node, which CAMs must accomplish at ever increasing wireline speeds to avoid bottling up the network—an particularly ugly problem for latency sensitive applications such as streaming video, including IPTV.

Not surprisingly, then, design wins are mounting for the second-generation NL6000, which doubles performance and halves power over the NL5000. And NetLogic has now announced availability of its NL6000XS line, already being designed in at five leading manufacturers. XS further increases performance by almost a half, enabling 40 Gigabit networking for voice, IPTV, mobile multimedia, peer-to-peer networking, and IPv6 systems at up to 75 percent lower power than the competing solutions.

On track for commercial production by next summer are the NL7000/8000 lines. Socket and software compatible with NL6000XS, the third-generation technology of NL7000 supports twice as many IPv4 and IPv6 decisions with the same board space and power profile. Finally, the fourth-generation NL8000 family uses an entirely new core architecture capable of 1.2 billion decisions per second and 50 Gigabit per second total data throughput. The processor, which supports twice the number of IPv4 and IPv6 decisions compared to recently announced competitive solutions, has just earned a key design win that opens up a "very large opportunity" for the company.

At the core and edge of the network where NL5000–8000 products reside, you only need to process packet headers. But at the access, where application processing and complex network security functions are performed, all packet content through layer 7 must often be analyzed. Since 80 percent of a packet is content, this results in a massive increase in data. Content-aware intelligence gives access networks the capability to distinguish between web, email, voice, instant messaging, and video traffic in order to accelerate them, to create tiered services, and to route based on content as well as the capability to provide unified layers of security against a variety of threats such as virus attacks and hacker intrusion.

Hence NetLogic's NETL7 layer-7 line. The first product in the series will be able to process application and security functions at 10 Gbps wire-speed, the fastest in the industry. Sporting such speed, NetLogic's chips can include more security features than competing chips from **Sensory Networks** and **Tarari**, and networkers will for the first time have enough speed to inspect every single packet of data that flows through them. Enhancing NETL7 are Cypress's Sahasra algorithms, boosting performance, reducing power, and lowering the cost of NetLogic's layer-7 products.

Application-layer networking and network security should become one of the fastest growing markets over the next decade, as service providers, enterprises, consumers, and government continue their migration toward layer-7 routing and security. With NETL7, Jankov can penetrate new markets beyond traditional networking by expanding into servers from the likes of **Sun** (SUNW), **Hewlett Packard**

(HPQ), and **Dell** (DELL) and into security software companies such as McAfee and Symantec. Based on the progress with potential customers and an early design win with a major provider of enterprise security solutions, it appears as though security appliances (which generally combine firewall, virtual private network, and traffic management functions) are going to jumpstart NETL7 around the middle of next year, followed a bit later by sales into switches and routers, where Jankov is just now seeing some interest in layer-7 processing. It is the switch/router market, where layer-7 products will command selling prices some 4 times higher than in the network appliances, that is expected to propel NETL7 to the size of the Jankov's current CAM business. Sales into computers and servers, not anticipated before late 2008, could finally drive NetLogic's layer-7 business ahead of the its traditional CAM lines.

Fertile markets and finances

Quadruple plays are expanding the need for network aware processors out across the network to the edge and access. To support these applications along with security and advanced protocols at steadily increasing line speeds, customers are putting more of NetLogic's most advanced processors on each line card—up to ten per card depending on the application—even as the company outpaces its rivals down the Moore's law learning curve.

Wireless is also emerging as a huge driver of knowledge-based processors as carriers increasingly require embedded intelligence to deliver multimedia content and IP-based services over the air to mobile devices. Jankov now reports two early design wins in this area, one with **Lucent** (LU) and the other with **Nortel** (NT). Across the board, he believes that NetLogic is winning more designs than ever, with eight additions during the third quarter alone. That good news in an industry where wins tend to be sticky due to the complexity of designs that can take up to two years to complete.

Armed for its mission by strong and growing cash

flows and essentially no debt, NetLogic's cash and receivables net total book liabilities have swollen by half over the past year, from $50 million to $75 million. Consistent with previous years, average selling prices for the company's products continue to decline by about 15 to 20 percent annually, a pace that Jankov believes will allow him maintain his record-high gross of 64 percent through at least next year.

Jankov expects most of the inventory backlog to work itself out before the end of the year. The impressive CEO has proven himself a conservative forecaster over the past two years. Not surprisingly, therefore, he acknowledges that such corrections often take longer than one expects. In addition, the new volume design wins, even in the core business, are weighted toward the second half of next year. Thus, coming off the depressed fourth quarter, Jankov is looking for a flattish first half of the year before the second long-term ramp starts on the confluence of NTT's next-generation build-out, a low-end NETLite revival, and early sales from the seven-layer NL7 line and third-generation CAM processors. Jankov expects NETLite and NL7 combined to contribute a minimum $5 million of sales during the second half of 2007.

An increase of quarterly revenues to $30 million, just 13 percent over this past quarter's sales, would raise earnings per share to $1.13 on an annual basis (including the 20 percent tax rate expected to kick in later next year) for a price of $23 to $28 at a price to earnings multiple of 20 to 25. At $35 million of revenue per quarter, EPS could rise to near $1.50 to support a stock price of $37 to $45 at growth PEs of 25 to 30. Thus, if NetLogic's products ascend even modestly through 2008, the stock has a decent shot at doubling by the first half of 2008 and rising higher thereafter. That's a good opportunity for far-sighted investors who are able to withstand the likelihood of several more months of weakness.

– George Gilder, with Charlie Burger

Got Questions?

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