

Deutsche Bank
Markets Research
North America
United States
TMT
Wireless Equipment
Periodical
Signals to Noise
(S2N)

MWC 2014: It is an LTE world

S2N #491 - LTE proliferation and cheaper handsets push data demand

The buzz returned this year to Mobile World Congress and we contributed as best we could, running between meetings, downing café con leches and snacking on jamon sandwiches. What was different was the focus of the buzz, which if last year was centered on smartphone growth and LTE unit volumes, then this year it was infrastructure. Almost every network equipment vendor we met with sounded optimistic about operator spending in the year ahead, especially with regard to LTE.

State of the Baseband - number two still undecided

As most of our readers know, we suggested a few months ago that Qualcomm would see little competition in 2014. In short, Mobile World Congress only reinforced this viewpoint. We met with most of the merchant baseband players and a number of industry contacts across the handset foodchain, and what is increasingly clear to us, is that this year the fight will be for a foothold,

in hopes to make a play for meaningful volume, and the second spot, behind Qualcomm in 2015. While we have argued that Mediatek was the clear number two behind Qualcomm (they remain so in unit volumes and profits), this point has been muddied a bit by the mixed progress in LTE of a few others. Bottom line - all of QCOM's competitors have their challenges, which we detail inside.

Smartphones high end struggles to differentiate, while Firefox redefines cheap

It is strikingly obvious that differentiating on the high-end with hardware is

limited. Every major handset OEM at the show had shiny new handsets (and tablets), as well as a wearable to go along with it. The good news for many across the globe is that smartphones are only getting cheaper. Firefox (Mozilla)

took this one step further, introducing a \$25 smartphone at the show.

The front-end end game

Last year we suggested that there would be consolidation in the frontend space, engineered by the active players - a result of Qualcomm's then announcement of RF 360. Before the show, RFMD announced a bid for Triquint. We do not feel like this is the end of the match-making, possibly with

Triquint, and certainly outside of this deal, with other players attempting to

redefine their own positions. Bottom line, the front end active players are merging with the front-end passive players (and other active players) in an attempt to develop fully integrated FEM's to compete with Qualcomm.

Infrastructure poised for growth:

Almost every network equipment vendor we met with sounded optimistic about operator spending in the year ahead. With LTE rollouts continuing around the globe, and beginning in earnest in places like Europe, China, Africa

and CALA, we believe this will be a solid year for infrastructure spend. Stock implications

We left MWC feeling incrementally positive on QCOM (limited LTE competition), FFIV

(telco wins raising price target to \$130), COMM (LTE builds), and MVNR (VoLTE builds),

constructive on CIEN (see our separate preview note), neutral but constructive on RKUS

(cable traction), CAVM (small cells), PSMI (CMOS PA performance) ADNC (Motion Q),

slightly more cautious on CSCO (SP execution) BBRY (increasing security competition)

and XXIA (testing virtualization)

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CERTIFICATIONS ARE LOCATED IN APPENDIX 1. MICA(P) 054/04/2013.

Date

2 March 2014

Industry Update

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Key Changes

Company

FFIV.OQ

Source: Deutsche Bank

Target Price

120.00 to

Rating

-

130.00(USD)

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Signals to Investors

Portfolio Manager's Summary:

LTE proliferation and cheaper handsets push data demand around the globe, creating a buzz for infrastructure players

The buzz returned this year to Mobile World Congress and we contributed as best we

could, running between meetings, downing café con leches and snacking on jamon

sandwiches. What was different was the focus of the buzz, which if last year was

centered on smartphone growth and LTE unit volumes, then this year it was infrastructure. Almost every network equipment vendor we met with sounded optimistic about operator spending in the year ahead.

In terms of an overarching theme, OTT (Over The Top) took the spotlight as Facebook

announced that Whatsapp would be launching voice services. Remember two years ago when carriers tried to launch RCS? Well this Facebook announcement was salt on

the old wounds of that struggling attempt to compete with fast moving OTT vendors.

Nevertheless, what the announcement does highlight in a positive sense is that carriers

will likely be pushed to offer better coverage and capacity as we move forward. There

were other themes, which, while not as overt as OTT, will likely have ramifications for

players around the industry. Specifically: a continued race in the baseband space - there

is still no clear number two behind Qualcomm here, the frontend industry consolidation,

LTE deployment acceleration, Firefox redefining the cheap smartphone and the struggle

to differentiate in high end handsets.

Our key takeaways:

☞ State of the Baseband – number two still undecided: As most of our readers know, we suggested a few months ago that Qualcomm would see little

competition in 2014. In short, Mobile World Congress only reinforced this viewpoint. In Barcelona we met with most of the merchant baseband players

and a number of industry contacts across the handset foodchain, and what is increasingly clear to us, is that this year the fight will be for a

foothold, in hopes

to make a play for meaningful volume, and the second spot, behind Qualcomm in 2015. While we have argued that Mediatek was the clear number two

behind Qualcomm (they remain so in unit volumes and profits), this point has been muddied a bit by the mixed progress in LTE of a few others and what we feel are challenges in LTE for Mediatek.

☞ Smartphones – high end struggles to differentiate, while Firefox redefines cheap: It is strikingly obvious that differentiating on the high-end with

hardware is limited. Every major handset OEM at the show had shiny new handsets (and tablets), as well as a wearable to go along with it. The good news for many across the globe is that smartphones are only getting cheaper. Firefox (Mozilla) took this one step further, introducing a \$25 smartphone at the show. The phone runs on a 1 Ghz application processor, and has a Spreadtrum 2G GSM/Edge baseband and WiFi connectivity. We were able to demo the device, which we felt was a large improvement on the year before, when they had the OS running on a more expensive 800 mhz processor. Ubuntu also was demonstrating an interesting multimedia OS which was improved from last year and eliminates any physical buttons on the screen.

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聖 The front-end end game: Last year we suggested that there would be consolidation in the frontend space, engineered by the active players – a result of Qualcomm's then announcement of RF 360, a completely integrated frontend solution on CMOS. Before the show, RFMD announced a bid for Triquint, attempting to grab one of the two main players in passive, frontend BAW filters (Avago being the other). We do not feel like this is the end of the match-making, possibly with Triquint, and certainly outside of this deal, with other players attempting to redefine their own positions. Bottom line, the front end active players are merging with the front-end passive players (and other active players) in an attempt to develop fully integrated FEM's to compete with Qualcomm.

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Infrastructure poised for growth: Almost every network equipment vendor we met with sounded optimistic about operator spending in the year ahead. With LTE rollouts continuing around the globe, and beginning in earnest in places like Europe, China, Africa and CALA, we believe this will be a solid year for infrastructure spend. Our checks indicate that spending will be significant across many operators in a number of geographies, as many understand the operational advantages of the all-IP architecture of LTE and feel confident enough about the macro environment to make the improvements. A few also noted decent recent 3G spending trends as developing markets increase spending in this more cost reduced (especially in handsets) technology. We also have updates on the following companies and provide more detail in the body of the note:

Qualcomm: On the baseband side, Qualcomm continued to press its lead, with others making announcements but few showing signs that they would make real progress in terms of volumes this year. The company issued a bevy of press releases, one of which was the release of their Snapdragon 600 series, which we believe underscores Qualcomm's strategy to waterfall their technology, bringing LTE modem capabilities further down market and increasing the hurdle for other merchant vendors looking to make an inroad into the market. They also announced a frontend win with ZTE. The solution integrates the power amplifier, antenna switch and high band amplifier on one platform. While Qualcomm announced a design win, other frontend players were busy both making deals and displaying their wares.

Peregrine: Peregrine demoed their CMOS PA, and the results were impressive – the company was able to achieve 44% efficiency in LTE used alongside Nuijira’s envelope tracking solution – being at least as good, if not better than the best GaAs competitor. With WCDMA, the solution achieves 48% efficiency without envelope tracking, in line with the best GaAs competitor. Many hardware vendors had been impressed with the demo results, and while RFMD has made inroads into Peregrine’s territory recently, we believe that Peregrine should be able to secure design wins with this PA solution given its efficiency and size.

Audience: In our meeting with management, they sounded constructive about growth with Chinese-based OEMs and their traction in adjacent markets. They also sounded encouraged about their recent announcement around motion technology, called Motion Q technology, which enables activity navigation and gesture interpretation while consuming low energy (less than 5mW). The company feels that there are a number of use cases around the technology and while we tend to agree, we note that the technology is still in its early stages.

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Blackberry: Blackberry likely won for most press releases during Mobile World Congress. In the bevy of statements, we found their clarification of MDM pricing with

EZPass to be the most resonant of all of them. The new pricing scheme breaks down

their MDM solution into two, clear levels, which make it simple for any customer to

understand. Overall, we think management continues to make smart decisions about

the way forward. It is difficult not to think about what could have been had these

decisions been implemented years ago. However, in spite of management's attempts at

a turnaround, our belief is it could be too late, at least to justify the current market cap

size of the company.

Infrastructure

Cisco: Our conversations with Cisco's mobile networking sales and business leaders at

MWC – and with our industry contacts – suggest that Cisco's service provider business

overall is still in "transition" mode. While Cisco pre-announced the CRS-X core router in

2013, the company is yet to ship the CRS-X to the telcos or ISPs in their production

networks. Further, while Cisco's higher-end edge router ASR 9k (suited for metro core

versus for lower-end metro access edge use cases) is seeing double-digit order

bookings trends, we continue to note an air-gap in Cisco's low and mid-range access

edge router portfolio – with the company's legacy 7600 routers etc seeing growing

competition from Juniper's MX and Alcatel Lucent's 7k series at the US telcos – e.g. at

AT&T, etc, and from Huawei at the Tier-1 telcos in Europe, China, and in Latin America.

F5 Networks: We are raising our Price Target on F5, from \$120 to \$130; reflecting our

improved conviction on F5's next-phase growth opportunities in Telco and in Next-Gen

Security - following our MWC and RSA conference meetings. Our key insight on F5 is

our higher conviction on the company's next-phase growth opportunities in Telco

Network Intelligence and Next-Gen Security use cases. Field color from our MWC

industry meetings correlate well with our recent round of IT channel

conversations – which note that F5's +2 years of R&D and sales cycle investment at the major telcos (e.g. Verizon, AT&T, Vodafone, Telefonica, etc) on Layer 4/7 network intelligence initiatives is starting to positively impact F5's telco sales pipeline. While the company noted recent set of LTE signaling and mobile data traffic management related design wins at OI in Latin America and at carriers in the EMEA and APAC – our research suggests the company has secured design wins at the large US telcos during 2014 (Verizon and AT&T Domain 2.0).

CommScope: Out of all of our companies, CommScope sounded the most positive. Their Wireless business is keeping pace, helped by LTE and 3G infrastructure coverage/capacity projects in Europe, CALA, Africa and Asia and capacity improvements here in North America. The company's DAS business has done well, as enterprises continue to look for easily deployable, multi-vendor solutions. To build on this, the company announced the Ion-E, a new DAS solution which is frequency agnostic (380 Mhz to 2700 MHz; multimode and allows the possibility to add WiFi) and with access points that can be powered over Ethernet (POE). The company continues to innovate in areas where they have the scale to bring specific products to markets. We reiterate our Buy here, as we feel the year should be a strong one for the company.

Ciena: Our MWC conversations with Ciena's CTO gave us insight on management's view on Alcatel Lucent selected recently as the second source supplier at Verizon, on 100G and OTN switching upgrade opportunities this calendar year, etc. We get the read from our conversations with management that Verizon is likely to follow an 80/20 rule for its optical network sourcing – i.e. appx 80% of long haul and metro optical networking upgrades using Ciena's platforms and the remainder likely allocated to the second-source supplier. Further, we note that a meaningful runway for Ciena's Carrier Ethernet (Packet Networking) switches for aggregating traffic from 4G macro cells (and

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ongoing 4G small cell rollouts) at the major US and rest of world telcos – with Ciena

noting that appx 50% of cell towers are lit by fiber – suggesting to us that there is appx

a +30% runway remaining for “fiberization” of the radio access and metro aggregation

network. We provide our preview of Ciena’s upcoming quarterly results in a separate

note.

Mavenir: Our MWC conversations with Mavenir senior management noted a positive

view on Voice over LTE network services rollouts in 2014+ at the company’s US and

European telco customers – i.e. at T-Mobile US, Deutsche Telecom, France Telecom,

Vodafone, etc. We get the read that Mavenir’s US telco customers are likely to rollout

VoLTE and RCS services sooner versus their European telco counterparts this calendar

year. We also noted 11 new carrier customer wins for Mavenir’s voice network solutions in Europe – with potential for VoLTE, RCS, and messaging services rollouts in

these customer wins later this year.

Cavium: Our MWC conversations with senior management suggests that Cavium’s Fusion chip shipments (likely a \$20-30 part) into 3G and 4G small cells

rollouts is still in

early stage at the present – likely a 2H14+ revenue opportunity for Cavium in our view.

The Fusion chip likely to ship into OEM platforms (NSN, Huawei, Samsung) at around

14 telcos for the initial phase of 3G/4G small cells rollouts –followed by +15 carriers in

the subsequent phases. While we are constructive on Cavium’s CY15+ rev growth opportunities for the new chips – Octeon3, Fusion, Neuron, etc – we remain

with our

neutral near-term view and our Hold-rating on the stock – noting balanced risk/reward

at current levels – i.e. the stock trading at appx 24x P/E for ~19% First Call consensus

rev growth expectation.

Ixia: Our MWC conversations with the network testing solutions vendors is another set

of datapoints supporting our near-term caution on Ixia – a key vendor in enterprise and

carrier network test and network visibility solutions. While 40GE datacenter switch

testing and LTE voice and data network equipment and network services

testing are

multi quarter opportunities for Ixia – we note lumpiness in LTE network testing orders (at telcos such as AT&T, etc), 40GE datacenter switch testing still in early stages and virtualization of testing applications moderating demand for incremental box capacity.

Ruckus: At the show management appeared confident, likely fed by continued cable provider traction. One point which struck us as positive was management's warm reception to LTE-over-unlicensed (LTE-u). They suggested LTE-u could be a positive development for some of their MSO customers, helping them to possibly put together a mobile strategy (e.g. Republic Wireless). Despite the cable provider wins and the acceptance of LTE-u, we remain on the sidelines here, as we would like to see them gain traction in the mobile operator space, an area where we believe if won, would begin to justify their P/E multiple.

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Sine of the Times

State of the baseband – the fight continues for number two

As most of our readers know, we suggested last August, that Qualcomm would see

little LTE baseband competition in 2014. In short, Mobile World Congress only reinforced this viewpoint. In Barcelona, we met with most of the merchant baseband

players and a number of industry contacts across the mobile device landscape, and

what is increasingly clear to us, is that this year the fight will be for a foothold, in hopes

to make a play for meaningful LTE volume, and the second spot in LTE, behind Qualcomm in 2015. While we once argued that Mediatek was the clear number two behind Qualcomm (they remain the strong #2 in overall mobile modem unit volumes

and profitability), in LTE this point has been muddied a bit by the progress of a few

others and what we feel are challenges for Mediatek (though we do continue to believe

that in 2015, Mediatek will likely be the #2 unit leader in low-end LTE, behind QCOM).

For their part, Qualcomm issued a bevy of press releases at the show. The company

was demoing a Category 6 baseband, the 9x35, and also announced the Samsung S5

win, with their Snapdragon 801 SOC. Our checks indicate that Qualcomm will gain

market-share in Samsung's top model (~50% of the S4 by our estimates, going to ~7080%

of the S5). The company also announced the Snapdragon 600 series, with a 64-bit

octa-core processor running on ARMv8 architecture. The 600 series will integrate

Qualcomm's third generation baseband, with Cat 4 LTE capabilities. The announcement

underscores Qualcomm's strategy to waterfall their technology, bringing LTE modem

capabilities further down market, increasing the hurdle for other merchant vendors

looking to make an inroad into the market. There was also announcement on the front

end, but we discuss this later with the assessment of the industry moves being made

here.

On the LTE baseband side, Qualcomm continued to press its lead, with others making

announcements but few showing signs that they would make real progress in terms of

LTE unit volumes this year. Mediatek, which we still considered Qualcomm's greatest threat, made their LTE announcement weeks ago. At the show, they announced a win with Alcatel for their dual chip, LTE solution. We feel volumes will likely be light for this model given Alcatel's position in handsets. And despite the announcement a few weeks ago of Mediatek's integrated LTE solution, our checks indicate that this chipset would only be shipping in handsets from Chinese-based OEMs in late 2014; developed world LTE volumes would only come in 2015. And LTE with carrier aggregation (LTEAdvanced) is a ways-off – 2015 is a best-case scenario. While there is potential that Mediatek could see decent LTE volume in developing markets exiting CY 2014 – the company highlighted their target market, the "Super-Mid" (\$79 - \$399), in a new marketing campaign – Qualcomm and others will be busy challenging them here as well. In short, while we do not discount Mediatek in the least, we do think they are further away than their recent press releases would have most believe. Another major player, one that has been knocking on the door for some time, is Intel. Our checks indicate that the company did win an LTE SKU with the S5 (remember that in the S5, as in the S4, they will also be in the 3G only version as the modem with the Exynos AP, but 3G volumes in the S5 will be lower than they were with the S4). It is our understanding that this will be dual-chip solution, with separate Cat-6 LTE chip and 3G/2G modem, and will only be available in a limited market, which we understand to be with a carrier in Germany. We believe winning a slot in the S5 is encouraging, as it is

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first meaningful win for its single mode LTE chipset; however, we would warn that until

the company is able to design an efficient, multi-mode solution, we do not see them

gaining meaningful share. The current, two-chip solution in the S5 SKU will likely be

expensive and inefficient, as it uses two ARM licenses and implemented with two

discrete elements. Intel is supporting this design win with co-marketing funding. As it

stands, we believe that efforts to complete a multimode solution are not going as well

as some had hoped, and that there are still be meaningful challenges to overcome as

the company struggles to integrate disparate technology acquisitions.

Some of the more encouraging words from our checks were reserved for Broadcom.

Heading into the show, the company already had an LTE design win with their Renesas

(Nokia) solution in the Samsung Ace 3. And while we did not see the model on the

show floor, many indicated that the multi-mode solution was working well and that

Broadcom would be announcing an upgraded version of their modem in the near-future

(possibly LTE Cat-6). If the company is able follow through on this, we believe they

could find small, but relatively meaningful volumes for BRCM, in the mid- to possibly

higher-end, exiting the end of the year.

Remember, this is the former very competent Nokia modem design team that has their

own fully integrated multimode protocol stack (2G-LTE). Only QCOM, Ericsson (EMP)

and BRCM (Nokia) possess their own fully integrated 2G-LTE protocol stack. The

protocol stack is the operating system of the modem and having a seamless, fully

integrated solution has advantages few outside the modem design world can appreciate. Other players have what one of our contacts referred to as

"Frankenstien"

protocol stacks (having licensed protocol stacks from four different stack suppliers).

And as wireless technology advances, these Frankenstien protocol stacks, like the

monster, become increasingly difficult to control and manage, impacting advanced

technology implementation and release dates.

Others were mostly left out of the conversation with LTE, given the apparent lack of resources and resulting lack of clout with handset vendors. In other areas, like 2G and 3G, we feel that pricing will continue to be pressured, as handset price points hit new levels of affordability (e.g. \$25 smartphones with 1GHz processors, GSM/Edge and wifi)

In short, while we continue to believe Mediatek to be Qualcomm's most credible overall competitor, we think the shift to LTE creates an opportunity for perhaps one other vendor. While we will not venture to guess who this might be, we note that Qualcomm is not standing still and possess massive volume economies of scale much larger than everyone else combined. The company continues to press ahead not just with modem technology, but other areas of the handset BOM, small cell, as well as building out platforms in order to leverage the overarching theme of mobility and the internet of things in general. We reiterate our Buy rating on QCOM.

Smartphones – High-end commoditizes; Firefox redefines cheap; new technologies to drive data growth; augmented reality and personal encryption buzzes

It is strikingly obvious that differentiating on the high-end is difficult. Every major handset OEM at the show had shiny new handsets (and tablets), as well as a wearable to go along with it. Last year we suggested that most should attempt to differentiate on software, by tweaking Android. The results of this have been mixed at best. Samsung's health and security enhancements have made it no more sticky, just as Sony's content offerings offer little draw to the hardware, which otherwise looked the most impressive at the show. Nokia attempted to go further down market with its first Android handset

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ever (strictly Android open source code with no integration into Google), but the

strategic questions of this maneuver overshadowed any attributes that the device may

have had. What was most worrisome, was that a cursory look around hall 7, where

many of the Chinese-based OEMs resided, revealed smartphones that were at least as

feature rich as any the major OEM design houses were carrying. Many even had wearables to go alongside them. All of this points to a market that is continually being

commoditized, at least on the hardware side – a suggestion that has been made years

before, but a theme that is now so palpable at the show it is hard to ignore. The good news for many across the globe is that smartphones are only getting cheaper.

Firefox took this one step further, introducing a \$25 smartphone at the show. The

phone runs on a 1 Ghz application processor and has a Spreadtrum Edge baseband and

WiFi connectivity. We were able to demo the device, which we felt was a large improvement on the year before, when they had the OS (which is based on HTML-5)

running on a more expensive 800 mhz processor. Overall, we feel as though Firefox is

moving in the right direction with this OS, towards the masses with the hope to migrate

these initial customers to more expensive devices in the future. Just in terms of buzz,

the Firefox booth was constantly packed with people and had moved from the hinterlands of hall 8 up to hall 3, where many of the bigger companies were located. It

appears the thirst for anything non-Android or non-iOS is significant, and as long as

Firefox continues to refine its solution, and target the low-end, we feel there should be

an encouraging reception there.

Ubuntu was also there as an alternative to Android or iOS. Last year, the company

appeared to have the most complete OS offering of any of the three main alternatives –

Tizen being the third. During the past year, the company has been able to sign up a

number of both operators and hardware vendors, and while the OS is aimed more at

the mid- to high-end than Firefox or Tizen, the OS is also the most unique. The buzz was

comparable to last year, which was to say it was decent and relatively less

notable than Firefox. Regardless, we believe it could have legs given that so many in the entire mobile ecosystem would like to see more players. The show was lacking in terms of "wow" factors from the handset side. However, there were a few mobile applications that caught our attention. Metaio, a company which has an augmented reality solution, was showing off some very interesting use cases; one from Ikea was demonstrating pulling items like furniture from a physical catalog, onto a 3D imaging sensor attached to a smartphone or tablet and placing the item into your home (viewed through the tablet screen) so you can see what it would look like in your home; another, using 3D glasses, used 3D images to augment the physical world to walk a repairman through the steps they needed to perform to repair an air conditioner. The company has been in existence for almost ten years - the technology was originally formed at Volkswagen. The idea of the technology is becoming more mainstream and Metaio could be one of the key beneficiaries given how advanced the solution appears. The other player in this space is Qualcomm, which for some time now has promoted its augmented reality platform Vuforia. The difference between the two is that Metaio has a solution and is adapting it to customer use cases, whereas Qualcomm has a platform and is looking for app developers to do the consumer facing. In either case, the technology in general is very interesting and we think it could easily be adopted by consumers in significant fashion, all the while increasing demand for data across the network. We expect augmented reality to be one of the major themes in next years MWC as a major handset vendor could launch a smartphone and/or tablet with an integrated 3D image sensor in front of the show. Handset hardware appeared more iterative from our standpoint. One company we met with, Skycross, has developed an antenna solution for 4X4 MIMO, a seemingly simple

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idea which is actually very challenging to implement in a small form factor.

To date,

only 2X2 MIMO has been achieved on the handset, which makes their 4X4

solution all

the more compelling.

Personal encryption and privacy was a new theme and garnered a lot of interest at the

show. The Blackphone booth (not to be confused with Blackberry), run by SPG

Technologies, was constantly packed, with many questions about availability and how

the solution actually worked. The solution secures data at the application level, and

while not yet ready to prevent NSA and hacker snoops, the attempts at trying to restore

personal privacy garnered that attention of many at the show. At the same time Boeing

lobbed in announcement from afar, suggesting they would have a fully encrypted

handset by the end of the year, but not made available to the general public. Given the

excitement around both solutions, our sense is that this budding area could grow into

something significant given most people's wariness of big brother issues in both the

States and elsewhere. In terms of how it affects the industry, we believe it could be a

potential risk for Blackberry (or opportunity), with end-to-end encryption being a key

advantage of their platform.

Blackberry clears up muddled MDM strategy; launches new devices

Blackberry likely won for the most press releases during Mobile World

Congress. In the

bevy of statements, we found their clarification of MDM pricing with EZPass to be the

most resonant of all of them. The new pricing scheme breaks down their MDM solution

into two, clear levels, which make it simple for any customer to understand.

Before

now, with the strategy implemented by the previous CEO, BES 10 had a "buffet-style"

approach to pricing, which was both unclear and at odds with previous Blackberry

pricing schemes. The new, simpler approach corrects these. The company also launched a couple handsets, one for the Indonesian market and one that

returns to the

company's roots of keyboards and trackballs. While the new handset design complements their end-to-end approach, we believe any hopes of traction in the

the

consumer market will likely be muted by the ongoing increasing competition in smartphones in general and Blackberry's inability to gain application momentum with BES 10 specifically. Overall, we think management continues to make smart decisions about the way forward. It is difficult not to think about what could have been had these decision been implemented years ago. In spite of management's attempts at a turnaround however, our belief is it is too late, at least to justify the current market cap size of the company. We believe that they could be successful as a much smaller company with a smaller market cap. As a result, we maintain our Hold here. The front endgame Last year, we suggested that there would be consolidation in the frontend space, engineered by the active players – a result of Qualcomm's then announcement of RF 360, a completely integrated frontend solution on CMOS (eventually). While the complete solution is still a goal Qualcomm has yet to achieve using their internal elements alone, they do feel as though they will have a very competitive, complete solution within three years (not five as we suggest). At the show the company announced a win with ZTE for their latest front-end solutions, the QFE2320 and QFE2340. The solution integrates QCOM's version of envelope tracking, the power amplifier, antenna switch and high band amplifier on one platform. While Qualcomm announced a design win, other front-end players were busy both making deals and displaying their wares. Before the show, RFMD announced a bid for Triquint, attempting to grab one of the two main players in BAW filters (Avago being the other). We do not feel like this is the

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end of the match-making, possibly with Triquint, and certainly outside of this deal, with

other players attempting to redefine their own positions. It will be interesting to watch

Skyworks, which has a healthy handset business in the active elements, but is doing

well growing their business in other areas, outside of the handset market. There is a lot at stake in the front-end, we estimate the total 3G/LTE FEM addressable

market to be a \$7.6 to \$11.5 billion annual opportunity in FY15. And while we did not

hear much interest out of the merchant baseband vendors not-named-Qualcomm (they

are likely focused on launching LTE before they attempt integration elsewhere), many

front-end players were likely looking around at possibilities to strengthen their position

or sell while the selling is good. Some have made great strides in recent years – we met

with Ethertronics, who continues to do well and is making similar moves to integrate

front-end elements into their antennae. I/O Semiconductor is another player with

whom we met and is sounding encouraged by recent design wins. Altogether, there

appear to be a number of players receiving decent amounts of business. Our thesis

though remains the same – consolidation will continue and many will be best served to

find a dance partner sooner rather than later.

Peregrine – PA catches attention of many

At the show, Peregrine demoed their CMOS PA, and the results were impressive – the

company was able achieve 44% efficiency in LTE used alongside Nuijira's envelope

tracking solution – being at least as good, if not better than the best GaAs competitor.

With WCMDA, the solution achieves 48% efficiency without envelope tracking, in line

with the best GaAs competitor. Many hardware vendors are impressed with the demo

results, and while RFMD has made inroads into Peregrine's territory recently, we

believe that Peregrine should be able to secure design wins with this PA solution given

its efficiency and size. While the existing switch business continues to bump along with

Samsung being their main customer, adding PA revenues could be hugely

helpful not just to the top-line, but also to the company's appeal as a target for others. Meanwhile the high performance business segment continues to perform well, with automotive and set-top players both helping to drive profitable growth for the business. Overall, management sounded encouraged about the results of their PA. We believe this is certainly a step in the right direction but our excitement is tempered by the view that something may need to be done, possibly inorganically, in order to expedite their roadmap to a fully integrated solution for the front end.

Audience – sensing more In our meeting with management, they sounded constructive about growth with Chinese-based OEMs and their traction in adjacent markets. They also sounded upbeat about their recent announcement around motion technology, called Motion Q technology, which enables activity navigation and gesture interpretation while consuming low energy (less than 5mW). The company feels that there are a number of use cases around the technology and while we tend to agree, we also wonder how quickly Qualcomm would be able to integrate such a technology into their own chipset. Nonetheless, the technology on its own was interesting, but is still in its early stages. Management appeared positive, encouraged by recent, more constructive discussions with Apple than in years past; however nothing was announced, nor did they expect it to be any time soon. Management simply made the point to suggest that relations were no longer at a standstill. To us this means taking the value of zero opportunities with one of the largest handset OEMs in the world to a chance, incorporating a small option value to the name. We would counter any positive notions about this, with the point that the company could find it challenging to backfill the waning Apple royalty stream with profitable sales as we move throughout the year. As a result, we maintain our Hold.

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Wireless Equipment

Signals to Noise (S2N)

LTE infrastructure poised for growth; small cells could play a bigger role towards the backhalf of '14

Almost every network equipment vendor we met with sounded optimistic about operator spending in the year ahead. With LTE rollouts continuing around the globe,

and beginning in earnest in places like Europe, China, Africa and CALA, we believe this

will be a solid year for LTE infrastructure spend (with 3G also getting a lift in emerging

markets as a lower cost alternative, especially on the handset side). Until now, LTE

spending has been limited to developed Asia and North America. As we have suggested in past notes, many operators have made commitments to LTE this year.

What was not known however, was the significance of that spend and if some operators would choose to roll-out in an iterative process, or do so more quickly. Our

checks indicate that it will be significant across many operators in a number of

geographies, as many understand the operational advantages of the all-IP architecture

of LTE and feel more confident about the overall macro environment to make those

improvements. And increasingly for those that have already rolled out LTE coverage,

densification and newer technologies continue to make headway into their everyday

vernacular.

Small cells have ridden the hype cycle in past years but from what our checks say, we

believe they could see initial, meaningful deployments in the back-half of 2014 and in

earnest in 2015. Over the years we have mentioned Spidercloud as a key player in the

small cell space – even hosting them on one of our tech talks last year. The company

continues to grow quickly, deploying their solution in the UK (and elsewhere) as part of

Vodafone's densification/in-building coverage effort. Spidercloud's solution, while still a

single operator solution, has a total cost of ownership that is less than typical DAS and

the set-up time is also greatly shortened by comparison. After discussions with

management, we believe the year is setting up nicely for the company, and with

multiple operators trialing or deploying their solution and work being done on a multioperator

solution, we believe the future remains bright.

Cisco – More work to be done

Our conversations with Cisco's mobile networking sales and business leaders at MWC

– and with our industry contacts – suggest that Cisco's service provider business overall

is still in "transition" mode. While Cisco pre-announced the CRS-X core router in 2013,

the company is yet to ship the CRS-X to the telcos or ISPs in their production networks.

Further, while Cisco's higher-end edge router ASR 9k (suited for metro core versus for

lower-end metro access edge use cases) is seeing double-digit order bookings trends,

we continue to note an air-gap in Cisco's low and mid-range access edge router

portfolio – with the company's legacy 7600 routers etc seeing growing competition

from Juniper's MX and Alcatel Lucent's 7k series at the US telcos – e.g. at AT&T, etc,

and from Huawei at the Tier-1 telcos in Europe, China, and in Latin America. On the mobile networking side, a key insight from our MWC conversations with Cisco

management was the focus on readying the company's mobile packet core, small cells,

and SON (Self Organizing Network) SW solutions portfolio for upcoming Telco NFV and

Mobile Cloud opportunities [refer to our recent FITT report on Big Data Networking in

which we discuss the Mobile Cloud topic and SW themes around mobile services orchestration, service creation on the fly, etc].

We get the sense that Cisco is buying time on the NFV front – by noting at their MWC

Q&A and keynote sessions that NFV rollouts are still an "early stage" architectural

transformation at the Tier-1 telcos in the US, telcos in Western and Northern Europe, etc.

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Signals to Noise (S2N)

Our view is that while Cisco is in the process of launching their APIC SDN Controller

SW to be a Cloud services orchestration, Cloud IT automation, and virtual overlay

framework for their Nexus 9k datacenter switches – the company is yet to launch a

telco-focused service orchestration framework and SW tools specifically meant for

automating mobile network services creation, virtual overlays based on BGP/-MPLS etc

for telco NFV use cases etc (similar to Juniper's Contrail SW).

Further, we note that Cisco's Virtualized Evolved Packet Core solution – with performance metrics comparable to their current ASR 5k HW and SW platform – is

likely in the product development phase versus in carrier production network readiness

stage – another reason for why we hear comments around NFV timing being still relatively early stage at the major telcos from Cisco.

That said, we do note a well thought-out go to market strategy from Cisco on the NFV

front – with management noting that service providers – especially mobile operators –

are likely to deploy a combination of HW platforms (e.g. for higher-end edge and core

routers), virtualized appliances (for radio access network SW, EPC, firewalls, etc), and

Cloud based services – versus an all virtual network of layer 2/7 feature-functions.

On the SON front – i.e. SW tools for automating the planning, configuration, management, and optimization of 4G LTE and Carrier WiFi based mobile

networks – the

company is seeing a higher number of field trials of Cisco's SON SW and the Intucell

Small Cells solution - with the Tier-1 mobile operators (versus in 2013) – indicative of a

higher interest level from the major mobile operators for Cisco's LTE and Carrier WiFi

HW and SW solutions – with potential for pull-through for the ASR 5k EPC platform, the

ASR 9k edge router, etc.

In summary, while the company is making some progress in its wireless initiatives, we

remain with our near-term caution on the growth prospects of Cisco's service provider

business.

Cisco, in our view, needs to launch a best in class competitive lower-end and mid-range

edge routing portfolio and the CRS-X core router, earliest this year – so as

to stabilize recent share loss trends we (and industry data trackers: Infonetics, etc) have noted in the company's routing portfolio. We also see the need for Cisco to launch a competitive virtual EPC solution and NFV focused virtual overlay and Mobile Cloud service orchestration solutions (competitive with Juniper's Contrail, etc) in this calendar year – so as to be a meaningful player in upcoming telco NFV rollouts of SW centric layer 2/7 networking solutions.

F5 – Winning in the Telco Space
We are raising our Price Target on F5, from \$120 to \$130; reflecting our improved conviction on F5's next-phase growth opportunities in Telco and in Next-Gen Security - following our recent MWC and RSA conference meetings. While we leave our FY14/15 estimates unchanged, we maintain a positive bias to our estimates – which we plan on updating post the Mar Q report. At our \$130 PT, the stock would trade at appx 18x P/E on an FY15 First Call consensus EPS est basis (ex cash) – which is in line with our data networking peer group multiple of 18-19x [details in our valuation and risks section].

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Signals to Noise (S2N)

Our key insight on F5 is our higher conviction on the company's next-phase growth opportunities in Telco Network Intelligence and Next-Gen Security use cases, as we highlight below:

Telco Network Intelligence: Field color from our MWC industry meetings correlate well

with our recent round of IT channel conversations – which note that F5's +2 years of

R&D and sales cycle investment at the major telcos (e.g. Verizon, AT&T, Vodafone,

Telefonica, etc) on Layer 4/7 network intelligence initiatives is starting to positively

impact F5's telco sales pipeline.

While the company noted recent set of LTE signaling and mobile data traffic management related design wins at OI in Latin America and at carriers in the EMEA and

APAC – our research suggests likely design wins at the large US telcos during 2014

(e.g. at Verizon, AT&T Domain 2.0, etc) – for LTE Diameter Signaling, LTE Roaming,

mobile web traffic steering, enforcing BW caps for mobile data plans, mobile network

firewalls, etc.

The telco design wins involve a multi-Q sales pipeline for F5's HW platforms such as

the higher-end BIG-IP 7k/10k series and Viprion, SW modules such as Traffix Diameter

Signaling, CG-NAT, Local and Global Traffic Management, Policy Enforcement, Application and Network Firewalls, Access Policy Management, etc, and pre/post-sales

telco solutions integration + consulting opportunities.

F5 has "crossed the chasm" in our view – in terms of being a viable carrier-grade SW

and HW platform solution for the large telcos – for enabling the mobile operators in

particular to effectively monetize their LTE data services subscribers – using

sophisticated usage based charging schemes - and pricing methods for specific consumer and business demographics – such as teen-rate plans, corporate plans, etc

[refer to our recent FITT on Big Data Networking for the SW use cases in network intelligence].

Driving the demand for F5's layer 4/7 and application-aware service provider network

intelligence solutions is the carrier industry's imperative around Network Functions

Virtualization [NFV] and "Network Consolidation".

We plan on a deep-dive follow-on note on the Telco NFV and Network Consolidation themes.

In the context of this note, it is noteworthy to highlight that F5 is seeing opportunities to

sell its Layer 4/7 network intelligence solutions at the large mobile operators – primarily

due to the window of opportunity that has opened up for F5 in:

1. Telco NFV: which involves deploying SW and virtual appliances for Control Plane use

cases such as LTE Diameter Signaling Routing, LTE Roaming, Usage-Based Mobile Data Plans, Web Traffic Steering, etc;

2 Network Consolidation: Mobile operators, keen on meaningfully improving the EBITDA profitability of their LTE mobile data service offerings are looking to consolidate

multiple legacy network elements (security, policy servers, DPI/analytics, charging

servers, IPv4/v6 address translation, etc) in the Gi and SGi network – i.e. the network

segment between the mobile packet core (GGSN/S-GW, etc) and the IP edge router –

using newer technology platforms such as F5's multi Gigabit BIG IP or Viprion ADC

platforms running multiple SW modules – so as to structurally lower their network cost

basis and also leverage new application- and web traffic aware network intelligence

features to implement new usage and traffic based mobile rate plans, etc.

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Next-Gen Security: On the security use cases, our MWC and RSA conference conversations suggest that the "best" solutions bundle – involving F5's BIG IP or

Viprion ADC running the Traffic Management, Access Policy Management, and Web Application Security + Network Firewalling Modules – is currently seeing the most sales

traction – versus the "good" or the "better" solutions bundle (which do not include the security SW modules).

Higher than anticipated IT customer demand for the "best" solutions module – which

includes F5's ADC feature-functions and at least 1 security related SW module –

suggests to us that interest in F5's Next-Gen Security solutions is clearly on the uptick –

the key demand driver, in our view, is Datacenter IT customer's preference for highperformance

DDOS mitigation systems (which require 100's of Gbps of traffic processing throughput (offered by F5) – versus peers mostly selling 10s of Gbps

capable DDOS mitigation appliances).

A related demand driver for F5's Application + Network Firewall solutions is the

differentiated value proposition of F5's "Full Proxy" architecture – which, in our view,

has higher security efficacy (in terms of threat mitigation efficiency, application aware

security policies, etc) versus conventional stateful inspection firewalls (which mostly

look at ports and protocols versus examine application layer events).

Our MWC and RSA conference meetings suggest to us that F5 is likely to introduce a

range of subscription services oriented security services – for DDOS mitigation, etc –

which could help improve the visibility of the quarterly revenue flow – given inherent

lumpiness in box oriented purchases.

There are 2 positive catalysts for F5's security business heading into CY15, in our view:

1. Outbound Firewalls: While F5 is adding limited outbound security features to its

inbound firewall solution this year, the company is likely to launch a new Outbound

Firewall SW module in CY15, complementing the Inbound Firewall solution. We therefore see F5 competing more effectively versus CSC0, PANW, CHKP, etc for both

inbound and outbound security use cases, heading into CY15 – helping to expand F5's

share of wallet to the full \$8B a year security market [Infonetics data]. We estimate F5's

current wallet share in security around \$2B/year.

2. APT Defense: We see F5 targeting APT Defense opportunities in CY15 – a market

segment in which FireEye is currently the market leader. APT complements F5's NextGen

Firewall in our view – adding more depth to F5's security skill sets.

In summary, we remain positive with our Buy rating on F5 – noting Security + Telco as

next-phase growth opportunities.

F5: Valuation and risks

We raise our Price Target, from \$120 to \$130; reflecting our improved conviction on

F5's next-phase growth opportunities in Telco and in Next-Gen Security - following our

recent MWC and RSA conference meetings. While we leave our FY14/15 estimates unchanged, we maintain a positive bias to our estimates – which we plan on updating

post the Mar Q report. At our \$130 PT, the stock would trade at appx 18x P/E on an

FY15 First Call consensus EPS est basis (ex cash) – which is in line with our data

networking peer group multiple of 18-19x.

We have established our \$130 Price Target using discounted cash flow (DCF) analysis.

For our DCF, we assume a discount rate of 11.5% and a 5% growth rate. Our discount

rate is derived on a weighted average cost of capital basis using a risk-free rate of 5.5%,

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beta of 1.4, and an equity risk premium of 5%. Our growth rate is based on a long-term estimate of industry growth, consistent with F5's specialty communications equipment peer group.

Key downside risks to our price target are around unanticipated shifts in enterprise and carrier IT spending, technology disruptions in the ADC space, and F5's competitors (e.g.

Citrix, Radware, Al0, etc) taking share in key ADC use cases such as Web 2.0 and

Cloud providers, telco and cable, and in next-gen security.

CommScope – LTE, 3G optimization and desification all provide tailwind

Out of all of our companies, CommScope sounded the most positive. Their Wireless

business is keeping pace, helped by infrastructure coverage projects in developing

countries and capacity improvements here in North America. The company's DAS business has done well, as enterprises continue to look for easily deployable, multivendor

solutions. To build on this, the company announced the Ion-E, a new DAS solution which is frequency agnostic (380 Mhz to 2700 MHz; multimode and allows the

possibility to add WiFi) and with access points that can be powered over Ethernet

(POE). We met with several operators who were excited by the flexibility the solution

allowed. And with the point-and-click usability, it allows the enterprise IT manager to

push into the active space, essentially becoming RF engineers. After four years of

development, the project is commercially available now and will be shipping in the

second half of this year, first into Europe, and later in the US and elsewhere.

In terms of visibility, the company appeared confident about their view, both the

quarter and the year, and suggested that many investors wrongly assumed that the

slowdown in a few coverage projects in North America would put them at risk. But

management believes that the pickup in LTE in Europe and elsewhere, 3G modernization projects in the South East Asia, Africa and Russia and continued

capacity adds in North America will help them to maintain growth through the rest of

the year in Wireless. We believe that management is likely being conservative with their

guide, and feel confident that the diversity in end-markets and in their product portfolio, position them well for a solid year. In terms of the Enterprise side, DAS will also help here, especially in the second-half as Ion-E begins shipping in volume. A recent Enterprise-specific development is the company's announcement of a modular data center, which can be drop-shipped to any customer. The solution can help customers add capacity quickly and management expects these solutions to add incrementally in the second half of 2014. With Broadband, management expects it to be profitable in the near-term, otherwise they could take measures if it is not. They did note that Broadband brings them significant cross-segment sales, and believe that they should be able to realize more cost synergies going forward. Altogether we believe CommScope should benefit from what will be a strong year in infrastructure spending. Furthermore, the company continues to innovate in areas where they have the scale to bring specific products to markets. We reiterate our Buy here, as we feel the year should be a strong one for the company.

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Wireless Equipment

Signals to Noise (S2N)

Ciena – Benefitting from the shift to LTE

We sum up comments on our quarter preview and our thoughts on optical network upgrade opportunities in FY14+, in our Quarter Preview - published alongside this MWC note.

Our MWC conversations with Ciena's CTO gave us insight on management's view on

Alcatel Lucent selected recently as the second source supplier at Verizon, on 100G and

OTN switching upgrade opportunities this calendar year, etc.

We get the read from our conversations with management that Verizon is likely to

follow an 80/20 rule for its optical network sourcing – i.e. appx 80% of long haul and

metro optical networking upgrades using Ciena's platforms and the remainder likely

allocated to the second-source supplier.

Further, we note that a meaningful runway for Ciena's Carrier Ethernet (Packet

Networking) switches for aggregating traffic from 4G macro cells (and ongoing 4G

small cell rollouts) at the major US and rest of world telcos – with Ciena noting that

appx 50% of cell towers are lit by fiber – suggesting to us that there is appx a +30%

runway remaining for "fiberization" of the radio access and metro aggregation network.

AT&T's \$14B over the next 2-3 years Project Velocity IP capex spend for utilizing IP

based fiber networks for access traffic aggregation, etc - is a case in point.

Ciena also noted potential for 1G to 10G access network upgrades in telco networks –

as an out quarter refresh cycle opportunity for the company's Packet Networking

portfolio.

Ciena management also noted that they see around a 10% OTN switching attach rate in

their 6500 series 100G packet/optical networking platform this year – suggesting to us

that Ciena could manage to gradually improve the gross margin profile of their 100G

platform, based on sales of mid 40s margin OTN switching line cards embedded in their

6500 series platform.

Management remains positive on strength in the 100G optical transport upgrade cycle –

in both the long haul and metro networks – at the large telcos and in Cloud

datacenters,
ISPs, etc – noting that appx 20-25% of their quarterly revenues are from non telcos –
i.e. from datacenter interconnect use cases, etc.
Ciena does not see 200G being a meaningful optical network upgrade cycle this calendar year – noting that 100G is still in “year two” of a multi-year refresh cycle. As a case in point, we note that AT&T is yet to commence 100G optical network upgrades at any level of scale and Verizon is still in eval stages of upgrading their metro core networks to 100G – according to our mosaic field research view.
In summary, we remain with our positive outlook and our Buy rating on Ciena, noting favorable risk/reward at current levels – and noting Ciena as a market leader in technology and in carrier customer mind-share in 100G coherent, OTN switching, control plane SW tools, etc.
The recent Ciena – Ericsson partnership is likely to be favorable for sales of Ciena’s optical networking gear and control plane automation SW in Telco NFV architectural upgrades – given our view that a high degree of network and services level automation is a key requirement from the large carriers – given the telcos’ opex efficiency imperative.

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Mavenir – VoLTE the Key

Our MWC conversations with Mavenir senior management noted a positive view on Voice over LTE network services rollouts in 2014+ at the company's US and European

telco customers – i.e. at T-Mobile US, Deutsche Telecom, France Telecom, Vodafone, etc.

We get the read that Mavenir's US telco customers are likely to rollout VoLTE and RCS

services sooner versus their European telco counterparts this calendar year.

We also noted 11 new carrier customer wins for Mavenir's voice network solutions in

Europe – with potential for VoLTE, RCS, and messaging services rollouts in these

customer wins later this year.

Carrier commitment for VoLTE hovered in the 90% range; and in the 50% range for RCS

– based on results of a recent carrier customer survey discussed by management

during our MWC meeting.

Management further noted improving carrier customer demand (with an assist from

Oracle) and order booking trends for their in-house SBC solution – noting that in prior

years the company mostly re-sold third-party SBC solutions to the telcos.

We also note Mavenir starting to engage at Verizon in IP based voice networking use

cases and also at AT&T for Rich Communication Services etc (a step up, in our view,

from sales of 3G voice, video, and text messaging solutions to the carrier).

The company feels convicted on their improving sales win/loss ratio – noting technologically and price/performance differentiated VoLTE, IMS control

plane, and

RCS solutions versus alternatives from the Tier-1 vendors – e.g. Nokia Solutions

Networks, Huawei, Alcatel Lucent, etc.

We remain with our positive outlook and our Buy rating on Mavenir – noting Voice over

LTE, RCS, and SBC as among the key product cycle drivers for revenue growth in

CY14/15.

Cavium – Small Cells, but not Femto's

Our MWC conversation with senior management suggests that Cavium's Fusion chip

shipments (likely a \$20-30 part) into 3G and 4G small cells rollouts is still in early stage

at the present – likely a 2H14+ revenue opportunity for Cavium in our view.

The Fusion chip likely to ship into OEM platforms (NSN, Huawei, Samsung) at

around

14 telcos for the initial phase of 3G/4G small cells rollouts –followed by +15 carriers in the subsequent phases.

Sales of the Neuron chip into TCAM use cases is pointing to a CY15+ event, with

Neuron chip revs likely to be less than 10% of CY15 revs by the company's estimate.

Management also noted that sales of their Liquid I/O chipset is likely to be significant

for this calendar year – an incremental growth driver, in the company's view, to sales of

their core products – i.e. Octeon2, Nitrox3, etc.

Cavium management remains convicted on their Project Thunder initiative – noting

potential for ARM SOC chip sales into 64 bit ARM servers in Cloud-scale datacenters.

While Octeon3 is likely to be an incremental revenue growth driver for Cavium in CY15

(early revs for Octeon3 starting Q4 CY14), we think that the ARM SOC solutions sale is

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likely a CY16+ opportunity for the company – and mostly an out quarter growth story

opportunity for management to share with investors, at the present.

In summary, while we are constructive on Cavium's CY15+ rev growth

opportunities for

the new chips – Octeon3, Fusion, Neuron, etc – we remain with our neutral near-term

view and our Hold-rating on the stock – noting balanced risk/reward at current levels –

i.e. the stock trading at appx 24x P/E for ~19% First Call consensus rev growth

expectation.

Ixia – Virtualization moderating growth

Our MWC conversations with the network testing solutions vendors is another set of

datapoints supporting our near-term caution on Ixia – a key vendor in enterprise and

carrier network test and network visibility solutions.

While 40GE datacenter switch testing and LTE voice and data network equipment and

network services testing are multi quarter opportunities for Ixia – we note lumpiness in

LTE network testing orders (at telcos such as AT&T, etc) and 40GE datacenter switch

testing still in early stages and virtualization of testing applications moderating demand

for incremental box capacity (that is, customers run virtual instances of testing scripts

which reduce the need to purchase incremental physical capacity, lowering the overall

industry revenue growth rate.

That said, we remain constructive on Ixia's Anue Network Monitoring and Network

Visibility test solutions business, while being cautious on muted growth trends in the

near-term for Ixia's core network testing business. We remain with our Hold rating on

Ixia.

Ruckus – helped by cable providers; in search of mobile

We met with Ruckus management at the show, who felt encouraged by continued traction by cable providers. One point which struck us as positive was

management's

warm reception to LTE-over-unlicensed (LTE-u). They suggested LTE-u could be helpful

for some of their MSO customers, possibly pushing them to stitch together a mobile

strategy (e.g. Republic Wireless). In addition, offering up an AP with integrated LTE-u to

enterprises puts their enterprise customers at the negotiating table for operators. They noted that integrating LTE into their access points was relatively easy and would be part of their roadmap if demand trends moved in a positive direction. The one Mobile World Congress announcement for Ruckus covered their new partnership with Global Reach, a major VAR in the UK. The agreement is example of how Ruckus is using the gateway solution in areas outside of the traditional service provider vertical. The company will likely see more deals like this, as VARs look to increase the recurring/management piece of their respective revenue bases. In terms of 802.11ac, the company said it is shipping product and believes this will contribute to a better year. They also said that they will be on time with Wave 2 of 802.11ac. The offering will undoubtedly help their competitive position, as we believe it has been a hindrance until now; however, with just a 10 to 15% price premium we believe it simply keeps ASPs stable and will not necessarily drive a new wave of demand. Overall management struck a positive tone, likely helped by the growing cable provider business. While we believe this to be a source of continued growth, we remain on the sidelines here, as we would like to see them gain traction in the mobile operator space, an area where we believe if won, would begin to justify their price multiple. We maintain our Hold rating.

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-----Networking

Sector Valuation and Risks

Stocks in our data networking peer group trade at a forward P/E in the 18-19x CY15

consensus EPS estimates range – a modest premium to the market multiple; given the

above market growth prospects of the networking universe.

Key risks (on the downside and upside) are from unanticipated shifts in enterprise and

telco IT spending, share shifts from competitive new product launches, and from

technology disruptions – creating new market entry opportunities.

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Industry Metrics
Figure 1: Universal stock price performance
3/2/2014
Alcatel Lucent Sa
Cisco Systems Inc
Hewlett-packard Co
International Business Machines Corp
Ericsson
Motorola Solutions Inc
Nokia Oyj
Zte Corp
Networking majors
Brocade Communications Systems Inc
Emc Corp
Extreme Networks Inc
Juniper Networks Inc
Netapp Inc
Dell Inc
Other Networking
Htc Corp
Samsung Electronics Co Ltd
Blackberry Ltd
Apple Inc
Smartphones
Acme Packet Inc
Aruba Networks Inc
Audiocodes Ltd
Vmware Inc
F5 Networks Inc
Riverbed Technology Inc
Sonus Networks Inc
Next-gen networking
Powerwave Technologies Inc
Telestone Technologies Corp
China Greentech Corp Ltd
Adtran Inc
Comba Telecom Systems Holdings Ltd
Sub-systems
Infasonics Corp
Tessco Technologies Inc
Distributors
Qualcomm Inc
Texas Instruments Inc
Broadcom Corp
Infineon Technologies Ag
Stmicroelectronics Nv
Marvell Technology Group Ltd
Mediatek Inc

Basebands
Anadigics Inc
Avago Technologies Ltd
Cavium Inc
Immersion Corp
Interdigital Inc
Omnivision Technologies Inc
Rf Micro Devices Inc
Silicon Laboratories Inc
Skyworks Solutions Inc
Emulex Corp
Qlogic Corp
Triquint Semiconductor Inc
Components
Garmin Ltd
Tomtom Nv
Trimble Navigation Ltd
GPS/Navigation
Netgear Inc
Universal Electronics Inc
Tivo Inc
Entropic Communications Inc
Echostar Corp
Home Networking
Ciena Corp
Finisar Corp
Jds Uniphase Corp
Opnext Inc
Oclaro Inc
Optical
Glu Mobile Inc
Gameloft Se
Artificial Life Inc
Mobile Content
Total Universe
Mean
Median
High
Low
Market cap weighted Wtd. Avg
Source: Deutsche Bank, Bloomberg Finance LP
-1.5%
7.0%
2.6% 43.2% -34.5%
29.6%
124.6%
-0.4% -2.6%
-16.5%
-3.3% 53.3%
2.8%
1.7%

32.6%
 -16.5%
 14.9%
 4.6%
 150.0%
 0.5% -1.3%
 132.9%
 19.2%
 54.1% 80.5%
 384.4%
 187.7%
 45.1% 4.1%
 27.6% -1.7%
 425.9%
 -85.8%
 4.7%
 Weekly Return YTD Return Y/Y Return 3-year return
 0.4%
 -1.5% -2.8%
 0.3%
 1.3%
 2.2%
 1.8%
 1.6%
 1.0%
 0.9%
 0.4%
 3.4%
 6.8%
 -3.0% 211.8%
 4.7%
 5.1%
 -13.1%
 17.6%
 48.3% -30.8%
 -1.3% -8.7% 13.3%
 5.5%
 0.3%
 -1.9% 6.7% 64.4%
 -6.5% 111.1%
 6.8%
 0.4% 51.0% -0.7%
 8.0%
 4.9%
 -4.7% -17.9%
 -4.3% 18.5%
 1.3%
 0.0%
 -12.4%
 28.8% -44.8%
 69.4% 50.0%

13.4% -3.6%
63.7% 50.4%
30.5% -38.9%
-1.8% 19.0% -23.0%
0.0%
-0.6% 1.9% 32.5% 3.8%
2.6%
1.4%
9.4%
0.2%
3.4%
NA
-24.6%
NA
-1.0% 14.6%
6.3%
23.8%
23.6%
23.2%
-18.0%
120.8%
-3.5% -51.4% -87.0%
-1.7% -12.6% 46.2%
34.4%
-6.2% 22.2% 46.4%
5.7% -16.6%
NA
-20.0%
NA
-34.1%
28.7%
-0.4% 7.1% 30.6% 12.7%
1.9%
6.1%
-0.8% 18.4%
2.0%
11.5%
NA
18.5% 42.2% -8.2%
31.8%
NA
-92.4%
NA
-3.8% 150.0%
NA
NA
NA
NA
-0.2% -3.0%
-1.1% -3.0%
1.6% 44.0%

-2.2% 99.3%
3.6%
0.7%
2.4%
3.8%
NA
-84.0%
NA
NA
-37.5%
425.9%
NA
NA
-97.0%
NA
NA
23.9% -44.5%
2.4%
-64.9%
-68.8%
224.5%
-5.6% 70.4% 218.4%
46.9% 248.1%
221.4%
-0.4% 1.4% 13.6% 28.0%
1.8%
12.9%
0.3%
16.7%
22.1%
13.0%
21.9%
3.9%
8.4%
32.6%
3.4%
0.4%
30.2% 23.0%
-3.4% 0.2% -12.3% -29.6%
4.6%
8.7%
NA
NA
2.1%
1.6%
31.5% 30.7%
-3.7% -1.1%
5.4%
4.7%
3.9% 22.6% 1.1%
-13.7%

-1.5% 15.1%
0.8%
37.2%
20.0%
24.2%
-65.2%
83.1% 87.0%
14.3% -4.9%
83.6% 70.7%
-31.8%
31.7% 2.7%
14.7% -30.9%
-2.0% 6.3% 48.9% -16.1%
NA
20.0% -1.8%
47.1% -48.1%
52.9% -6.5%
-1.0% -11.9%
-85.4%
-35.6%
26.9% -48.4%
58.0% -1.7%
26.5% 14.5%
71.3% 0.1%
-0.5% 1.7% 12.7% -34.1%
1.1%
163.8%
-14.8%
7.2% 15.2%
3.3%
2.1%
NA
16.2%
41.2% -5.7%
52.7% 56.9%
-9.3% 48.3% -25.5%
-0.7% 9.9% 28.3% 51.1%
NA
NA
9.7%
2.9%
109.2%
8.1%
NA
1.6% 5.6% 43.1% 27.5%
-0.1% 3.8% 1.3% 3.6%
4.2%
6.1%
3.1%
7.2%
4.1%

6.1%
NA
49.3%
42.9%
-6.8% -1.6% -52.9%
0.2%
32.2% 37.2%
1.9% 29.8% 16.0%
-3.6% 2.7% 65.7% -14.4%
-3.4% -0.9%
2.7%
NA
NA
66.0% -43.7%
-2.0% -45.2%
NA
-3.5% -0.3% -36.1%
46.8%
224.5%
-9.3% -92.4% -97.0%
18.7% 21.3%

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Deutsche Bank Securities Inc.

Signals to Noise (S2N)

Wireless Equipment

2 March 2014

Deutsche Bank Securities Inc.

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Figure 2: Valuation metrics

Intraday

Deutsche Bank Securities Inc. Forecasts

\$ 11.72 16.70 \$ 9.58

ARUN-USJuly Hold \$ 20.51 26.02 \$ 13.07

BBRY-USFeb Hold \$ 10.00 16.29 \$ 5.75

BRCO-US Oct Hold \$ 9.57 \$ 9.71 5.25\$

BSFT-US Dec Hold \$ 30.01 37.47 \$ 22.18

CAVM-USDec Hold \$ 42.13 42.77 \$ 29.60

\$ 24.57 27.67 \$ 14.32

\$ 24.22

\$

\$

\$

CIEN-US Oct Buy

COMM-USDec Buy

\$

\$

\$

CSCO-USJuly Hold \$ 21.80 26.38 \$ 20.24

FFIV-US Sep Buy 112.34\$

\$

\$ 114.51 68.02

\$

\$

\$

JNPR-US Dec Hold \$ 26.74 27.95 \$ 15.69

MSI-US Dec Hold \$ 66.20 67.50 \$ 54.01

\$ 15.45

NPTN-US Dec Hold \$ 8.25 \$ 9.45 4.79\$

PSMI-US Dec Hold \$ 6.68 12.02 \$ 5.08

\$ 75.29 76.44 \$ 59.39

QCOM-USSep Buy

RVBD-USDec Hold \$ 22.28 22.28 \$ 13.89

RKUS-USDec Hold \$ 14.00 24.11 \$ 10.68

UBNT-US Jun Hold \$ 49.41 52.00 \$ 12.84

XXIA-US Dec Hold \$ 12.36 22.24 \$ 12.01

\$

\$

\$

\$

\$

\$

Avg.

Intraday Current

ADNC-USDec Hold 11.72\$

ARUN-USJuly Hold 20.51\$
 BBRY-USFeb Hold 10.00\$
 \$
 BRCD-USOct Hold 9.57
 BSFT-USDec Hold 30.01\$
 CAVM-USDec Hold 42.13\$
 CIEN-US Oct Buy 24.57\$
 COMM-USDec Buy 24.22\$
 CSC0-USJuly Hold 21.80\$
 FFIV-US Sep Buy 112.34\$
 JNPR-USDec Hold 26.74\$
 MSI-US Dec Hold 66.20\$
 MVNR-USDec Buy 15.45\$
 NPTN-USDec Hold 8.25
 \$
 \$
 PSMI-US Dec Hold 6.68
 QCOM-USSep Buy 75.29\$
 RVBD-USDec Hold 22.28\$
 RKUS-USDec Hold 14.00\$
 UBNT-USJun Hold 49.41\$
 XXIA-US Dec Hold 12.36\$
 Average
 258 1.2
 2,484 4.8
 5,257 0.2
 4,404 1.9
 845 5.6
 2,265 8.2
 2,544 1.9
 3,853 2.0
 118,374 1.9
 8,743 6.2
 13,520 2.6
 17,291 2.0
 275 6.1
 254 1.1
 218 1.9
 129,649 6.0
 3,667 5.0
 1,327 9.9
 4,430 14.7
 959 2.9
 4.31
 EV
 59 0.6
 0.8 0.7 0.8
 3.8 3.5 3.0
 0.3 0.4 0.8
 1.8 1.8 1.8
 4.7 4.4 3.9

9.1 7.0 5.9
 1.8 1.5 1.4
 2.0 1.9 1.9
 1.8 1.8 1.8
 5.3 4.9 4.3
 2.7 2.5 2.3
 1.9 1.9 1.9
 4.1 3.0 2.5
 0.9 0.8 0.8
 1.0 1.0 1.4
 4.8 3.8 3.6
 4.4 3.5 3.3
 5.5 4.5 3.7
 13.0 9.3 6.7
 2.2 1.9 1.8
 0.7 11.2
 1.8 10.2
 Valuation Metrics At Current Price
 6.4 10.8 NM NM 18.6
 2.6 25.1 18.0 21.6 18.6 15.7 33.0
 1.5
 3.3 21.6 18.0 20.6 15.1 10.6 24.4
 1.3 NM NM NM NM 2.0
 8.5 8.1 9.1 9.4 17.6
 13.3
 28.3
 14.3
 20.8
 5.0 39.6 NM 35.7 23.1 17.5 38.4 101.9
 7.4
 6.7 6.5 6.6 6.4 12.9
 29.0 NM NM 2.6 1.9
 35.2 25.5 22.4 2.4 2.0
 25.3 20.4 14.1 2.0 1.7
 41.4 32.5 25.4 1.7 4.6
 Price Market EV/Rev EV/Rev EV/Rev EV/Rev EV/Rev EV/EBIT EV/EBIT EV/EBIT EV/
 EBIT EV/EBIT P/E P/E P/E P/E P/E PE/GR PE/GR PE/GR PE/GR PE/GR 52-week Book
 Symbol FYE Rating 03/02/14 Cap. (Mils) CY2011 CY2012 CY2013E CY2014E CY2015E
 CY2011 CY2012 CY2013E CY2014E CY2015E CY2011 CY2012 CY2013E CY2014E CY2015E
 CY2011 CY2012 CY2013E CY2014E CY2015E Low Value
 2.5 1.8
 2.0 1.7
 1.9 1.5
 % above Price/ Price/
 Cash
 Value
 4.1 NM NM 22% 1.61
 1.6 57% 8.33
 1.3 NM 63.4 29.4 22.0 16.5 NM NM 46.1 26.3 17.5 NM NM 4.7 2.7
 1.8 17.2 13.1 10.7 10.7 10.0 29.0
 1.7

3.7 16.3 13.9 13.7 11.5 9.9 28.5
2.2 12.7 17.1 12.9 11.6 10.4 22.5
1.9 12.0 11.0 10.8 11.3 11.1 25.2
20.5
11.3
25.0
31.3
20.7
1.2 NM 15.4 75.4 NM 35.3 NM 22.7
3.3 15.0 12.8 12.2 9.5 8.7 22.4
3.0 17.1 16.5 15.1 14.2 12.3 24.8
3.1 NM 41.9 56.1 37.6 23.3 125.3
5.6 42.5 40.0 27.2 19.5 16.5 61.4
1.6 14.0
9.7 9.0 7.7 6.8 20.3
15.2 16.0 14.1 8.0 5.7
10.7 10.6 10.0 6.8 5.9
24.1 21.0 18.5 2.3 2.0
20.8 18.8 17.3 3.3 4.6
63.9 NM NM NM NM NM NM NM NM 74% 1.95
11.9 12.5 12.9 NM NM NM NM NM 82% 6.66
1.1 35% 7.51
1.1 42% 13.18
1.8 72%
3.9 NM
4.2 4.4
5.6 5.6
1.9 1.7
3.1 2.8
1.85
7.64
2.54
11.36
12.53
17.73
NM (3.43)
NM (1.43)
5.2 8% 3.79
1.5 65% 9.40
2.6 70% 4.31
14.0 17.8 16.2 31.9 26.1 17.6 22.5 20.4 23% 7.93
2.0 NM NM NM NM 23.2 NM NM NM NM 58.7 NM NM NM NM 2.2 NM
0.7 NM 72% 1.50
91.1 NM 43.5 NM NM NM NM NM 31% 1.77
1.0 27% 4.28
1.4 60%
18.8
22.4
26.0
52.3
17.2

16.7 14.4 12.9 1.8 1.5
 22.0 20.9 18.2 1.9 1.7
 83.3 72.3 44.1 5.7 1.2
 33.5 24.6 21.5 1.9 1.6
 15.4 13.6 12.2 2.0 1.7
 1.3 1.1
 1.6 1.6
 3.8 3.3
 1.0 0.8
 1.5 1.3
 3.70
 7.08
 7.32
 22.57
 NM (10.86)
 8.29
 13.28
 4.10
 2.0 31% 7.78
 0.7 285% 18.85
 1.2 3% 2.64
 3.59 3.01 2.68 2.40 17.55 19.54 22.12 15.22 14.33 31.64 30.05 31.51 23.15
 22.33 5.30 4.44 3.80 3.76 3.18
 Valuation Metrics At Our Price Target
 ARUN-USJuly Hold \$ 17.00
 BBRY-USFeb Hold \$ 6.00
 BRCD-USOct Hold \$ 6.00
 BSFT-USDec Hold \$ 26.00
 CAVM-USDec Hold \$ 35.00
 \$ 26.00
 \$ 22.00
 1,734 3.8
 1,086 0.1
 2,374 1.1
 665 4.8
 CIEN-US Oct Buy
 COMM-USDec Buy
 1,754 6.8
 3,432 2.0
 6,202 1.9
 CSCO-USJuly Hold \$ 25.00 103,775 2.3
 FFIV-US Sep Buy 120.00\$
 JNPR-USDec Hold \$ 26.00
 MSI-US Dec Hold \$ 55.00
 \$ 14.00
 MVNR-USDec Buy
 NPTN-USDec Hold \$ 5.00
 PSMI-US Dec Hold \$ 6.00
 QCOM-USSep Buy
 RVBD-USDec Hold \$ 16.00
 RKUS-USDec Hold \$ 14.00

UBNT-USJun Hold \$ 42.00

XXIA-US Dec Hold \$ 16.00

Average

8,103 6.7

11,299 2.5

13,600 1.7

275 5.5

123 0.6

180 1.7

\$ 78.00 102,706 6.3

2,626 3.6

1,188 9.9

3,534 12.4

1,189 3.8

3.91

Source: Deutsche Bank, company data

0.4 0.4 0.4

3.1 2.8 2.4

0.1 0.1 0.3

1.1 1.1 1.1

4.0 3.8 3.3

7.4 5.8 4.9

1.8 1.6 1.5

1.9 1.8 1.8

2.2 2.2 2.2

5.7 5.3 4.6

2.6 2.4 2.3

1.6 1.6 1.6

3.7 2.7 2.3

0.5 0.4 0.4

0.9 0.9 1.2

5.0 4.0 3.8

3.1 2.5 2.3

5.5 4.5 3.7

10.9 7.8 5.6

2.9 2.5 2.4

0.3

5.6

3.2 5.3 NM NM 14.3

2.1 20.1 14.5 17.4 14.9 12.6 27.3

0.5

1.1

10.2

23.5

22.3 NM NM 2.0 1.5

29.2 21.1 18.6 2.0 1.7

NM 521.17

9.50

19.10

17.99

% below Price Dif Share

Target at Price EV/Rev EV/Rev EV/Rev EV/Rev EV/Rev EV/EBIT EV/EBIT EV/EBIT
 EV/EBIT EV/EBIT P/E P/E P/E P/E P/E P/E PE/GR PE/GR PE/GR PE/GR PE/GR 52-week
 Cur vs Gain
 Symbol FYE Rating Price Tgt (Mils) CY2011 CY2012 CY2013E CY2014E CY2015E
 CY2011 CY2012 CY2013E CY2014E CY2015E CY2011 CY2012 CY2013E CY2014E CY2015E
 CY2011 CY2012 CY2013E CY2014E CY2015E High Target
 ADNC-USDec Hold \$ 9.00
 3.2 NM NM -30% (2.72)
 \$
 \$
 2.1 1.5
 0.5 NM NM NM NM 1.2
 6.0
 5.0 4.8 5.4 5.5 11.0
 2.8 18.5 15.4 17.6 12.9 9.0 21.1
 4.1 32.5 NM 29.3 19.0 14.3 31.9
 8.9
 8.0 7.9 7.9 7.7 14.8
 9.0
 18.0
 84.7
 4.0 17.6 15.0 14.8 12.5 10.7 30.5
 2.1 12.3 16.6 12.5 11.2 10.1 21.8
 1.5
 9.9
 9.0 8.9 9.3 9.2 21.0
 18.7
 13.0
 26.7
 30.4
 17.2
 21.9 17.7 12.2 1.7 1.5
 34.4 27.0 21.1 1.4 3.8
 1.8 1.4
 1.5 1.2
 1.3 -21% (3.51)
 \$
 1.0 -20% (4.01)
 \$
 0.9
 1.4 NM 66.3 30.7 23.0 17.2 NM NM 48.8 27.9 18.5 NM NM 5.0 2.8
 1.7 16.3 12.4 10.1 10.1 9.4 26.3
 2.1
 13.8 14.5 12.8 7.2 5.1
 12.3 12.1 11.4 7.8 6.8
 25.7 22.5 19.8 2.5 2.1
 20.2 18.2 16.9 3.2 4.5
 3.8 4.0
 6.5 6.4
 2.1 1.8
 3.0 2.7

-1% (7.13)
\$
(2.22)
1.6
2.5
11.6 14.8 13.4 26.5 21.7 14.7 18.7 16.9
1.1 NM 13.7 67.1 NM 31.4 NM 20.4
3.5 15.7 13.4 12.7 9.9 9.1 23.2
2.2 12.3 11.9 10.8 10.2 8.8 17.8
3.1 NM 41.9 56.1 37.6 23.3 125.3
4.8 35.7 33.7 22.9 16.4 13.9 52.2
2.2 18.3 12.8 11.9 10.2 9.0 26.3
3.23 2.71 2.40 2.13 15.35 18.30 20.05 14.04 13.09 29.1
-2% 7.66
\$
6.0 -17% 3.20
\$
-4% (0.74)
\$
1.8 NM NM NM NM 21.2 NM NM NM NM 53.2 NM NM NM NM 2.0 #VALUE! \$
\$
19.5
16.1
26.0
44.5
22.2
25.8
17.3 14.9 13.4 1.8 1.5
15.8 15.0 13.1 1.3 1.2
83.3 72.3 44.1 5.7 1.2
28.5 20.9 18.3 1.6 1.4
19.9 17.6 15.8 2.6 2.2
29.1 21.6 20.6 4.8 4.0
1.4 1.2
1.2 1.1
3.8 3.3
0.9 0.7
2.0 1.7
3.5 3.5
1.0
1.0
-2% (11.20)
(1.45)
0.4 NM -13% (3.25)
\$
-2% 2.71
\$
2.0 -42% -
\$
0.6
81.9 NM 39.1 NM NM NM NM NM -44% (0.68)

\$
 0% (6.28)
 \$
 -5% (7.41)
 \$
 1.6 -44% 3.64
 2.9
 38.3 NM NM NM NM NM NM NM NM -39% (4.0)
 \$
 1.9 -11% 1.43
 3.5 #VALUE! \$
 \$
 7.5 7.9 8.1 NM NM NM NM NM -1% (3.57)
 \$
 (Loss)
 -23.2%
 -17.1%
 -40.0%
 -37.3%
 -13.4%
 -16.9%
 5.8%
 -9.2%
 14.7%
 6.8%
 -2.8%
 -16.9%
 -9.4%
 -39.4%
 -10.2%
 3.6%
 -28.2%
 0.0%
 -15.0%
 29.4%
 MVNR-USDec Buy
 22.0
 121.1
 460.2
 28.2
 53.8
 7.0% 56.8% 12.9%
 13.9% 73.2% 21.3%
 98
 144 161 157 176 10.5
 18.6
 11.0 (12.6)
 (8.3) \$0.63 \$0.88 \$0.40 (\$0.40)
 Price 52-Week 52-Week Out Sh Fwd 3 yr CY 12 CY 12 CY2011 CY2012 CY2013E
 CY2014E CY2015E CY2011 CY2012 CY2013E CY2014E CY2015E CY2011 CY2012 CY2013E
 CY2014E CY2015E Value/

454
 103.5
 159.1
 5,430.0
 77.8
 505.6
 261.2
 17.8
 30.8
 32.7
 1,722.0
 164.6
 94.8
 89.7
 77.6
 12.3% 83.0% 26.1%
 22.3% 62.6% 6.4%
 9.8% 41.3% 2.8%
 138
 259
 561 624 724 829 86.1 119.7
 165 176 198 234 35.9
 235 304 361 431 53.9
 43.1
 15.1
 Tgble Bk Net Cash/ Net cash
 (debt)
 Value/
 Symbol FYE Rating 03/02/14 High Low .(Mils) Rv Gw Rt PF GM PF OM Revs Revs
 Revs Revs Revs PF EBIT PF EBIT PF EBIT PF EBIT PF EBIT PF EPS PF EPS PF EPS
 PF EPS PF EPS Share Share
 ADNC-USDec Hold
 (\$0.23) \$7.26
 99.9 116.2 137.9 \$0.62 \$0.72 \$0.58 \$0.80 \$0.91 \$2.46
 \$5.12
 525.7 -43.6% 30.2% -11.0% 19,343 12,094 8,000 3,758 2,175 2,411.3 (1,330.0)
 (3,144.9) (1,432.2) (805.3) \$5.02 \$0.16 (\$1.36) (\$2.47) (\$1.61)
 -0.5% 64.8% 20.9% 2,157 2,256 2,197 2,187 2,223 395.7 471.6 493.1 439.6
 429.0 \$0.54 \$0.67 \$0.80 \$0.76 \$0.74 \$1.44
 37.7 51.4 73.5 \$1.23 \$1.44 \$1.19 \$1.47 \$2.12 \$3.99
 59.8 92.4 122.3 \$1.10 \$0.41 \$1.02 \$1.30 \$1.66 \$3.20
 1,731 1,858 2,133 2,286 2,460 18.2
 51.8 111.7 149.2 199.5 (\$0.16) (\$0.05) \$0.53 \$0.93 \$1.40 (\$2.59)
 3.6% 31.9% 15.1% 3,275 3,322 3,452 3,532 3,697 380.5 501.1 615.2 614.0 656.8
 \$0.84 \$1.18 \$1.59 \$1.52 \$1.71 (\$14.27)
 \$1.69 \$1.93 \$2.03 \$2.06 \$2.19 \$5.76
 1.9% 62.5% 27.5% 44,471 47,062 48,140 47,592 49,799 11,684.0 12,936.3
 13,218.9 13,089.3 13,444.6
 \$6.34
 \$2.68
 \$3.93

\$0.84
 \$2.39
 \$2.38
 (\$7.15)
 (\$16.99)
 12.4% 84.1% 38.0% 1,205 1,420 1,522 1,763 2,019 459.5 540.1 548.1 650.5
 759.0 \$3.94 \$4.49 \$4.67 \$5.34 \$6.07 \$11.95 \$15.87
 6.8% 64.3% 15.6% 4,449 4,365 4,669 4,971 5,314 917.3 681.4 906.2 1,006.9
 1,120.2 \$1.19 \$0.85 \$1.29 \$1.43 \$1.54 \$6.21
 0.8% 50.4% 17.3% 8,203 8,698 8,696 8,761 8,906 1,373.0 1,503.0 1,528.0
 1,463.9 1,483.6 \$2.62 \$3.20 \$4.74 \$3.71 \$4.10 \$8.35
 (5.4) 1.2 13.0 (\$1.24) (\$0.89) (\$0.57) (\$0.14) \$0.26 (\$6.10)
 (8.1) (\$0.40) (\$0.16) (\$0.53) (\$0.59) (\$0.35)
 \$3.65
 \$2.93
 26.7% 58.8% -19.0%
 8.7% 27.0% -2.9%
 -7.5% 39.4% 6.4%
 13.4% 78.5% 26.4%
 21.9% 65.4% 13.2%
 32.1% 42.3% 32.5%
 10.2% 80.3% 22.5%
 50
 201
 108
 726
 120
 286
 311
 74 101 120 150 (19.2)
 245 279 293 315 (10.1)
 (14.0)
 (7.2)
 204 202 145 162 (6.1) 13.1
 215 263 322 388 9.3
 413 474 506 553 64.9
 28.4
 (17.8)
 (15.4)
 \$5.52
 2.7 (10.1) 5.7 (\$0.26) \$0.29 \$0.07 (\$0.26) \$0.15 \$3.78
 21.2 31.6 51.0 \$0.11 \$0.54 \$0.17 \$0.19 \$0.32 \$1.80
 323 453 625 744 98.8 104.9 154.1 215.0 254.0 \$0.81 \$0.94 \$1.47 \$2.01 \$2.29
 \$2.62
 93.0 100.2 117.0 132.5 \$0.61 \$0.72 \$0.80 \$0.91 \$1.02 \$4.69
 140
 325
 2,068
 388
 67
 128

(741)
(2,703)
\$5.89 31,975
1,235
1,847
766
(\$1.42)
\$1.00
\$0.50
\$1.47
\$2.59
\$0.69
(25)
31
16
12.8% 64.5% 37.5% 16,290 20,458 25,469 26,957 29,352 6,539.0 7,677.0 8,056.0
10,330.7 11,227 \$3.36 \$4.00 \$4.51 \$5.22 \$5.83 \$17.61 \$18.36 31,610
837 1,041 1,126 1,219 214.3 221.3 243.1 257.4 298.1 \$0.90 \$0.99 \$1.01 \$1.07
\$1.23 (\$1.70) \$0.04
7
140
232
53

Signals to Noise (S2N)

Wireless Equipment

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Figure 3: Global Handset Model

Handset Shipments

By Region

(in thousands)

Handset Unit Shipments

Western Europe

Eastern Europe

Asia

Developed Asia

China

India

Indonesia

Developing Asia

North America

Latin America (Ex. Brazil)

Brazil

Africa/Middle East

Total Unit Shipments

y/y growth

By Technology

(in thousands)

Handset Unit Shipments

GSM

GSM

GPRS

EDGE

WCDMA

#WCDMA

#HSDPA

CDMA

CDMA

CDMA2000 1xRTT

CDMA450

CDMA2000 1xEV-DO

LTE

TD-SCDMA

WiMax

TDMA

iDEN

AMPS/Other

Total Unit Shipments

y/y growth

2004

130,722

81,594

247,343

71,959
107,201
20,128
12,105
35,950
124,733
31,283
20,540
40,947
677,163
19.5%
2005
205,001
99,511
322,071
76,961
132,197
31,533
19,270
62,111
128,347
73,909
38,610
78,320
2006
205,057
118,750
456,136
86,283
216,802
39,423
28,762
84,866
138,673
77,728
36,265
94,084
19.1%
2007
219,582
103,570
596,558
95,323
229,444
123,882
37,444
110,465
146,352
83,452
44,226
144,894

18.8%
2008
233,219
104,349
690,182
110,050
255,777
155,537
49,594
119,225
152,698
87,055
56,680
203,592
14.1%
2009
166,798
98,562
795,716
87,769
288,148
257,939
40,244
121,616
127,187
116,776
61,298
177,750
1.1%
2010
177,645
122,350
294,103
345,647
64,382
131,152
147,141
124,607
71,413
277,533
19.6%
2011
183,814
145,173
97,428
385,661
365,374
85,845
213,500
168,676
145,519

114,737
318,026
20.4%
2012
203,458
169,271
107,518
546,758
281,761
102,207
234,036
2013E
207,364
175,153
116,381
555,130
322,824
104,553
248,308
2014E
212,647
177,362
121,218
572,765
345,330
112,126
260,592
2015E
220,989
178,650
186,888
153,198
113,028
331,463
9.3%
187,634
165,775
104,592
359,485
4.8%
189,074
168,490
105,673
404,572
4.8%
137,705
589,180
356,200
115,703
264,941
196,822

177,271
110,453
435,495
2016E
230,834
181,688
926,456 1,147,808 1,272,281 1,347,197 1,412,031 1,463,728 1,529,444
91,173
143,245
607,213
385,282
116,896
276,808
211,143
175,440
106,079
444,724
945,768 1,126,692 1,338,634 1,527,776 1,544,086 1,847,144 2,223,756
2,429,587 2,547,201 2,669,848 2,783,408 2,879,353
39.7%
4.3%
3.4%
2004
474,552
257,367
200,932
16,253
18,029
18,029
-
151,212
3,698
136,491
-
11,023
-
-
-
12,125
6,626
14,620
677,163
19.5%
2005
677,204
302,838
296,260
78,105
60,891
60,890
1

177,709
0
153,915
-
23,794
-
-
-
13,868
6,710
9,386
2006
804,774
351,302
325,257
128,215
97,824
91,978
5,846
205,885
-
158,886
-
47,000
-
-
-
6,648
6,238
5,323
19.1%
2007
2008
342,840
397,687
305,920
2009
305,024
404,966
301,764
2010
263,292
145,663
117,629
211,744
-
106,654
-
105,090
-
2,273

6,179
2,913
18.8%
-
-
-
4,500
1,793
14.1%
300,821
116,706
184,116
217,873
5,852
100,423
-
111,599
-
-
-
9,901
920
-
2,255
560
1.1%
215,208
-
140,907
-
74,301
-
233,885
474,399
427,108
441,018
153,083
287,935
244,416
15,808
94,005
-
134,604
-
21,841
1,026
-
2,183
1,269
19.6%
2011

221,422
555,190
559,187
462,576
2012
187,115
519,060
588,064
2013E
161,074
548,028
532,826
2014E
92,739
2015E
940,158 1,046,447 1,011,754 1,135,392 1,335,799 1,294,239 1,241,928
1,163,571 1,078,589
374,072
374,009
192,077
171,903
136,433
35,470
510,467
560,365
556,500
93,925
247,067
15,783
47,452
59
183,773
30,849
43,806
5,946
-
2,458
1,330
20.4%
682,281
118,650
563,631
237,082
-
47,835
58
189,188
107,645
100,189
5,375
-

1,555
1,221
9.3%
765,600
142,448
623,152
201,328
-
41,851
55
159,423
249,389
81,658
5,216
-
932
1,150
4.8%
823,270
165,720
657,550
198,931
-
39,026
54
159,851
371,180
105,227
5,986
-
361
1,322
4.8%
-
37,576
55
167,721
514,508
93,210
4,486
-
392
1,504
4.3%
116,239
339,387
622,963
885,367
189,687
695,679
205,352

2016E
930,452
97,932
293,707
538,813
938,805
216,311
722,494
207,956

-
39,443
55
168,458
711,887
85,916
3,975

-
362
-

945,768 1,126,692 1,338,634 1,527,776 1,544,086 1,847,144 2,223,756
2,429,587 2,547,201 2,669,848 2,783,408 2,879,353
39.7%
3.4%

Source: Deutsche Bank, company data

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Wireless Equipment

Signals to Noise (S2N)

Appendix 1

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Equity rating dispersion and banking relationships

Buy: Based on a current 12-month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus projected dividend yield), we recommend that investors buy the stock.

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return (including

100

200

300

400

500

600

0

Buy

Hold

Sell

Companies Covered Cos. w/ Banking Relationship

North American Universe

48 %

54 %

50 %

40 %

3 %24 %

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Wireless Equipment

Signals to Noise (S2N)

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