

## Suppliers – on the Road to Redemption?

*Arthur D. Little's 2013 Telecom Infrastructure Supplier Outlook*



Following our 2008 and 2011 editions, Arthur D. Little has again reviewed the performance of leading telecom equipment suppliers. This report is based on our global survey of Chief Technology and Chief Procurement Officers on market developments and challenges ahead. After four tough years and significant M&A activity, the industry is showing initial signs of market repair, but cash generation remains an issue. Mid- to long-term, our interviewees expect the industry to move toward a competitive landscape with four financially-healthy players with comparable product portfolios.

### What we got right in 2011, and what remains to be proven

- ✓ “Wireless access infrastructure, already accounting for 43 percent of total telecom infrastructure capex, will increase its overall share of spending”
- ✓ “Master all wireless technology generations (2G/3G and 4G), in order to remain an attractive partner in Single RAN”
- ✓ “The challenges faced by telecom operators open a number of new opportunities for suppliers, but will require a radical rethinking of their business model and offering.”
- ? “Be equally strong in fixed and mobile, and particularly, in core network technology, which is moving ever closer to the base stations”

### Market returns to growth, but cash flow remains an issue

Over the last 12 years, the industry has had to weather two substantial crises (Figure 1), with value destruction of -45 percent between 2000 and 2002 and -23 percent between 2008 and 2010. In both cases, the US and Western European-based Network Equipment Providers (NEPs) have felt these corrections the hardest.

The NEP industry has proven to be a challenging environment with highly volatile operating margins and low cash generation

Figure 1. NEP industry revenue, 2000 – 2012



for some of its key players, due to fierce price competition and continuous restructuring charges. In addition, increasing headcounts in the service business, increased expenditure on product R&D, as well as internationalization activities, further decreased operating margins.

However, it now appears that the industry is on a more solid footing as a result of a number of consolidations and positive underlying demand for its equipment and services.

In 2012, 56 percent of the top 26 operators spent more of their revenue on capital expenditure (Capex) than in 2011. This trend is expected to continue, leading to the telecom network equipment and services market delivering healthy growth of 3 to 4 percent CAGR between 2012 and 2017.

According to our survey, LTE/SAE, All-IP (Edge and Core) and Network Maintenance and Operations will be the fastest growing segments, with Circuit Switched, WiMAX, GSM and CDMA being slowly phased-out. NEPs are also changing their business offerings to align with the strategic needs of telecom operators, moving from being a seller of “boxes” to positioning themselves as high-end managed service providers.

However, the industry is still generating very little cash despite turnover of USD 125 billion and positive top-line growth. In 2012, the five dominant players generated only approximately USD 8 billion in net operating cash flow. Huawei, Ericsson and NSN had the strongest position, and ZTE and Alcatel Lucent the weakest (Figure 2). This is a major concern, as the large customers of NEPs are all highly dependent on the financial health and sustainability of both their incumbent and non-incumbent suppliers, especially in terms of operating cash flow.

### Value shift among suppliers continues, but the first signs of market repair are visible

As Figure 1 illustrates, Asian players have made considerable inroads, now accounting for 38 percent of industry revenues. Many operators now see Huawei as a leading and incumbent supplier.

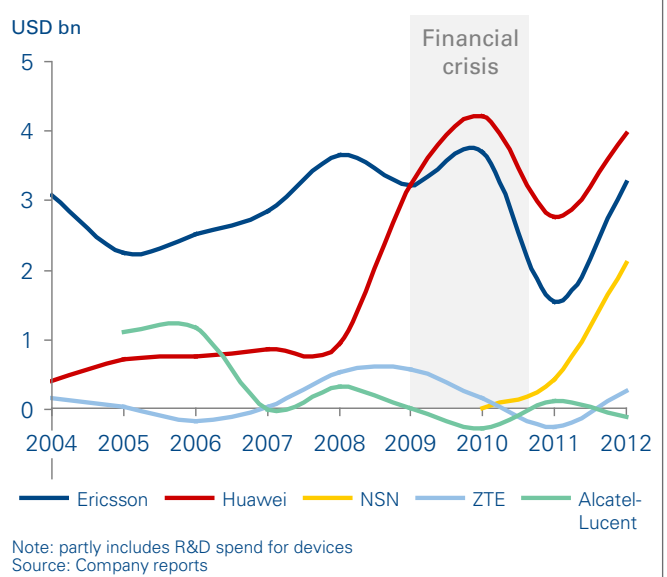
From a regional perspective, Ericsson and Huawei strengthened their positions in EMEA at the expense of NSN and Alcatel Lucent, while Huawei and NSN gained market shares in Asia-Pacific. From a technology perspective, Ericsson and Huawei have significantly increased their market share in 3G at the expense of Alcatel Lucent and NSN. While Ericsson is still leading in LTE, it has lost some of this market to NSN and Huawei.

### Going forward, we believe that market shares will fluctuate less, for two main reasons:

(i) According to respondents in our survey, prices are stabilizing and all main players have stopped buying market share in the last 12 months. There is also collective agreement that NEPs currently operate on razor-thin margins and cannot engage in further aggressive price behavior without endangering sustainability.

(ii) Although tenders are generally open to all NEPs, from a Total Cost of Ownership (TCO) perspective, the switching costs for swapping incumbents and primary vendors in single RAN are lower for new technology generations compared to bringing in new entrants, which requires a full hardware/software swap. This is further confirmed by the top three purchasing criteria

Figure 2. Operating Cash-flow, 2000 – 2012



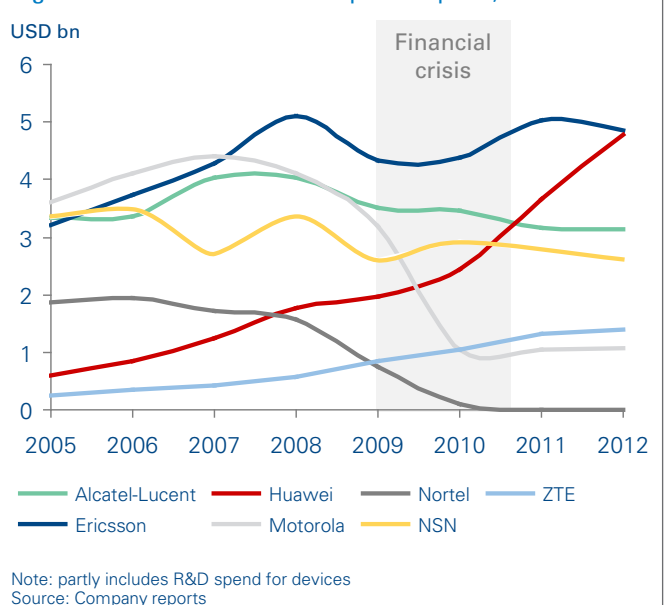
according to a majority of interviewees: price/TCO, installed base/share of wallet, and strength of technical roadmap.

Although Ericsson still leads in R&D spending, Huawei came in a close second in 2012; Huawei has more than doubled its expenditure in the last two years. However, compared to Ericsson, Huawei also has to sustain a broader product portfolio, including mobile, as well as fixed. With a similar product portfolio as Huawei, Alcatel Lucent is a distant number three in R&D expenditure, while NSN and ZTE bring up the rear.

### Innovations in technology and business models require suppliers to act

As the telecom industry matures, Arthur D. Little has identified a number of trends that will continue to impact NEPs:

Figure 3. Research and Development spend, 2000 – 2012



- Telecom network operators will face further growth in access bandwidth requirements and a continued reluctance by end-users to pay for this incremental consumption. In addition, traditional service revenues will remain under pressure from third-party OTT services and regulation.
- Radio, including LTE and further evolutions, will “only” suffice for access needs, including all mobile and tethered use cases, until approximately 2020 (see Arthur D. Little - Exane BNP Paribas Report 2013 for more details). Superfast fixed access would, therefore, be required for the remainder.
- Network topologies will also respond by significantly increasing network density, thus a new layer of micro-network will emerge. The boundaries between fixed and mobile radio access, including Wi-Fi, will blur and become seamless for a better user experience. Core and Edge (formerly access) will increasingly merge.
- New network business models and enablers will emerge, ranging from more extensive and deeper network-sharing initiatives, to an increasing separation of connection and service layers. This will ultimately lead to an operating model, whereby the intelligent parts of the network will be fully separate from the basic technology and infrastructure layers. Different entities can then manage these individual layers.

Besides these trends at the core of the NEPs’ product range, they will also need to build new capability in two other areas: Cloud and Big Data analytics. This will be a prerequisite to effectively compete against new competitors entering from the IT arena.

Cloud style production, such as the virtualization of access and core, will result in business models in which operators will buy a software license instead of boxes, thereby lowering the entry barrier for a range of new competitors.

In Big Data analytics, NEPs will face severe competition from well-established players in this space, such as IBM, HP and SAS. It is most likely that in this domain, they will need to grow inorganically.

### Significant changes on the technical product leadership board

Over the last two years, Huawei has managed to be acknowledged as leader in four new product areas (see Figure 4). This could be a direct result of the significant increase in Huawei’s R&D spending since 2010. NSN has also achieved a leadership position in three new product areas through acquisitions and a strong focus on the service business. Besides these two, respondents mentioned a number of new companies as product leaders, in particular Cisco, Oracle and Samsung.

Among new entrants in the mobile segment. Samsung is seen as a very credible vendor for supplying overlay LTE solutions. In the eyes of the respondents, Samsung also ensures that healthy competition is maintained in the NEP market.

Almost all respondents also felt that cash-rich IT vendors, such as Oracle, IBM and Cisco, will certainly push further into the NEPs’ territory, emboldened by the LTE-driven virtualization and standardization.

### End-scenarios: Moving to a four-player market?

The bargaining power of telecom operators is not expected to significantly increase, as the European and Asian markets are still fragmented and consolidation remains slow. A range of new players is expected to enter from the enterprise and electronics markets, from IT/Software, as well as OTT players. Therefore, the rivalry within the industry, particularly in mobile, is not expected to reduce significantly and all major NEPs will continue to compete strongly.

Huawei and ZTE have competitive momentum, but security concerns could create artificial bargaining power of suppliers in some countries, such as the US, Canada, Australia and UK. In contrast to mobile infrastructure, the fixed network market is increasingly fragmented and further consolidation is to be expected.

Our study also addressed the participants’ views on the industry end-game. While no operator was keen on further

Figure 4. Technology Leaders in each segment, 2013

Access Networks	GSM:	Huawei, NSN	WiMAX:	Huawei, Samsung
	CDMA:	Huawei, NSN	LTE/SAE:	Ericsson, Huawei, NSN
	WCDMA:	Ericsson, Huawei	DSL/MSAN:	Alcatel Lucent, Huawei
Core/IN Networks	Packed Switched:	Cisco, Ericsson, Huawei	Optical:	Alcatel Lucent, Cisco, Huawei
	Circuit Switched:	Ericsson, Huawei, NSN	SDP:	Cisco, IBM, Oracle
	All-IP (Edge, Core):	ALU, Cisco, Huawei, Juniper	IMS:	Ericsson, Huawei
	Backhaul:	Ericsson, +specialized	IN/NGIN:	no vendor labeled as “leading”
Network Services	Network Services (O&M Outsourcing):	Ericsson, NSN		
	Managed Network Services:	Ericsson, NSN		

Source: Arthur D. Little survey, June 2013

Note: Entries in red symbolize changes over last year.

ALU: Alcatel Lucent;

NSN: Nokia Solutions & Networks

vendor consolidation, there was consensus that the current industry structure is unfavorable. Ericsson and Huawei were acknowledged market leaders, followed by NSN, Alcatel Lucent and ZTE, with new players, such as Samsung, NEC, Oracle and Cisco, preparing to play a bigger role.

A majority of the respondents expects and hopes that the industry will move toward a competitive market of four financially healthy players with comparable product portfolios.

### Based on these inputs, our end-game scenario suggests two main possibilities:

- (i) Further consolidation resulting in a strong, third NEP, on par with Ericsson and Huawei, or,
- (ii) Strategic partnerships between medium-large NEPs, such as ALU, NSN, Cisco and ZTE, with smaller new entrants and niche players building full product portfolios.

### Conclusion

Suppliers and operators will need to work together more closely to manage the transition from growth to efficiency, while taking advantage of emerging opportunities. The business models of operators will dramatically change, and suppliers must respond to this.

To capture growth from these new opportunities, NEPs will need to:

- Improve cash-flow generation in order to remain a sustainable partner to operators
- Carefully review their product portfolio by fine-tuning their R&D expenditure or consider partnering with specialists on some areas
- Increase differentiation in areas with three or more leaders, such as All-IP, packet-switched and optical.
- Build new capabilities related to the growing importance and impact of IT in telecom networks and operations

Key actions for operators include:

- Continuously monitor the supplier ecosystem to test the vulnerability of their existing investment to disruptions in the supplier landscape
- Partner with suppliers in network-sharing deals in FTTx deployment, as well as for LTE
- Involve suppliers in the early stages of business model innovation
- Determine a healthy supplier mix in access, core, transmission, and services

A detailed report of the Arthur D. Little Supplier Assessment Study was shared with the survey's global CxO-level participants, which numbered over 150.

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### Arthur D. Little

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