ARTESYN® TECHNOLOGIES

Artesyn Communication Products

empowering communications worldwide

Bundled Solutions: A White Paper

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Abstract

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Original Equipment Manufacturers (OEM) are facing tough times ahead as they strive to improve their businesses. Core to this are the "Make versus Buy" decisions they face during every new product development. A significant trend is emerging towards the "Buy" decision, resulting in the outsourcing for new technology.

A faster and better approach is needed when introducing new, innovative ideas and products, which will provide significant value and cost savings. Currently there are two perspectives when developing and deploying new network technology–those of the OEMs and those of the network operators.

This article suggests a third possible perspective: that of the suppliers to the OEMs who should be viewed as partners who can deliver significant value and not just as suppliers of components.

"Make Versus Buy": It's a Tough Decision

Original Equipment Manufacturers (OEM) are facing tough times ahead as they strive to improve their businesses. Core to this are the "Make versus Buy" decisions they face during every new product development. A significant trend is emerging towards the "Buy" decision, resulting in the outsourcing for new technology.

> "Instead of using internal project teams to design and manufacture custom embedded systems, OEMs will increasingly outsource their embedded requirements to embedded systems companies to speed time-to-market." *(Andrew Huang, "The Brains Behind the Box", CIBC World Markets, February 20, 2002)*

Bundled hardware and protocol solutions will provide value to OEMs who embrace this new approach with the benefits of reducing their costs and the costs of their customers, the network operators.

As part of our strategy to partner with the OEMs, Artesyn Communication Products is developing several new bundled solutions (for SS7, Sigtran and ATM) which will help reduce time to market and increase revenues and profits, by providing a viable "Buy" alternative instead of the current "Make" one.

Over the Past Few Years

Over the past few years, the telecommunications market has been on a financial roller coaster ride with little sign of improvement. Major companies have been downsizing, cancelling projects, and taking other corrective actions in an attempt to position themselves to take advantage of new opportunities when the market recovers. This will happen eventually, although no one seems to know exactly when. OEMs are under increasing pressure on two fronts:

- From themselves to reduce their costs and increase profits.
- From network operators to reduce costs of ownership and increase ARPU (Average Revenue per User).

How can this be achieved? No single solution will solve these problems. Indeed, it may take many years for companies to recover the market positions they previously enjoyed. The major cost cutting exercises currently being implemented will provide short to medium term relief. However, a long-term solution requires a different approach, which is likely to meet some internal resistance. A faster and better approach is needed when introducing new, innovative ideas and products, which will provide significant value and cost savings. Otherwise, many well known companies could disappear completely.

This article will present a case which, if adopted by OEMs, will help provide long-term value to both themselves and their customers, the network operators. This article will focus on one particular technology area, SS7, currently being developed and deployed for tomorrow's complex networks, although the principles presented are valid for all technology areas (e.g., Sigtran, 3G, ATM, VoP).

Currently there are two perspectives when developing and deploying new network technology – those of the OEMs and those of the network operators.

This article suggests a third possible perspective: that of the suppliers to the OEMs who should be viewed as partners who can deliver significant value and not just as suppliers of components. However, before presenting a case for the suppliers let us look at the main issues that continue to concern managers of both the OEMs and the operators.

The OEM's Perspective

OEMs develop complex products for an extremely complex and ever demanding market and attempt to deliver their products in as short a timeframe as possible. Like most businesses, they are continually seeking to increase their profitability, their products' performance, minimize their development costs and reduce time to market. At the same time, they are striving to provide end-user benefits to their customers which are significantly better than the alternatives available from their competitors. When developing a major new product, time to market is crucial. Missing the market window by even a small margin can mean the difference between a successful product and a complete flop, with the consequence of significantly reduced revenues. Figure 1 shows the opportunity cost of releasing a new product at point "B" instead of the planned release date "A". The cost of the delay, or "the opportunity cost", is represented by the area between the two lines "Release A" and "Release B" and is significant.

Bearing this in mind, the effects of downsizing while trying to remain competitive can have potential serious long-term consequences particularly during the development stage in a products life cycle.

The Network Operator's Perspective

The position taken by the network operator can be stated quite simply. The main purpose of introducing any new product or service is aimed at increasing the Average Revenue Per User (ARPU). Any product which does not offer this benefit to the operator is unlikely to be successful. Increasing ARPU can be contributed to in many ways, not just by providing new value added services to the network users.

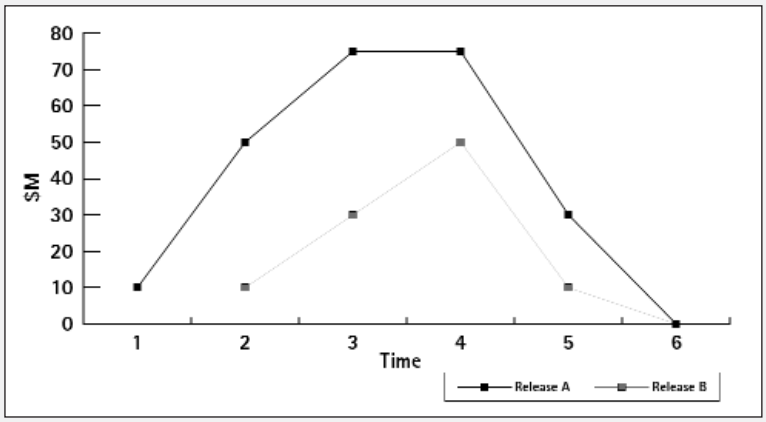

Figure 1: Opportunity Cost

Providing the same services for lower costs would increase the ARPU. Lower costs can be achieved in a number of different ways including a reduction in the number of employees. But the size of the staff can only be reduced to a certain level before other related problems surface. A significant way to reduce costs for the operator would be to provide the same capabilities and performance with equipment which provides higher performance, has a smaller footprint, is easier to maintain, consumes less power, etc. Achieving these types of savings in the end comes down to fostering long-term business partnerships between the operators, the manufacturers and their suppliers.

The Supplier's Perspective

As mentioned earlier, there is a third potential perspective that should be considered–that of the supplier. Projects started by OEMs typically are complex, take a long time and can cost tens, if not hun-

The Supplier's Perspective

dreds, of millions of dollars. Reducing the time to deliver a new product by several months can make a significant contribution to a product's success (e.g., lower development costs, earlier to market, higher revenues, lower lost opportunity costs). So how can a supplier, viewed until now as a supplier

Task	In-House	Bundled
Spec Product	8 weeks	25%
Stack Selection	4 weeks	50%
Board Selection	4 weeks	
Stack Porting/Testing*	8-26 weeks	100%
System Integration	4 weeks	25%
System Testing	8 weeks	25%
Sales Cycle	26 weeks	15-30%
Total Time-to-Revenue	**62-80 weeks**	**37-41 weeks**

*This duration will be shorter if the board already exists and longer is the board is new.

Figure 2

of components, contribute to any of the issues currently faced by the OEMs, and ultimately the network operator? By providing bundled products.

What are Bundled Products?

Typically an OEM will either develop solutions in-house or buy both hardware and software from various suppliers. They will then design and manufacture boards, port the software onto the board and then integrate these into the final product. These components, whether hardware (i.e., components, boards), or software (i.e., operating systems, protocol stacks), or both, require significant engineering resources to integrate them into a final system. By exploiting the expertise available from suppliers such as Artesyn Communication Products, OEMs could take delivery of a bundled solution where the integration of the protocol stack with the board has already been done.

A good analogy for this situation comes from the building trade. Imagine if while building new homes the builder had to mix the concrete for the foundation of each home from the raw materials of cement, sand and water. This would be an expensive, time consuming and somewhat unreliable process. There would be no guarantee of repeatable high quality results. Instead the builder buys a "bundled solution"–pre-mixed concrete–which arrives at the designated time, is poured to lay the foundations, and has the consistent quality necessary to save the builder time and money allowing him to focus on his application (the home) rather than having to worry about the components (the foundations).

This type of partnership, combined with the benefits offered from bundled solutions, provides OEMs the opportunity to positively impact their business by allowing them to focus on their key application areas.

Figure 2 shows the typical time taken during project development using normal methods and the possible savings expressed as a percentage which could be achieved when using a bundled solution.

Partnering

The key to success will be partnering. By partnering closely with suppliers, long term relationships will be developed which will provide significant profitable benefits for all. Establishing these relationships takes time and requires agreement from senior management in both organizations. From an Artesyn Communication Products' point of view, we are ready. Are the OEMs? A major element of these partnerships—one which will ultimately determine their success—is trust. All parties need to buy into a relationship based on trust and the sharing of long term strategic roadmaps. Sharing roadmaps will allow both parties to manage their business more effectively, plan and deliver new products

when they are needed, and deliver increasing value to the ultimate customer the operator. In an attempt to show how bundled products will help, let us look at an example that is very relevant in today's global networks. Signalling System #7 (SS7) is the key protocol used today in every telephone call in the world whether from a wireline or wireless phone, at some point SS7 is involved.

Typically SS7 is carried over a 56/64 kbps timeslot on low speed communication links such as E1 (2.048Mbps) or T1 (1.554Mbps).

Generally there are multiple links in a link-set between the various network elements for capacity and redundancy reasons. Figure 3 shows a typical SS7 network with the lines representing the signalling links grouped into a link set. Each link set can contain up to 16 E1/T1 signalling links and multiple link sets can be deployed between each of the network elements.

These E1/T1 links, of which there are tens of thousands operational today, are provisioned by VME/PCI/cPCI or custom boards, which are installed in a chassis, integrated with application software, and deployed in the network.

It sounds simple but in reality this is a complex, time consuming process. Today a single slot in a chassis can typically provision between 4 and 8 E1/T1 supporting approximately 16 SS7 timeslots. Technology being introduced by Artesyn Communication Products and branded as SpiderWare™SS7 will provide up to 16 E1/T1 links on a single cPCI slot supporting up to 128 SS7 timeslots–a major step forward.

SpiderWareSS7 comes ready to use with the MTP2 protocol already bundled and tested on Artesyn Communication Products' PM/3G-E1/T1 board with an MTP3 and upper layers pre-ported onto Solaris™ and Linux, providing seamless operation with multiple instances of SpiderWareSS7. This increase in performance, combined with pre-bundled protocols, provides a major opportunity for the OEMs to deliver the next generation of SS7 network equipment without having to develop the technology in house. The overall effect of this type of partnership will be to reduce time to market, increase capacity, reduce footprint, reduce power consumption, and increase profits.

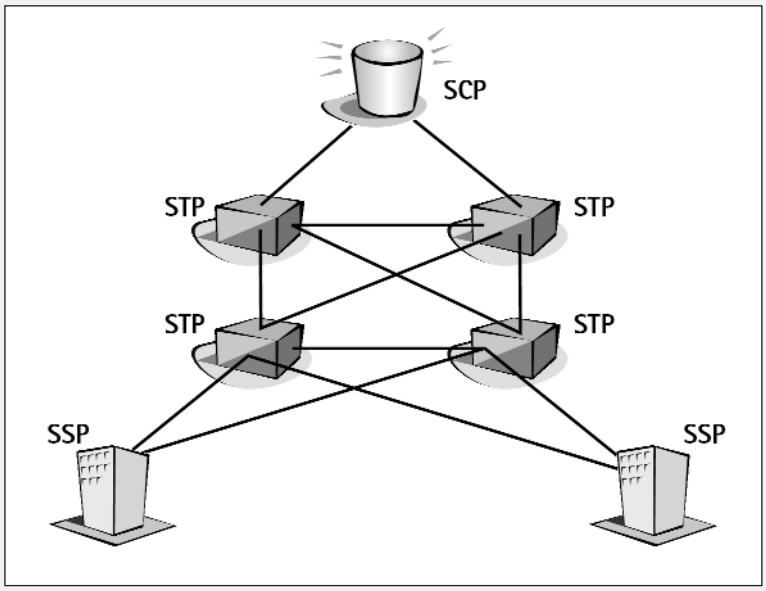

Figure 3: A Typical SS7 Network

Summary

The traditional practice of companies developing all components of a new product in-house is beginning to lose favor and the practice of outsourcing is being encouraged as a way to add value and significantly reduce time to market. There is a positive outlook for the development and deployment of new telecommunications equipment if the OEMs and suppliers can work together as partners. The advantages described in this article provided by bundled solutions are exciting, real and available now. Further progress in offering more complex bundles will eventually provide complete chassis solutions, thereby saving OEMs more time and money and increasing the operators ARPU. In order to grasp this opportunity and deliver increas-

Summary

ing value to our collective customers we must forge ahead with these strategic business relationships now.

About Artesyn Communication Products

Artesyn Communication Products, LLC, provides a broad range of board and software technology for use in carrier-grade equipment such as voice over packet, wireless infrastructure and optical networking. Products include WAN interfaces, CPU boards, DSP boards and software, Spider™ protocols and hardware/software subsystems. Based on PMC, CompactPCI or custom platforms, Artesyn's products are used to develop products and systems for worldwide Teledatacom™ networks and real-time communications applications.

Artesyn's Spider Software division, located in Edinburgh, Scotland, is one of the world's leading suppliers of embedded telecommunications and networking software to the OEM marketplace. Spider Software has developed and licensed protocol software to some of the leading telecommunications companies in the world offering portability, interoperability, maturity and resilience.

Artesyn Communication Products, LLC, a subsidiary of Artesyn Technologies (NASDAQ: ATSN), is based in Madison, Wisconsin and is an ISO-9001 certified company.

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