



By Curt Schwaderer

**CompactPCI & AdvancedTCA**

# Q&A: Realizing standards-based telecom systems

The demand for new products and services from the telecom industry are on the increase. Telecom providers find themselves lacking the resources to develop the proprietary systems of the past, and even if they could, service providers now are demanding standards-based solutions. With these challenges in mind, I recently caught up with John Fryer, Technical Marketing Director for Motorola Embedded Communications Computing (ECC), for a Q&A on the realization of standards-based telecom systems.



**John Fryer**

**Q.** Recent examples point to a real trend of the behavior of network equipment manufacturers, such as Nortel and Alcatel, changing their role in delivering cost-effective, highly reliable systems to service providers. Nortel announced they are teaming up with Motorola ECC to speed delivery of a converged multimedia services system. Alcatel announced a partnership with Motorola ECC for an infrastructure program based on AdvancedTCA. Does this signal a transition from vertical to horizontal?

**A.** The industry is no longer on the fringe, but in the midst of a transition phase from vertical to horizontal, meaning that telecom equipment manufacturers are no longer developing ASICs, boards, systems, and software resulting in a proprietary system. Most equipment manufacturers are shifting their core competency to the system level by developing system-wide architecture, applications, and services so that network operators can offer more innovative voice, video, and data systems. This is a challenge for these companies' limited engineering resources.

For example, 15 years ago in the enterprise systems market you had DEC, IBM, and other vertical proprietary solutions dominating the enterprise. Today, the enterprise space is a completely horizontal

market. Companies such as Dell and IBM provide cost-effective hardware platform foundations. Companies such as HP and Sun Microsystems layer on the software Operating System (OS), and middleware, then applications software companies such as Oracle and VERITAS Software layer on applications. Enterprise solutions are fast, can be easily adapted, and are very much standards-based, enabling innovation at the system and application level.

**Q.** I came across an announcement relating to IBM and a partnership to use IBM's BladeCenter products as part of the Motorola platform strategy. This struck me as potentially sending a mixed signal to the market – that perhaps Motorola was hedging its bets on AdvancedTCA.

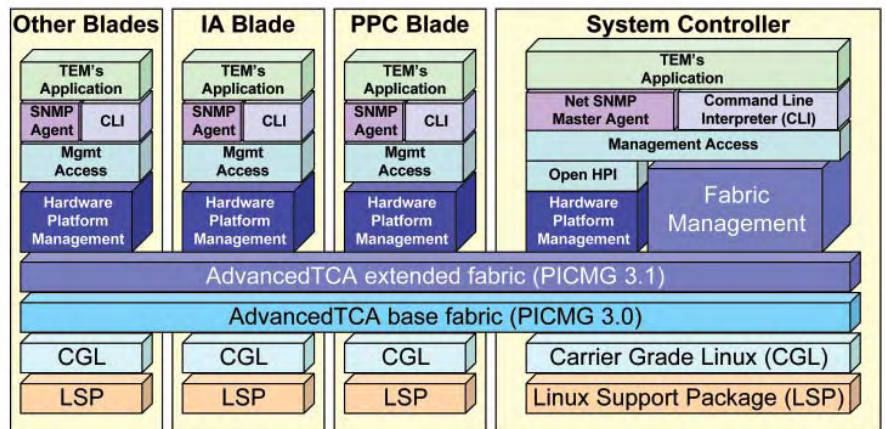
**A.** The BladeCenter strategy actually fits nicely into an end-to-end service set. The lines between telecom and enterprise are blurring. AdvancedTCA provides a robust I/O capability along with compute capability depending on the blades you put into the AdvancedTCA system. This is needed due to a lot of compute-centric things happening in the telecom back-office environment. Blade servers are used in the enterprise and are compute-centric with a dimension of I/O. As you look at the end-to-end system problem, there is a point in the middle representing a gray area. The relationship with IBM

## Background

You may recall Motorola ECC by the name Motorola Computer Group. The change in name symbolizes the new perspective and approaches necessary to win business and advance the market in today's telecom environment. Historically, the Motorola Computer Group manufactured circuit boards of various form factors and made them available to the industry. The software, systems, test, and validation was done by the customer. Motorola has always promoted standards-based hardware form factors, introducing a number of CompactPCI solutions into the market. But now several announcements and products point to significant standards-based software and systems solutions that are not just development systems. For example, Figure 1 shows the software architecture of Motorola's AdvancedTCA platform architecture. All of the software from the OS to middleware and applications used to be developed internally. With platforms such as Motorola's AXP, all of the middleware is written and tested, giving network equipment providers the ability to focus on system integration and application development.

Foundation products can serve as the starting point for the deployed product solution. Motorola calls these CompactPCI and Advanced Telecom Computing Architecture (AdvancedTCA) hardware and software systems *Application-Enabling Ready Platforms*.

**AXP-Basic Integrated Platform Architecture**



**Figure 1**



and their BladeCenter products enables Motorola complete flexibility when mixing I/O and compute-centric functions within the overall system.

**Q. All of the software from OS to middleware and applications used to be developed internally. What emphasis is Motorola putting on software services?**

**A.** Software is a critical component to Motorola's standards-based horizontal systems strategy. Everything moving forward is focused on standards. The basic integrated platform software – from shelf management, switch blades, controller software, and other I/O or compute blades to middleware and application software – all must be made using industry standard Application Programming Interfaces (APIs). To that end, Motorola is a significant contributor in and adopter of the Service Availability Forum (SA Forum) standards). The SA Forum Hardware Platform Interface (HPI) definitions have been approved for about a year now, and implementations appear in the Motorola systems. The SA Forum Application Interface Specifications (AIS) are newer. Only a limited set exist in their final form. We currently use a form of the AIS interfaces in our platform and plan on aggressively developing and driving these standards into products in the future.

Even beyond platforms and software, Motorola is also now providing services to do everything from thermal testing and New Equipment Building Systems/ Network Equipment Building Standards (NEBS) compliance to complete system manufacturing on behalf of their customers. These software and services enable equipment manufacturers to outsource the majority of the development of individual subsystems and focus internal resources on the task of integration, management, and applications.

**Q. How do you gauge the industry's attitude toward a horizontal approach?**

**A.** We've been pleasantly surprised at the receptivity to moving toward this horizontal approach. Motorola had anticipated the acceptance of standards-based form factors, but imagined the industry would take that as a first step before going further. However, a large number of companies I talk to are making the leap from heavily proprietary to delivery of standards-based hardware and

software subsystems in one step.

**Q. One of the key differentiators between blade server companies is their robust network management and diagnostic capabilities. Might companies such as IBM see some SA Forum functionality as competitive with their network management solutions? Additionally, Motorola may find it difficult to get the information they need to properly integrate their software with software running on the BladeCenter.**

**A.** What we are seeing is companies such as IBM and HP becoming increasingly involved with SA Forum. Motorola anticipates future development to be complementary with SA Forum. We do not envision any Motorola software additions or integration software that would reside directly on the BladeCenter, but are not ruling it out as a future possibility either.

**Q. Motorola has been an active SA Forum participant, most recently with regard to initial AIS specs.**

**A.** Motorola has taken a strong role in SA Forum and is heavily contributing. Currently, 45 companies encompassing telecom equipment, boards and systems, and software companies make up SA Forum. Telecom equipment companies Nokia and Ericsson are taking a primary role with Nortel, Lucent, and others becoming more involved.

Sun Microsystems, HP, and others are also active. Last year, B series specifications for the SA Forum AIS were introduced. This is the top end of the SA Forum charter where someone would build an application to utilize high availability services such as resource locking, message distribution, and failure event management.

The first set of AIS specifications encompasses five basic services:

1. Cluster membership: For failover and redirection of processing as cluster members become loaded over a threshold, or taken in or out of service.
2. Global walking: Communications and diagnostics among various node points within the system.
3. Message service: Messaging between components within a system.
4. Event distribution: Failure or

management events, what constitutes an event and when it occurs, who gets notified, and how are they notified.

5. Checkpointing service: Checkpointing at certain phases within a task and if errors occur, roll back and relaunch of the task from the checkpoint.

From a telecom perspective, some of these services are enterprise-centric and too simplistic. Developers are now adding message-based distribution, system management, and logging capabilities, as well as security that figure much more importantly for telecom. Everything will now be backward-compatible from the older specifications. So, now a critical mass of services has emerged that can be adopted as a high availability system.

**Q. What plans does Motorola have with respect to AIS?**

**A.** Motorola is actively developing an application interface library and plans to integrate it into our AdvancedTCA application enabling platform. Also, we plan to work with third-party platform providers to implement on their platforms as well. The HA software and AIS products will be our own unique products. In addition, Motorola plans to port the application interface library to other systems of partners that make a good strategic fit for us. The end benefit from this activity is portability for applications that perform high availability tasks within a system.

**Q. What kind of interest are you seeing in using AIS specs?**

**A.** Oracle and VERITAS have joined and are seeking a way to incorporate the AIS specifications I mentioned earlier into their applications. Motorola and the SA Forum are also looking into Java-based alternatives. Since Java is quickly becoming a ubiquitous part of Internet programming, integrating AIS services, either as a Java class or native method, opens up high availability services for just about every application connecting with the Internet.

We're also seeing some activity in defense and aerospace, where the Navy and Army mandate high availability with standard form factor solutions. Many of the same attributes of streamlining sup-

ply chain coupled with high availability in telecom are also attractive for defense applications.

Significant interest also exists in the high availability SA Forum product being developed. We originally estimated one design win this year with significant design win activity in 2006, but we're well ahead of 2005 projections.

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Motorola ECC is changing to meet the needs of the telecom industry. Likewise, Motorola ECC headcount seems to also be tracking this change. Currently, John estimates the ratio of hardware to software engineers being 60/40. Software head count could reach the point where the 60/40 ratio could flip in favor of software engineering over the next few years. Boards and platforms are still an important piece of the Motorola solution. However, software capabilities are the key ingredient to serving the needs of capturing new business in the telecom industry.

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