Open Standards outlook – Key drivers for the future

By Jon Kenton, Motorola Computer Group

The climate of the last two to three years will not be stored away as the fondest of our memories – a less than happy ending to a story that had seen record growth and profits for much of the telecommunications and high tech sectors. As we entered this year, however, the signs of recovery were evident to all. Order books for most parts of the value chain are looking healthier than they have been for a long while. Although unlikely to match boom-time levels, a return to profitable growth has already been achieved by some and is the realistic outlook for many. The frozen CAPEX budgets of the service providers are thawing as spending on next generation infrastructure fuels a drive towards new services. These new services, such as wireless data and Voice over Internet Protocol (VoIP) telephony, are aiming to minimize churn and drive up Average Revenue Per User (ARPU) for the carriers. The analysts' forecasts look rosy, so what's the downside?

From an opportunity perspective, the downside may not be apparent. However, the challenge lies in capitalizing on the opportunity. Virtually all equipment manufacturers now have only a fraction of the staff they had a few years ago. With engineering having borne the majority of the losses, this severely hampers their ability to develop and release new products. TEMs cannot recreate the *grow it all* environment of the past and must now rely more on external suppliers. This growing dependence on external suppliers will cause the open standards community to play an increasing role over the next few years.

Using open standards to gain competitive advantage is not a new innovation. The desktop and enterprise computing manufacturers adopted open standards that have now largely replaced proprietary architectures. The key benefits to the telecommunications industry closely resemble those that general-purpose computing enjoys.

Once accepted, open industry standards tend to create a large number of suppliers who must constantly innovate in order to remain performance- and price-competitive. Vendors can concentrate on their core competencies, providing specific platform elements without the need to supply every component.

Platforms based on open standards have additional appeal for telecom equipment suppliers because commercially available hardware and software building blocks can form the basis for many different applications. This reduces the cost and time required to bring a complete system to deployment or to upgrade an existing one. Reusing these elements, instead of starting from scratch for each application, keeps costs down. Systems based on common architecture building blocks also reduce the time required to train installers and operators and help keep the size of the spares pool down.

The telecom equipment manufacturers (TEMs) are no strangers to Commercial Off-The-Shelf (COTS) technology. CompactPCI has enjoyed broad acceptance since it was introduced in 1995 in a variety of communications applications. CompactPCI delivered greater ruggedness than similar desktop standards, and due to its form factor and system *mechanicals* it has been possible to construct solutions with a high degree of modularity.

While CompactPCI is the most widely adopted standards based COTS technology in the communications world, it is not ideal for all applications. Over the next 12 to 18 months a new standard is set to make a major impact on a broad range of telecom solutions. The Advanced Telecommunications Computing Architecture (AdvancedTCA), which has grown out of the same PICMG (PCI Industrial Computer Manufacturers Group) camp as CompactPCI, was developed with direct support and help from the TEM community. PICMG released the first revision (1.0) of the Base Specification on 12/31/2002.

One reason AdvancedTCA will make a major impact is due to significant TEM involvement in the specification's creation and development, as their requirements were specifically considered. The board area, total volume, power, and cooling elements are all increased, meaning high power CPUs or arrays of DSPs can be more easily accommodated. A major step forward is the inclusion of multiple specs covering fabric and backplane technologies, enabling a vast increase in potential data bandwidth for bearer applications. Systems management has also been an issue lacking standardization, and AdvancedTCA specs also encompass this aspect.

The trend towards using software standards has seen several advances over the past few years and will gain stronger momentum as they evolve. Linux has been one of the major technologies to take the industry by storm. TEMs were understandably nervous when considering using an operating system that essentially had no *owner*. The issues of support have largely been ironed out, as have most of the specific requirements surrounding the software needs in a central office environment. Carrier Grade Linux products are now offered by more than a single vendor, demonstrating the power of open standards.

One of the last discrete bastions of the telecom world is the requirement for high availability. Most, if not all, telecom applications need to provide service 24 hours a day, 365 days a year. The middleware, software, and management interfaces that enable such levels of availability are complex and have been largely developed completely in house by the equipment vendors. This area represents one of the biggest potential changes that standardization will bring about in the near future.

The Service Availability Forum (SAF) is a driving force for standardization. The SAF is a consortium of industry-leading communications and computing companies working together to develop and publish high availability and management software interface specifications. Through standardizing the interfaces for systems required to implement high service availability levels, the SAF aims to help create a new open world for service availability. The SAF is unifying multiple levels of functionality to deliver a consistent set of interfaces, thus enabling consistency for application developers and network architects alike. This translates into significantly greater reuse and much quicker turnaround for new product introductions. The SAF suite of standards comprises the Application Interface Specification (AIS), Hardware Platform

Interface (HPI) and Systems Management (SysMan) Interface Specifications. Collectively they represent the industry's first standard APIs for managing hardware and applications that run critical Next Generation Network (NGN) services. This also enables portability of applications between open platforms, reducing the cost and risks of moving to COTS hardware (see Figure 1).
[Figure 1]

Open industry standards, such as AdvancedTCA, CompactTCA, CompactPCI, Service Availability Forum specifications, and Carrier Grade Linux, have the potential to bring substantial business value to the telecom industry. However, using traditional board- and chassis-level products still requires major resource investment by the TEMs in order to fully realize this value.

This collection of open standards, however, makes possible a greater level of integration, reaching to a higher point in the value chain. Motorola has defined a new concept, the Application-Enabling Platform, to deliver more business value via a higher level of standards integration.

An Application-Enabling Platform is a pre-integrated and validated system that, at its highest level of integration, combines industry standard hardware, system software, sophisticated middleware, and application-specific protocols. TEMs can bring applications that generate revenue to market faster by using an Application-Enabling Platform to reduce base platform development and system test time. They also enable TEMs to streamline internal development and operations while helping to manage the risks associated with adopting new technology. TEMs can also protect their investments by selecting the optimal mechanism for implementing both existing and new applications through flexible migration capabilities that are inherent to an optimized Application-Enabling Platform.

Over the coming months and years, the adoption of open standards including AdvancedTCA, Carrier Grade Linux, and SAF interfaces embodied within a concept such as the Application-Enabling Platform will deliver distinct advantages to equipment manufacturers.

- Competitive advantage – Spending less time on base platform development and system test accelerates time to market. Resources can also be better focused adding the distinctive value that helps build a competitive edge.

- Cost efficiency – Operations can be streamlined and costs reduced through reuse of a common platform across multiple projects. This maximizes efficiency of inventory and spares costs. Furthermore, standardized high availability and platform management functions make performance predictable and reduce operating costs for service providers.

- Investment protection – Application-Enabling Platforms are based on open standards, simplifying migration to different hardware and software technologies. This translates into better management of risk within the overall development process.

As mentioned earlier, using open standards is not a dramatically new concept. In the past, however, standards tended to be isolated, and the gaps between what the standards offered and a complete solution were often chasms. The narrowing of these gaps represents probably the biggest change in the open standards environment of today. Over the next couple of years we will see open standards moving even closer together to enable real synergistic solutions. Standards bodies are working more in unison and taking into consideration a broader set of solution requirements. We mentioned a few key standards (AdvancedTCA, Carrier Grade Linux, and Service Availability Forum interfaces) that illustrate this change. Standards that are more closely linked help to create more highly integrated solutions such as the Application-Enabling Platform. In the near future it will be significantly easier to bring a variety of products together under an open standards umbrella to meet specific market and application needs.

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