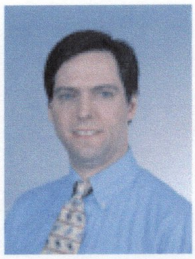
INTERNET TELEPHONY converged ▪ networks

September 2000



# Multi-Application Platforms: Simplifying Network Complexity

BY SCOT ROBERTSON

As convergence progresses at different rates at different parts of the network, service providers risk creating disparate systems that support a variety of access services and network protocols. When providers use different access equipment for different services it results in higher costs and lower reliability. The system administration and maintenance costs are higher when different equipment must be supported for similar applications. Additionally, providers often lose their equipment price negotiating clout when they are forced to buy from different vendors to meet all of their service needs. The goal is to converge voice and data for maximum top-down advantages without creating different networks for each access service. A new generation of access systems based on multi-application platforms are providing a way to reduce the system's complexity by meeting the needs of each converged market or segment with one single platform.

The business case for many converged markets, such as long-distance wholesaling, makes goals such as uniform access equipment secondary priorities. Another case of convergence that is causing service providers to implement different sets of equipment for convergence is multi-service access. A service provider that offers multi-service access and also offers long-distance services, for example, has a compelling business case for convergence. However, a provider that deploys both multi-service access and long-distance services often ends up with fragmented networks. The underlying questions that the multi-application approach answers are how does a service provider deal with the fragmentation of each market and service type that require different sets of equipment, and what does the provider do with all of the access gateways for the different voice markets? Ultimately, how can the network be simplified?

**Convergence Of The Last Mile**

As a somewhat new approach to offering a variety of services on a single network, multi-service access is becoming more popular due to the ability to add voice to DSL (VoDSL) or cable (VoCable) broadband data services, allowing the service provider to become a full-service supplier. Because of this, multi-service access is becoming a more attractive business for many service providers due to the benefits that offering both voice and data services provides, and the low barriers to entry. Whether a provider is offering xDSL, cable, or fixed wireless broadband access, voice services can be added. Voice is typically viewed as a new service that providers are trying to deploy using their broadband data access service to tap the voice market and become a competitive local exchange carrier (CLEC).

A good example of this is VoDSL for converged data and voice services to businesses. Today this means voice and data are converged to offer local phone services and broadband data services over a single connection. An Integrated Access Device (IAD) is installed at the end user premise to terminate the DSL modem connection and provide connectivity for phones and Ethernet. The IAD digitizes and packetizes the voice connections typically in VoATM format for transport over the DSL connection. A single to more than a dozen or more (typical range of 1--16) phone lines can be supported through the DSL link.

On the infrastructure side, the "last mile" to the subscriber is terminated and split into data and voice streams. For voice services, a voice gateway is needed to route the voice over the Internet or to the PSTN. Voice and data are converged over the last-mile connection between the subscriber and the central office but then are split as needed to allow access to a full range of PSTN services. With this architecture, service providers can offer the same services as the ILEC (incumbent local exchange carrier) because the multi-service access provider will route the voice call over the data network to reach the PSTN, making it fully transparent to the end user. Alternatively, the service provider may offer a new service to users by offering low-cost long-distance over data networks and providing the voice connection over the data networks.

Many CLECs are rolling out converged access plans or multi-service plans including SBC Communications Inc., which is leading in offering VoDSL among the incumbents. Sprint is working with vendors to deploy VoDSL services by year-end. AT&T's purchase of MediaOne so far has captured 39,500 users for its voice-over-cable service, adding 500 per day and with a goal to have 400,000 to 500,000 by the end of 2000. VoDSL is slowly but surely becoming a popular way of adding voice services over a data network. According to Cahners In-Stat Group, the U.S. market for VoDSL is forecast to grow 25-fold in 2000, from only about 2,400 subscribers and $47 million in service revenues in 1999 to 61,000 subscribers, with service revenues of $1.2 billion, by the end of 2000.

The key is that by providing multi-service access, the service provider can add additional revenue to their existing connection to the client that requires a

low investment to gain a new revenue stream. Multi-service access is one business opportunity that could be a service provider's whole business, or an added layer.

**Implementing Multi-Application Platforms**

Multi-application platforms are a solution to the complexity of having to support convergence in different markets. Many multiservice access systems use different technologies to support voice services than VoIP access systems used in long-distance wholesaling. The typical multi-application platform, which can include a gateway using a multi-application platform architecture, typically uses a digital signal processor (DSP), which is able to run different protocols to support several types of services. For example, the multi-application gateway could support VoDSL for multiservice access and support VoIP for long-distance wholesaling access. The platform must be flexible because there are differing standards for voice access depending on the data network connection for VoDSL, VoCable, VoATM, VoIP, where each is connecting to the PSTN and different standards are required for each connection.

In general, what's driving the rapid proliferation of the Internet is the service provider's ability to integrate networks and services in new ways, based on these new standards and protocols available. Mixing up different services and offering different applications creates the complexity of having to purchase, integrate, and maintain different sets of equipment or duplicate sets of equipment. Multi-application platforms reduce the diversity of equipment and simplify the overall design, saving time, capital expenditures, and operating expenses. Having a single technology-type for both voice and data that is flexible and programmable, is also important when adding new features, applications, and upgrading the system to support new standards.

**Conclusion**

A platform should be chosen so that it can run multiple applications. The service provider should consider all of the near-term application needs as well as long-term potential services. The multi-application platform chosen must support all of the near-term applications and have the capacity to meet future needs, such as more capacity and new services. However, since it is difficult to predict future needs in the rapidly changing networking market, the capacity and flexibility, such as the ability of each DSP core to run independent applications, should be a key metric in choosing the platform. Choosing the right platform will deliver flexibility and lower cost of ownership.

Next month, I will take an even closer look at the VoIP gateway and then examine the elements of the gateway -- both hardware and software and what some of the issues are relating to quality, density, and interoperability.

*Scot Robertson is the product line manager for Remote Access Products at Analog Devices, Inc., a leading manufacturer of precision high-performance integrated circuits used in analog and digital signal processing applications.*