The need for TDM-to-packet migration:
A welcome opportunity
Today, an increasing number of carriers and service providers are compelled to transition away from TDM technologies—which are rapidly going obsolete—toward modern packet-based approaches. And it should come as no surprise, since packet-based networks can deliver the best possible system performance, guarantee their ability to support both legacy and new business services, and reduce operational costs related with the management, support, and maintenance of multiple networks and aging infrastructures. This results in savings not only for service providers, but also for end-users who will benefit over time from much higher-speed services at generally lower recurring costs.

The pressure to change opens a welcome opportunity to build better, fully modernized networks. As they craft their migration strategies, service providers, IO utilities, and government agencies are looking for solutions that can accommodate legacy services for as long as necessary while establishing agile packet networks that are dynamic and responsive, with the ability to support a full range of emerging business opportunities and services. Easier said than done.

The challenge of moving from outdated to updated
The challenge is that some providers, like power utilities and municipal, state, and federal government agencies, find themselves having to determine is how to migrate their most critical network services from the TDM interfaces and protocols which they currently run on, to packet-based networks, without severely impacting these highly profitable legacy services.

While they are under pressure to migrate their systems, they must find a way to manage the transition. But how? Not everyone is prepared with the budget, technology, expertise, or resources to update all their TDM-based services. And of course, over the long term running parallel networks is costly and complex, and ultimately unrealistic.

While a go-it-alone approach certainly is not out of the question, the going may be slow and tough, as providers often find it difficult to plan, start, or execute on schedule. Furthermore, this approach requires technical specialists with highly sought-after skills. These resources are difficult to find, let alone recruit, hire, and retain, with very high associated HR costs. Even providers with in-house planning and engineering teams struggle with the scale and complexity of these projects. Often, their legacy systems and processes and out-of-date inventory and circuit office records present significant barriers to successful migration. Additionally, if a TDM-to-packet effort is not managed as a dedicated program, there is a risk that, over time, internal resources will be deflected or refocused onto other activities or projects.

The risks of migrating a TDM network to packet is much easier to overcome with help. Working with the right partner ensures a successful outcome that achieves set goals—on time, within budget, and without service disruption—and leads the way to better and higher-performing infrastructure that benefits end-users and operators alike.

This is where Ciena Services can help.
A simple, secure, and seamless experience
Ciena Services offers a comprehensive, start-to-finish evaluation, planning, and implementation solution for eliminating power-hungry TDM legacy equipment. It is a simple, phased approach that minimizes both upfront and overall costs, in addition to decreasing the amount of risk associated with the migration and the time to deploy.

Ciena Services leverages our tried and true modernization methodology, proven in hundreds of network transformations worldwide. It draws upon our extensive expertise in deploying TDM (SONET/SDH/PDH) solutions—including DACS replacements, with carrier-grade design and ease of deployment in existing TDM networks—and providing simple and cost-effective packet solutions globally for over 490 customers over the past decade. Ciena’s five-step modernization methodology ensures quality and success:

Consulting: The consulting phase lays the foundation for any TDM to Packet migration project. It begins by developing two essential prerequisites for success: intimate familiarity with the customer’s network and a shared understanding of their business needs and objectives. This allows Ciena consultants and customers to align teams on the project’s goals and objectives, evaluate what will be the right technologies, and build a robust business case for change that key customer stakeholders can buy into, define the scope of the project, and ensure the most appropriate method for migration.

Discovery: Legacy networks have taken years to build, so it is a common problem that service providers don’t have a consolidated, detailed inventory view of their network assets, but this is solvable. Ciena’s Discovery applications and site services, automation tools, and analytics can pull data from numerous disparate sources and create a unified, real-time view of a network.

Planning: Planning is one of the most important phases. Ciena’s project managers and engineering consultants work closely with customers’ technical and operational teams to develop robust Engineering Methods of Procedure (EMOPs) for every scheduled activity, including contingency plans. Meticulous planning is required to ensure mission-critical services remain available during reconfiguration, consolidation, upgrade, or migration between legacy environments and to next-generation, intelligent infrastructure. Ciena has the capability and experience to conduct this planning and achieve these goals.

Execution: Execution is the actual deployment. This is where Ciena’s experience, proven methodology, automation procedures, and tools come to the forefront, ensuring the success of a project, while minimizing risk. The best and most common approach is to converge legacy and future technologies on the same equipment. Ciena’s TDM-to-Packet Solution—including TDM SFPs, TDM service modules, and the 6500 Packet Transport System (PTS) combined with our Manage, Control and Plan (MCP) domain controller and professional services and associated software tools—offers everything providers need to build converged networks that streamline the migration and modernization process for edge, access, and metro aggregation sites.

**Figure 1. 6500 PTS applications**
The 6500 PTS is purpose-built to simplify network modernization while minimizing network transition costs and space on a single, secure converged network for future packet-based services. A future specifically for legacy TDM services, allowing for continuation of a valuable revenue stream yet supported over a modern (and common) infrastructure. Its primary applications for service providers include ADM, DACS, and MSPP replacement, TDM-to-Ethernet Gateway, and network modernization. As soon as the platform is installed for either of these applications, network providers simplify their networks and gain high-performing packet-optical networks that are also ready to deliver next-generation broadband and virtual services. Pre- and post-migration testing are included as well, to make sure each step in the deployment is performed properly and the network operates as it should.

Ciena’s TDM-to-Packet Solution offers all of this, without the need for building, troubleshooting, and managing a complete parallel network.

**Closure:** A variety of closure activities must be completed before a project can be declared finished. The activities include conducting OSS/BSS updates, decommissioning and removing legacy equipment, and ensuring all cross-functional teams are trained in the new network and the capabilities it brings.

The entire end-to-end process leverages Ciena’s deep understanding of telecom and expert project management. Ciena’s project managers employ best practices, such as the Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK), and diligently apply lessons learned from all of their engagements to ensure consistent, positive experiences that will accelerate a customer’s ability to mitigate risks, migrate, and realize their strategic business outcomes.

**Figure 2. Ciena’s legacy to next-gen modernization—a multi-step methodology and process**
The Adaptive Network™ connection
Migrating from TDM to packet lends itself to a smarter, more agile network—and a more innovation-ready infrastructure that responds when needed. As such, a TDM-to-packet migration is a step toward Ciena’s Adaptive Network. Utilizing a unique combination of automation and analytics, and built upon a programmable infrastructure, the Adaptive Network rapidly scales, self-configures, and self-optimizes by constantly assessing network pressures.

Ciena Services
Having co-created some of the most customer-centric networks in the world—with major service providers, multiple-system operators, and global content network providers, from greenfield to brownfield to modernization—there is no environment Ciena Services cannot transform. Designed to be as open and flexible as the networks we build, Ciena Services provides real, quantifiable business value. Our Services team becomes part of your team. As advocates for our customers’ goals, we prepare for unavoidable challenges and tirelessly drive toward your business outcomes—faster.