Perspective

Network Synchronization Overview

Timing and synchronization are indispensable in our increasingly digital, networked world. Precise, accurate time enables virtually all infrastructures such as wired and wireless communications, data centers, smart power grid, financial exchanges, industrial networks, and other secure communications. Wireless networks, for example, rely on highly accurate timing and synchronization for smooth cell-to-cell transfers of the mass of voice, video, and mobile data deluging the networks on a daily basis. Precise timing is similarly vital for financial networks processing billions of dollars in transactions daily.

Achieving highly accurate precision time is no easy feat from a technology perspective, so it is important to find a resource you can trust. Network synchronization and services assist customers with the planning, deployment, and maintenance of synchronization infrastructure. Synchronization services are designed to help lower costs, streamline processes, ensure quality, and deliver the highest level of performance from your networks.

What Happens without Sync?

- Fixed line: Dropped calls/loss of links. HELLO HELP!
- Wireless: Dropped calls, handover problems, failure to connect, QoS/QoE degradation.
- Data: Repeated packet transmission.
- Voice: Audible clicks/dropped calls
- Facsimile: Distortion/smearing
- Modem: Connection failures
- Data: Corruption/loss/retransmit broadband services not delivered
- Video: Distortion/freeze frames
- Poor interoperability between network operators at point of interconnect (POI)
- Disagreement on causes at points of Interconnect (POI)

Area of Application

Synchronization for communications networks, based on both traditional TDM distribution and new packet timing synchronization; time and frequency solutions for aerospace and defense applications; high precision frequency standards, including cesium atomic clocks, hydrogen masers, and timescale systems which ensemble multiple sources to produce a common timing standard; time and frequency sources and distribution systems for public utilities and energy management; network time servers and timing measurement solutions for enterprise networks

Planning & Design Services

- **Sync Audit:** A comprehensive review of your synchronization performance is captured and documented using the Sync Audit.

- **Network Synchronization Design:** Any time you build a new synchronization network, it is important to incorporate best sync practices.
- **Modernization Planning:** Many customers may already have a pre-existing synchronization network in place. However, transmission technologies have evolved from TDM based to SONET/SDH and now to packet-based transmission. As a result, synchronization and timing networks need to evolve and *modernize* as well.

Deployment of Synchronization Solution		
Planning and Design	**Implementation and Deployment**	**Maintenance and Support**
Sync Audit	Sync Survey	Technical Support
Design	Installation and Services	Hardware Maintenance
Modernization	Test and Acceptance	Software Maintenance

Deployment and Implementation Services

- **Sync Survey:** To ensure the installation goes smoothly, it includes a pre-installation checklist to identify any issues before work begins and identifies any obstacles to plan around them.
- **Installation:** Generally, installation includes planning, parts, and labor necessary to ensure successful network implementation of equipment into the overall synchronization network.
- **Test and Acceptance:** Test and Acceptance can be conducted at the factory and/or on-site at the customer location. Test criteria ranges from verifying individual product specifications to validating end-to-end performance such as PTP packet transport delay over a live network. Customer Test and Acceptance procedures verify that the installed equipment meets operational and performance requirements. Test criteria are based on industry standards.

Maintenance

- **Technical Support:** Network synchronization demands 24×7×365 support as its critical element of current generation networks.
- **On-Site Technical Support:** When deployed equipment problems cannot be resolved remotely, on-site technical support is required to evaluate, identify, and correct the problem.
- **Platform Maintenance:** In order to continue providing customers with long product lifecycles, more emphasis on software maintenance and technical support is required to assist customers with next-generation network timing deployments.

Savitri Telecom has collaborated with Microsemi USA (formerly Symmetricom), industry leader in deployment of next-generation synchronization networks. Together we ensure your synchronization plan is successful. ∎

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