spectracom

Technology Brief: Network Master Clocks and Time Servers
NTP over Anycast

What is NTP
Network Time Protocol is a client-server protocol for synchronizing time on IP networks.

What is Anycast
Anycast is a network addressing scheme in which messages are routed to one of a group of potential "receivers" via a single destination address based on a one-to-nearest association.

What it Means to You
- Reduce latency, increase availability, improve scalability of NTP deployments
- Simplify the management of a reliable wide-area NTP deployment with redundant stratum-1 servers
- Leverage existing Anycast-enabled networks and OSPF-capable routers
- Leverage the ability of a "smart" NTP server for a simple NTP client implementation

Spectracom NTP over Anycast Capabilities
- Configure an Anycast IP address to any Spectracom network interface
- NTP server responds to client requests as directed by the Open Shortest Path First (OSPF) routing protocol
- NTP server becomes "unavailable" upon loss of synchronization or detection of a problem with its reference, client requests are directed to the "next-nearest" server
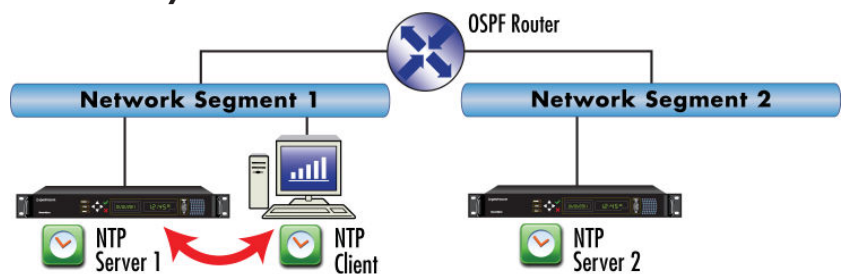- NTP server is automatically made available when synchronized

Introduction
The configuration of NTP clients for mission-critical timing using NTP servers with static IP addresses can be problematic for large deployments across several network and geographic boundaries. Referencing an NTP server by hostname with existing DNS infrastructure can help reduce the reliance of maintaining static IP addresses for NTP servers, but still requires a lot of configuration when a group of NTP servers are available. The NTP daemon offers a Manycast feature to allow a client to automatically discover and configure a group of NTP servers starting in version 4. However, for Anycast-enabled networks, the ability to route NTP requests to several potential servers via a single IP address without any specific client configuration offers the most simple, reliable and scalable approach. This feature is available for Spectracom NTP servers as "NTP over Anycast."

NTP over Anycast
Spectracom NTP services, implemented in its SecureSync and NetClock 9400 platforms, are compatible with an Anycast routing scheme. The NTP over Anycast feature is a combination of the time server's ability to associate one of its network ports to an Anycast IP address and to remove itself as an available time source if there is a problem with its reference. As long as the time server is "in sync" it will be available for routing by OSPF to receive and respond to NTP requests. If the unit goes out of sync, it becomes unavailable. The request will be sent to the next nearest NTP server also configured with the NTP over Anycast address. In essence, it is the intelligence of the time server that removes the burden of this function from an NTP client so that the NTP client deployment can be simplified. Contact Spectracom for more information about its NTP over Anycast feature or to receive the application software upgrade for currently fielded units.

All NTP Servers Synchronized

NTP Servers with 1 Out-of-Sync

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