Purpose

The purpose of a network synchronization audit is to provide the customer with a snapshot of synchronization signals to help them better understand the status of their network and thus result in better network synchronization planning.

Method

A Valiant Communications engineer will come to the customer location with the measurement equipment required to measure a Sync signals on different points/sites in the Customer's network.

The following measurements will be performed:

1. Jitter Measurements
2. MTIE (Maximum Time Interval Error) Measurements
3. TIE (Time Interval Error) Measurements.
4. Wander Measurements (up to 24 hrs)

What happens in the absence of Sync in network?

- Transmission Bandwidth cannot not be achieved.
- Carriers would not be able to inter-work effectively at POPs.
- Unacceptable Levels of Slips.
- Unacceptable Levels of Pointer Adjustments in SDH.
- It would not be Possible to provide some Services effectively.
- It would not be possible to perform handover in wireless networks.

Synchronization Testing Set-up
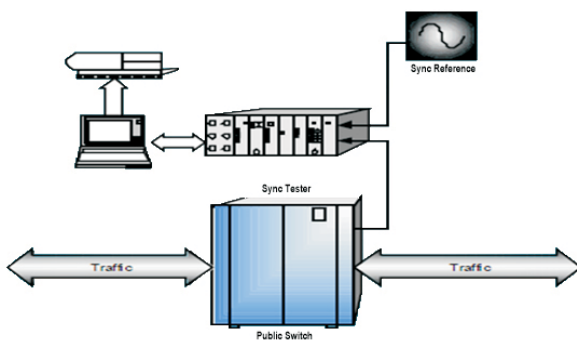
Technical

General	Dropped Calls / Loss of Links
Voice	Audible Click
Facsimile	Distortion / Smearing
Data	Corruption / Loss / Retransmit time
Video	Distortion / Frozen Frames
SDH/ SONET	Excessive Pointer adjustment

Financial

Customer	Increased Cost / Customer Loss
Network	Poor interoperability
Operations	Increased Maintenance Cost
Revenue	Lower revenues

Why need Networks Synchronisation Quality Test?

To transport bits across a network or multiple networks, as well as national boundaries, without losing bits. Clock Signals are degraded as they are transported through Network Elements. Eighty percent of the traffic carried by service providers over SDH facilities terminated outside of their own Networks. There is a large requirement for interconnecting networks for the above reason which makes SYNCHRONIZATION a critical part due to problematic pointer adjustment. Regular Network Sync audit help the organization to control and maintain the proper network synchronization status.

Benefits of Networks Synchronisation Quality Test

- Minimizes the number of frame slips on TDM, Time Division Multiplexed, Telecom Networks
- Minimizes the number of packet or cell discards and retransmission on Data Centric Statistically Multiplexed Telecom Networks.
- Minimizes the bit error rate in high-speed digital networks by reducing the amount of frequency jitter and wander at the network interfaces.
- Minimizes the amount of pointer activity on SONET transport facilities that is due to phase and frequency offsets in the network element clocks.
- Maximizes the amount of available bandwidth on shared bandwidth applications using ATM and IP, Internet Protocol, technologies.

Networks Synchronisation Quality Test Program

Survey
- Overview of Clock Network
- Architecture
- Check working and reference sync route
- Check Network and equipment health status

Audit
- Sync Quality measurement Test
- Wrong Configuration detecting
- Sync Loops checking
- TIE and MTIE stability Test

Result
- Detailed Network Sync Quality (NSQ) Report
- Suggestions for necessary changes
- Conclusion summery.

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