

# An alternative approach to transport Time Sync over Telco Networks

Umut (Udo) Keten





- **Turk Telekom Group**
- **The Problem(s)**
- **The Solution**
- **The TurSwe Approach**  
**(Turkish, Swedish)**



# Turk Telekom builds efficient media transport network with DTM

Turk Telekom recently put in place a dynamic synchronous transfer mode (DTM) solution to run over its MPLS network to provide a better media infrastructure for broadcasters in Turkey. Typically, most broadcasters are based in western Turkey, and when they want to cover live events in the east, they have to dispatch cameras and SNGs at huge cost.

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Imut Udo Keten, Senior  
and Product, Turk  
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Umut Udo Keten, Senior Architect, Service and Product, Turk Telekom

Turk Telekom realises that transporting video over a live broadcast network would

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quite expensive. We've got to be a little bit more creative with a creative solution.

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# Umut (Udo) Keten

## Lead Architect

18 years of Telco Network and Broadcaster experience.



# In numbers Türk Telekom



**304K km**  
fiber network in  
**81 cities**



**32.180**  
**EMPLOYEES**  
Turkey's  
largest employer



Serving  
**47.8 mn**  
Subscribers



**21.9 mn**  
**Fiber Homepass\***



Most valuable  
**telco brand for**  
**11 CONSECUTIVE**  
**YEARS**

\*Homepass includes FTTC & FTTH/B

# The Challenge

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For deploying Sync  
in WAN Networks



- There are challenges and threats to using only **GPS/GNSS**.
- PTP provides an alternative/additional solution, deployment of PTP in WAN type of operation brings other challenges, risks and costs.

# The Problem



## GPS/GNSS

- Most of us will consider that overall GNSS provides a high degree of reliability, that is not the issue here.
- But this degree of reliability is not applicable at the Mobile LTE TDD/5G domain.
- The main issue is that each individual base station and its GNSS receiver becomes a challenge.
- Malfunction of the antenna/receiver, a limited view of the sky(dark clouds), or jamming activities are common threats.

# The Challenge

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## Deployment PTP in WAN

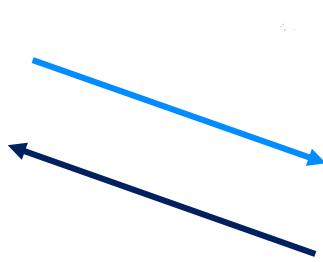
- **8275.1** is very hard to accomplish in a WAN.
- **8275.2** is relying too much on Satellite signals which is previous advised problem and there is still a portion of WAN.

# The WAN Challenge

## Layers of Networks

Layers are unaware of each other

Point A



MPLS

- All networks require an end to end design engineering on all the layers.
- Any change in any of the layers has the risk not being design engineered as all operations of each network layer is separate from the other.

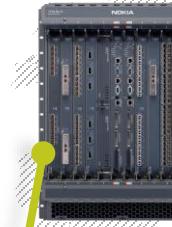
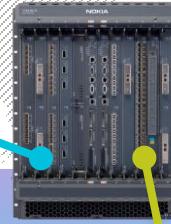
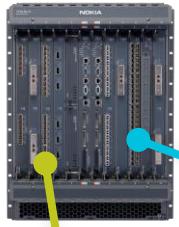
Point B



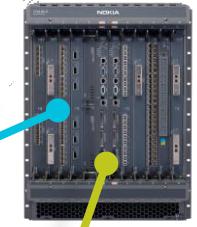
# Layers of Networks

Layers are unaware of each other

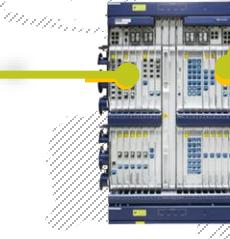
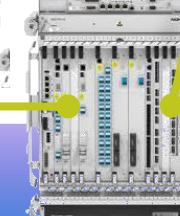
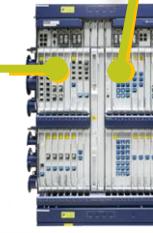
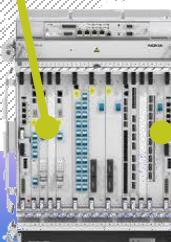
Point A



Point B



**MPLS**



**DWDM**

# The TurSwe

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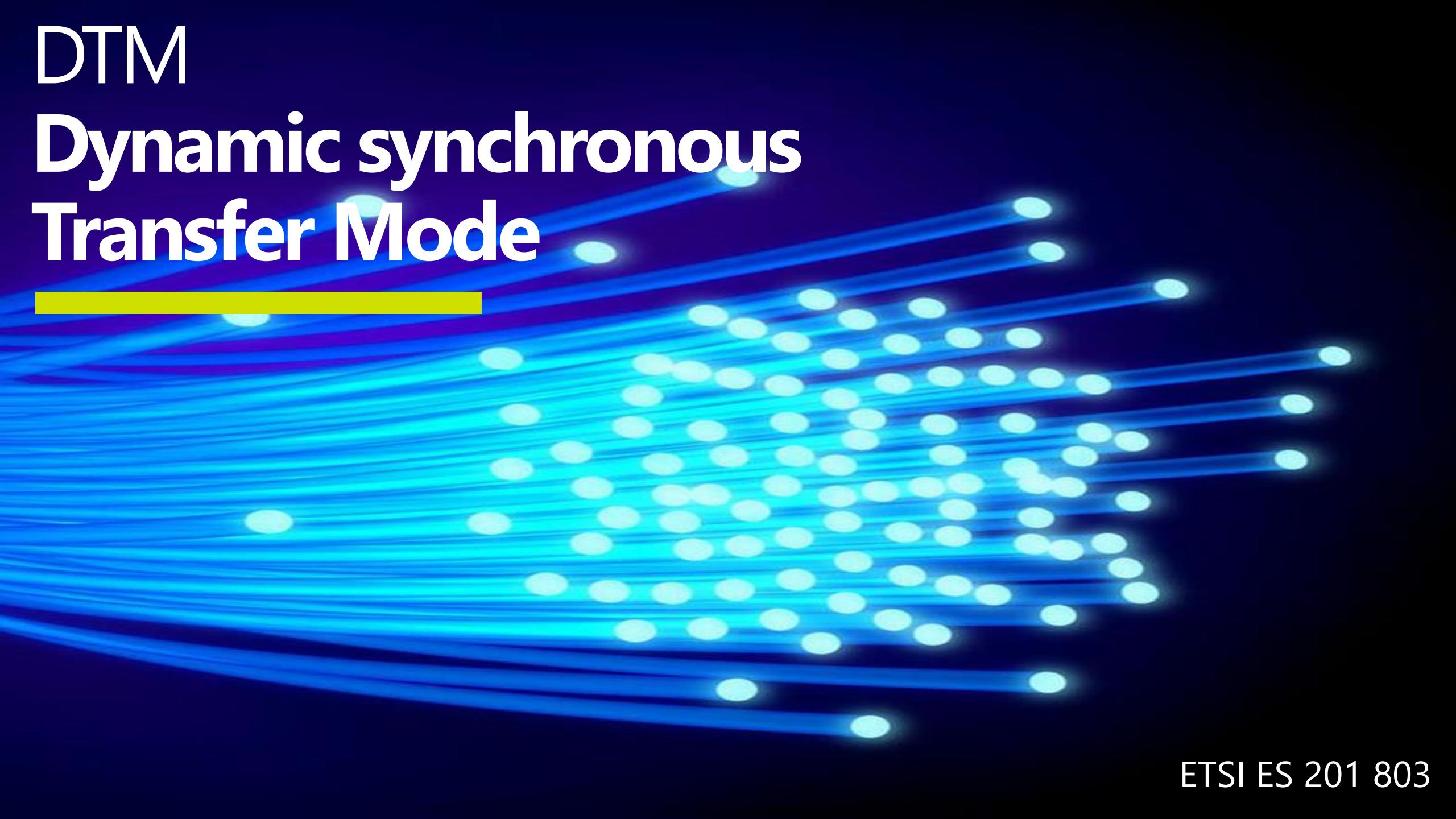


# DTM

# Dynamic synchronous

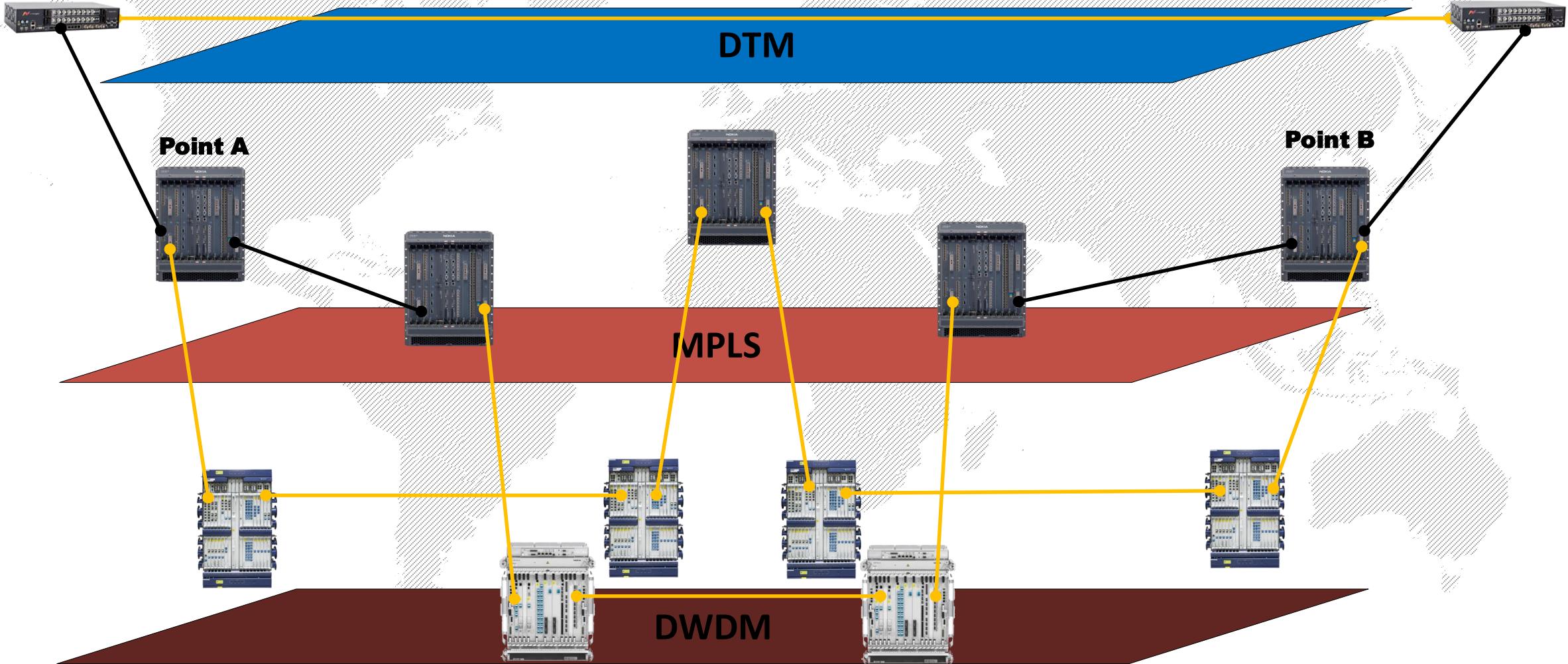
# Transfer Mode

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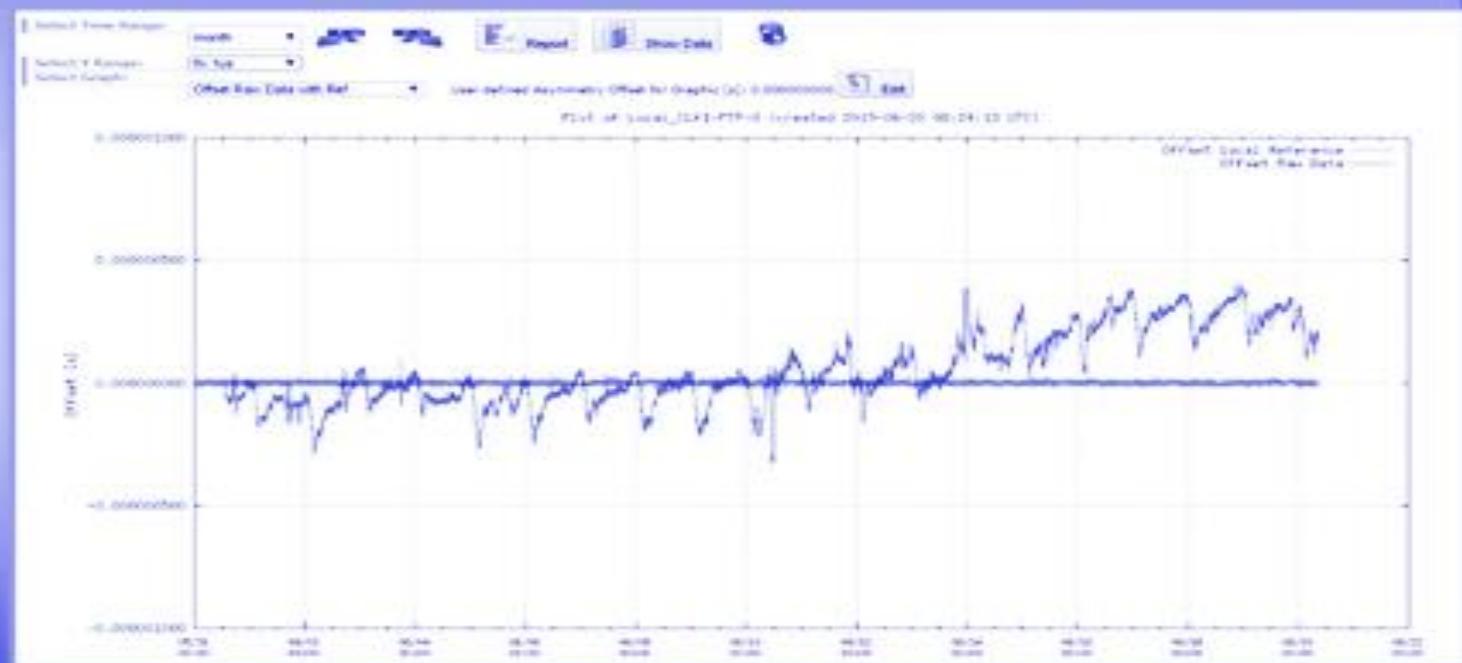


# DTM over IP

A new layer to transfer Time



# GPS Independent Time Distribution



Total Test Topology Live Network

**Thank you...**