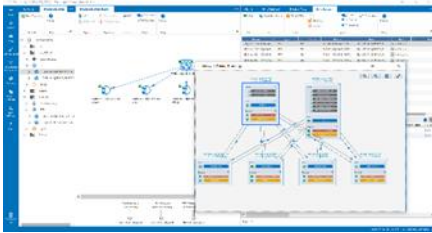


# Synchronization principles and introduction to the OSA 541x, 542x and 5430/40 Family and Ensemble SyncDirector

**4 days technical training, Open Class**



The **OSA 54XX Series** is a family of compact and cost-effective synchronization distribution and assurance devices that bring the power of Syncjack™ to any network. Following a toolbox approach, the family members of the OSA 54XX Series can be utilized in a variety of network synchronization applications. OSA-ACCESS: 5410/11/12/20/21/22; OSA-CORE: 5430/40, Cesium Clock



**Ensemble Sync Director** is an extension of Ensemble Controller Software for timing delivery management and sync assurance. Ensemble Controller is an advanced platform for reliable, secure, and user-friendly management and surveillance of ADVA FSP and OSA networks, with full FCAPS support.

## Objective and Level

This training course introduces the full **OSA core and access family** and the **Cesium clock family** with basic features, using CLI and GUI for provisioning. Students will be introduced to the synchronization concepts including PTP, NTP and SyncE. Throughout the training we introduce some features of Ensemble Sync Director

The last day focuses on using **Ensemble Sync Director** for Management and Monitoring of OSA services.

This class is applicable to different industries (Broadcasting, Power and Enterprise).

Level: Introductory

Please, note: For installation and administration of Ensemble Controller Software, we offer a separate full Ensemble Controller training.

## Audience and Benefits

- The class is aimed for beginners to Synchronization as well as experienced users who need to get familiar with the OSA core and access devices (541x, 542x and 5430/40), the OSA3230B and Ensemble Sync Director.
- Certificates for attendance
- Small courses, 8 to 12 attendants maximum

Agenda	THEORY	PRACTICE
	<ul style="list-style-type: none"> <li>• Introduction to Synchronization</li> <li>• System overview and comparison of the different OSA 54XX products</li> <li>• Sync Delivery and Sync Assurance applications (PTP, NTP &amp; SyncJack™)</li> <li>• Redundancy Principle on 5430/40</li> <li>• Introduction to Ensemble Controller Software</li> </ul>	<ul style="list-style-type: none"> <li>• Setting up a system and its components</li> <li>• Implementing DCN</li> <li>• Setting up PTP, NTP clock</li> <li>• Using GUI &amp; CLI command line</li> <li>• Database Backup &amp; Restore</li> <li>• Software upgrade</li> <li>• SyncJack™ configuration</li> <li>• Using Ensemble Sync Director for Management and Monitoring of OSA services</li> </ul>

## Pre-requisites

Engineer or technician having a background in telecommunication networks.

## Contact

Training: [training@adva.com](mailto:training@adva.com)

Day 1 9am – 4:30pm	Introduction to Synchronization principles Sync Delivery using SyncE
<b>Theory</b>	<ul style="list-style-type: none"> <li>• Introduction to Synchronization principles <ul style="list-style-type: none"> <li>◦ Frequency, phase, and time synchronization</li> <li>◦ How synchronization is distributed in a network (Oscillator, PLL)</li> <li>◦ How to characterize synchronization (TIE, TE, MTIE, TDEV)</li> <li>◦ Synchronous and asynchronous network.</li> </ul> </li> <li>• Delivering frequency synchronization using Sync-E or legacy SDH <ul style="list-style-type: none"> <li>◦ Principles of Sync-E</li> <li>◦ Ethernet Synchronization Messaging Channel (ESMC)</li> <li>◦ Combining SDH and Sync-E</li> <li>◦ Sync-E and SDH synchronization Network Element.</li> </ul> </li> </ul>
<b>Lab Exercises</b>	<ul style="list-style-type: none"> <li>• Introduction of the Sync elements in the 54xx</li> <li>• Navigating with Web GUI of the 541x, 542x and 5430/40</li> </ul>
Day 2 9am – 4:30pm	Introduction to the PTP principles Introduction to the OSA 54xx family and the Web GUI
<b>Theory</b>	<ul style="list-style-type: none"> <li>• Introduction to PTP principles <ul style="list-style-type: none"> <li>◦ PTP concept</li> <li>◦ Asymmetry issue</li> <li>◦ PTP clock types</li> <li>◦ PTP messages</li> </ul> </li> <li>• Introduction to the OSA 54xx Family and Web GUI. <ul style="list-style-type: none"> <li>◦ Review of the OSA 54xx family and cesium clock</li> <li>◦ Introduction to the Web GUI and CLI</li> </ul> </li> </ul>
<b>Lab Exercises</b>	<ul style="list-style-type: none"> <li>• Description of the Web GUI for the OSA 541x, 542x and 5430/40</li> <li>• Connection with the CLI terminal</li> <li>• Navigation through the key components of the 54xx and essential configuration</li> <li>• Build a Sync-E chain with SSM announce.</li> </ul>

Day 3 9am – 4:30pm	
Description of the PTP profiles Maintenance of the OSA 54xx	
<b>Theory</b>	<ul style="list-style-type: none"><li>• Introduction to the PTP profiles<ul style="list-style-type: none"><li>◦ Concept of the PTP profiles</li><li>◦ BMCA and A-BMCA algorithms</li><li>◦ Telecom profiles, Power profiles, Enterprise profiles (to be adapted to the participants needs)</li></ul></li></ul>
<b>Lab Exercises</b>	<ul style="list-style-type: none"><li>• Maintenance of the OSA 541x, 542x and 5430/40</li><li>• Database Backup &amp; Restore</li><li>• Software upgrades</li><li>• Performance Monitoring</li><li>• PTP GM and Slave configuration for several profiles</li></ul>
Day 4 9am – 4:30pm	
Description of the cesium clock and e-PRTC ENC SyncDirector	
<b>Theory</b>	<ul style="list-style-type: none"><li>• Basic concept of the cesium clock technology (magnetic and optical)</li><li>• Introduction to the Ensemble Controller (ENC)</li><li>• Introduction to Ensemble Sync Director</li><li>• Introduction to SyncJack</li></ul>
<b>Lab Exercises</b>	<ul style="list-style-type: none"><li>• ENC GUI description</li><li>• Best practices for monitoring and managing synchronization using Ensemble Sync Director</li><li>• GNSS Assurance</li></ul>