EVERTZ ACADEMY · TIER 1: MAGNUM-OS-EDU

Learn How To Operate MAGNUM-OS

Course information

Course	Learn How To Operate MAGNUM-OS
Code	MAGNUM-ACADEMY-L1 MAGNUM-ACADEMY-L1-VIRTUAL
Provider	Evertz Academy
Format	Instructor-led lab on a live ST 2110 system
Focus	Supporting an operations team

Description

This course is for engineers and technical operators who support an operations team with MAGNUM-OS. The value of the course: we've taken years of experience directly from the field - proven best practices, strategies, failure points, and all the little things - and consolidated them into an 8 hour practical lab. It's a way to turbo-charge your knowledge and skillset.

You'll learn the best ways to give operators the tools they need for their day-to-day job, build up your MAGNUM's configuration with modern tooling, and learn how to troubleshoot when things go wrong (they will go wrong).

Each student has a VUE seat on a shared training system with MAGNUM, multiviewers, and ST 2110 senders and receivers. Real equipment, and a real instructor.

Learning outcomes

By the end of the course, a student supporting an operations team will be able to:

1. Hand operations a panel with the right names, lists, monitor, multiviewer, salvos, and subscriptions.
2. Configure new Router Panels, new MAGNUM workflows, and onboard new devices.
3. Recognize and resolve common issues in an ST 2110 system.

Topics

Introduction: the MAGNUM-OS system

A quick tour of the products, the lab, and how the day is laid out, so you know which tool does what before you start configuring anything.

- **The four products.** VUE is the operator control interface. MAGNUM is the control system that makes the routes. MAGNUM-NMS handles alarms and stores device configurations. MAGNUM-ANALYTICS monitors the ST 2110 network and the streams on it. Knowing which product handles which job saves a lot of time when you're supporting the system.
- **The training system.** A walkthrough of the lab: the MAGNUM, the multiviewers, the ST 2110 senders and receivers, and the VUE workstation you'll use for the day.
- **How VUE is used.** The same VUE can give operators a simple, locked-down panel for production and give engineers deeper troubleshooting tools. We'll look at how both are set up.
- **How the course is organized.** We start with a default layout, turn it into something an operator can actually use, then cover the engineering configuration behind it, and finish with troubleshooting.

Ports basics: sources, destinations, and namesets

Every panel is built from sources, destinations, and namesets. This short section makes sure everyone is using the same terms before we start building layouts.

- **The Ports app.** How sources, destinations, and namesets are shown and managed in the Ports app. Everything later in the course builds on this.

Part 1: Setting up MAGNUM for a production team

How to give operators a panel that shows the right things, using names they recognize. This part covers naming, filtering, monitoring, multiviewers, salvos, and subscriptions.

- **Namesets.** Set up the names that appear on the X/Y router page so operators see show-friendly names instead of system names, with the OPS nameset as the fallback.
- **Tags.** Use tags to control which sources and destinations each panel, multiviewer, and salvo can see. Device tags let you reuse one layout across many panels, with each panel showing its own list. You'll also learn the reserved tag keys (AZ, CONV, and subsystem) that affect where a route is allowed to go.
- **Router dialer.** Learn how to maximize value out of your nameset - VUE can create pseudo-categories based off naming convention.
- **Panel Individualization.** You'll learn how a VUE layout can provide different information depending on where it is. This matters at scale - manage 1 layout going out to many users, showing only the relevant info.
- **Multiviewers.** Build multiviewer layouts in the Multiviewers app, and tag the displays so each operator gets the right multiviewer page.
- **Salvos.** Save a group of routes as a salvo and tag it, so the right panel can fire it with one button.
- **Subscriptions.** Bundle video, audio, and ancillary data into a single source and destination, so operators route one item instead of picking individual flows.

Part 2: Configuring the system behind the panel

The engineering setup that operators depend on: building panels, understanding what's in a MAGNUM configuration, managing device configurations, sorting out login problems, and adding new devices.

- **VUE widgets.** Use VUE edit mode to add routing, multiviewer, parameter control, confidence monitoring, and layout widgets. The goal is a panel that has what the operator needs and nothing else.
- **Building a producer panel.** Build a VUE-CP140 panel with a QC monitor, four audio destinations, two multiviewer layouts, and the producer's sources.
- **MAGNUM configuration backups and restores.** What a MAGNUM configuration load includes and pushes to the main and backup servers, and what it doesn't (settings stored in NMS, Analytics, or on the devices themselves). Important to know before you restore a system that's on air.
- **Device configurations in MAGNUM-NMS.** Build a silver configuration (a reusable baseline) and a golden configuration (your plant-specific settings). If a device fails, you can load its replacement with the same settings.
- **Login and account issues.** Use the account, log, and token tools to figure out whether a user is locked out locally or there's a problem with the LDAP directory.
- **Adding a new NMOS device.** The full process for bringing in a new device: point it at the NMOS registry, register it, set its encapsulation, draw its links, intelli-bind it to a subscription, and tag its sources and destinations so operators can route it by name.

Part 3: Troubleshooting routes

When someone reports that a route isn't working, you need a methodical way to find the cause and to see who changed what.

- **Route history.** Use Log Search to find out who made a route and when. This is usually the first question you'll get asked.

- **MAGNUM services and logs.** Learn which MAGNUM service handles routing, device control, configuration, multiviewers, and salvos, and where to find each one's log.
- **Analytics and IPST.** Use the analytics dashboards and IPST to look at the stream itself once the problem goes beyond the control panel.
- **Availability zones.** Use AZ tags so sources only route to destinations in the same zone. Misconfigured zones are a common cause of failed routes.
- **Tracing a signal path.** Follow a multicast stream from a playout sender to its destination using path view, encapsulation settings, the network switch, and destination monitoring.
- **A troubleshooting checklist.** Work through a fault in order: route history, the basics, device health, links and optics, network reachability, path vs. command, route tags, driver and firmware, services, and sync. Packet capture comes last, once the simpler checks are done.
- **Signal tools in VUE.** Use VUE Vision scopes and meters to check the decoded picture and audio when the complaint is about what's actually in the signal.
- **PTP status.** Learn to read PTP converged and unconverged states on the training system, so you can quickly rule timing in or out.

Assessments

Quizzes are taken in the learning system. Practical work is done on the training system.

Quizzes

Part	Quiz	Topic
Ports	Ports App review	Sources, destinations, and namesets
Part 1	Tag quiz	Filters, device tags, case, and reserved keys
Part 1	Open-book multiviewer quiz	The Multiviewers app
Part 1	Subscriptions quiz	What a subscription is, and how it is tagged
Part 2	VUE widget quiz	Widget families, taken in edit mode
Part 2	MAGNUM configuration quiz	What a configuration load includes
Part 2	Device configuration quiz	JARs, silver and golden configurations, push, and compare
Part 2	LDAP quiz	Login path, lockout, and the log or token for a failure
Part 3	Processes quiz	Which service and log belong to which job

Assignments

Part	Assignment	What you submit
Part 1	Multiviewer layout	A screenshot of the display layout
Part 1	Salvo creation	A tagged salvo, from new routes or from captured routes
Part 1	Subscription creation	Subscriptions created on the system
Part 2	VUE-CP140 layout	A producer panel: QC monitor, four audio destinations, two multiviewer layouts, and the producer's sources
Part 2	Golden configuration	A named golden configuration with the required Scorpion controls
Part 2	NMOS onboard	Registry, names, encapsulation, links, intelli-bind, and SRC and DST tags
Part 3	Show me you routed	Log Search evidence of who made a route
Part 3	Availability zones	Route behavior after AZ tags are applied
Part 3	Trace the DC playout	A source-to-destination trace using encapsulation tables

Glossary

Term	In this course
MAGNUM	The orchestration and control hub. Device communication for these workflows goes through MAGNUM.
SDVN	The MAGNUM web environment used to configure the system and to search logs.
VUE	The control portal for operators and for engineering layout work, including the VUE-CP140 panel.
LM-CORE	The processor that drives the VUE seats in the lab. Each seat is still its own device in MAGNUM.
Nameset	The names a panel shows. Operator names in this course use spaces. OPS is the fallback nameset.
Tag	A label that filters what a station sees. With a reserved key, it also steers a route.
Device tag	A tag on a VUE or panel. Matched with resource tags so one layout can serve many seats.
Subscription	A bundle of video, audio, and ancillary essences. It is routed into, and onward, and it appears as both a source and a destination.
Salvo	A stored set of routes that is fired together.
Intelli-bind	The step that attaches physical NMOS essences to the subscription operators route.
Encapsulation	The stream address settings MAGNUM holds for a sender, including multicast addresses.
Silver configuration	A reusable device baseline. Plant identity stays out of it.
Golden configuration	The plant-specific device configuration built from the silver baseline.
JAR	The device control model NMS loads so it can see and push parameters. It needs to agree with the device firmware.
AZ	Availability zone. The reserved tag prefix MAGNUM uses when it chooses a route path.
NMOS	The registration method used in class to add senders and receivers. Practice uses emulated devices.
PTP	Precision Time Protocol. On this system the 5700MSC is the grandmaster and the NATX is a boundary clock.
Converged	PTP is present and sturdy, and it agrees with system timing.