

# What to expect on the Nokia Optical Network Architect Lab Exam

**Nokia Certified**  
Optical  
Network  
Architect

The Nokia Optical Network Architect Lab Exam is an eight-hour practical exam that tests a candidate's ability to design, manage, and troubleshoot optical networks based on the Nokia 1830 Photonic Service Switch (PSS), 1830 Engineering and Planning Tool (EPT), and 1350 Optical Management System (OMS).

To register for the Nokia Optical Network Architect Lab Exam, candidates must have successfully completed the following prerequisite written exams:

- Nokia Fundamentals of Optical Network Design (4A0-250)
- Nokia Advanced Optical Network Design (4A0-255)
- Nokia Advanced Optical Network Management with 1350 OMS (4A0-260)
- Nokia Optical Diagnostics and Troubleshooting (4A0-265)

The Nokia Optical Network Architect Lab Exam covers topics presented in the Optical Network Certification courses corresponding to the above listed written exams.

## Exam topics

Exam topics are summarized below. Candidates should be able to perform all tasks, understand all topics and work with all features. However, it is possible that some topics are not covered in the exam.

### 1. Optical Network Design

- Optical network design using 1830 EPT
- Traffic matrix analysis
- Configuration of optical node types (FOADM, ROADM, ILA, etc.)
- Manual modifications to automated EPT designs, including:
  - Routing
  - Span and link configurations
  - Network Element (NE) configurations
  - Shelf composition and card organization

- Design of CWDM and DWDM networks
- Traffic grooming and cascading
- Generalized Multiprotocol Label Switching (GMPLS)
- Protection and Restoration, including:
  - Diverse path
  - Dual homing
  - Guaranteed Restoration (GR)
  - Source-based Restoration (SBR)
  - Protection and Restoration Combined (PRC)
- Availability and cost calculations
- Availability-guaranteed design
- Optical Transport Network (OTN) hierarchy
- Encryption
- Synchronization
- Latency minimization
- Optical Signal-to-Noise Ratio (OSNR) margin requirements
- Quality of Transmission (QoT) guaranteed design
- Coherent and non-coherent transmission, and guard band
- Dispersion compensation requirements, and equipment selection
- Raman amplification
- Regeneration
- Forward Error Correction (FEC)
- EPT import and export features
- EPT reports, including commissioning file creation

## 2. Optical Network Troubleshooting

- Diagnose and resolve multiple issues in an 1830 PSS-32 network, including:
  - Broken or damaged fibers, both internal and external
  - Span loss issues
  - Forward Error Correction (FEC) configuration issues
  - Optical Supervisory Channel (OSC) configuration issues
  - Cross connect configuration issues
  - Payload type and encapsulation mode issues
  - Commissioning issues
  - Damaged boards
  - Power management issues
  - Unexpected or missing channels
- Use multiple troubleshooting tools, including:
  - Alarms and conditions
  - Logs
  - Performance Monitoring measurements (PMs)
  - Wavelength Tracker (WT)
  - 1830 EPT design files and reports
  - Loopbacks
  - Power traces
  - Trail Trace Identifier (TTI)

## 3. Optical Network Management

- Use 1350 OMS to:
  - Implement optical protection
  - Configure high capacity uplinks in compound nodes
  - Construct networks in scenarios such as managed plane, L0 control plane, L1 control plane and Multi-Region Networks (MRN)
  - Implement services in the above-mentioned network scenarios
  - Prepare links for maintenance under GMPLS
  - Reroute DSRs and move traffic under GMPLS
  - Localize network faults
- Perform OMS administration tasks such as:
  - Managing PM collection
  - Managing user profiles
  - Managing backup and restore functions
  - Maintaining OMS database files
- Troubleshoot OMS issues by:
  - Identifying important trace and log files
  - Modifying trace levels

## Exam registration

- Registration and scheduling for the Nokia Optical Network Architect Lab Exam can be completed at the following URL: <http://networks.nokia.com/onc/exams>
- Lab exams are delivered at select Nokia locations globally. Candidates should plan to register six to eight weeks in advance of their targeted exam date.

## Exam notes and tips

The Nokia Optical Network Architect Lab Exam is an eight-hour exam that covers a broad range of topics. The eight-hour time frame excludes a mandatory 30-minute lunch break and 30 minutes of break time to be taken at the candidate's discretion. In total, the candidate could be on site for up to nine hours including breaks.

During the exam, candidates will be allowed to access soft copies of the product manuals for reference. The product manuals will be accessible from the PC used for the exam equipment. No other notes, textbooks, course materials or reference materials are allowed during the exam. Electronic devices, including cell phones, are not allowed in the examination room. Candidates will be provided with pen and paper during the exam.

The Nokia Optical Network Architect Lab Exam consists of three distinct sections covering network design, troubleshooting, and network management. In order to pass the exam, the candidate must achieve a cumulative score of 80% across all three sections. The three sections are independent of each other; the candidate may work on any section at any time during the exam session. The candidate must have an adequate level of hands-on experience to maintain a reasonable pace during the exam to ensure that all required tasks can be completed within the allotted time.

Below are some tips to help candidates successfully prepare for and pass the Nokia Optical Network Architect Lab Exam:

1. Consider using My Nokia Optical Lab to help you prepare for the exam. My Nokia Optical Lab provides remote, dedicated access to a Nokia optical lab environment, including lab types focused on 1830 PSS, 1830 EPT, and 1350 OMS. Lab scheduling is available 24 hours a day, 7 days a week. In addition to lab access time, My Nokia Optical Lab includes a variety of optional lab practice scenarios that can serve as an excellent exam practice and preparation tool. Scenarios that correspond to all three exam sections (design, troubleshooting, and management) are available. To find out more about My Nokia Optical Lab and/or to register, please visit <http://networks.nokia.com/onc/my-nokia-optical-lab>. A summary of all of the lab practice scenarios is available from this URL as well.



2. Ensure that you completely understand and are familiar with all of the topics in the student guides of the recommended ONC courses. This will help you to become more comfortable with the lab exam material.
3. Ensure that you are completely comfortable with all of the hands-on lab exercises in the recommended ONC courses.
4. For each exam section, a recommended time, and mark allocation are provided to help you manage your time.
5. If you are unclear about anything in the exam, ask the proctor for clarification. The exam proctor will attempt to clarify anything that may be ambiguous. Do not expect the proctor to provide other information during or after the exam.
6. Be sure to allow yourself adequate time to verify your work on each exam section.
7. Save your work often. Your exam mark will be based on your final submission.
8. Relax and read each question very carefully. Be thorough in your work, but remember to pace yourself appropriately.

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