Nokia 7750 Service Router and Nokia 7450 Ethernet Service Switch
Any Service Any Port Media Dependent Adapters

The Nokia 7750 Service Router (SR) and 7450 Ethernet Service Switch (ESS) Any Service Any Port (ASAP) Media Dependent Adapters (MDAs) provide valuable options for delivering highly scalable multiservice, multi-encapsulation connectivity for IP/MPLS-based routing and services.

With their wide range of multiservice adapter types, interface options, and encapsulation capabilities, the Nokia ASAP MDA provides high-density and reliable support for ATM, frame relay (FR), and SONET/SDH applications in a common interface.

Nokia ASAP MDA variants deliver up to 10 Gb/s (full duplex) of throughput and provide physical layer termination over DS/E3, OC-3/STM-1 and OC-12/STM-4 interfaces. The ASAP MDA is inserted into a Nokia Input/Output Module 3-XP (IOM3-XP), with up to two MDA types per IOM, and are supported on 7750 SR and 7450 ESS chassis.

The Nokia ASAP MDA maximizes deployment flexibility with its multiservice and multi-encapsulation interface options, which converge diverse interfaces and protocols onto a common adapter.

Each ASAP MDA port can be configured independently to deliver clear channel or channelized connections, with increments that include DS3/E3, OC-3/STM-1, and OC-12/STM-4.

Each port can be configured to any combination of Layer 2 and Layer 3 services, and every port or channel’s upper-layer encapsulation can be configured flexibly to support ATM, FR, packet over SONET/SDH and High-level Data Link Control (HDLC).

In addition, the ASAP MDA supports channel bundling using multilink PPP (MLPPP) and inverse multiplexing over ATM (IMA) using multiple DS1/E1 links. This enables granular bandwidth services and a broad range of tiered offerings.
Features and benefits

- The Nokia ASAP MDA enables unsurpassed service flexibility.
- Protocol encapsulation support includes PPP/MLPPP, ATM/ATM IMA, FR, PPP/IP control protocol, PPP/bridge control protocol, and HDLC.
- ATM IMA options include nxDS1/E1 ATM IMA versions 1.0 and 1.1.
- MLPPP options include link fragmentation and interleaving (LFI) for MLPPP, multi-class MLPPP support for access bundles, extended E1 framing support using unstructured E1 (ITU-T G.703), and structured E1 (ITU-T G.704).
- Scales to support 256 bundles and 336 member links, with up to eight member links per bundle.
- High availability options include non-stop services, 1+1 automatic protection switching (APS) for link layer redundancy, and multi-chassis APS.
- Modular, compact ASAP MDAs and the Nokia IOM3-XP provide a flexible mix-and-match approach to system configuration while protecting investments.
- A wide range of pluggable optical SFP modules support a variety of black and white wavelengths and distances. Also supports CWDM and DWDM optics equipment as well as copper media types for greater flexibility.
- Pluggable optics with Digital Diagnostic Monitoring (DDM) are supported for extended operations, administration, and maintenance (OAM) and improved installation, activation and troubleshooting.
- Management is provided by the Nokia Network Services Platform (NSP).

Technical specifications

Encapsulations

- ATM, frame relay, PPP and HDLC
- Support for all physical framing modes, including unframed E1 (G.703 support)
- ATM direct mapping on any ATM interface and ATM PLCP mapping on DS3 interfaces
- BERT tests: 2e3, 2e9, 2e11, 2e15, 2e20qrss, 2e33, ones, zeros and alternating
- Access mode for all encapsulations
- Network mode for DS3/E3 PPP clear channel, OC-3/STM-1 PPP clear channel, and nxDS1/E1 MLPPP bundle

Channelizations

- Clear channel OC-3/STM-1
- Clear channel DS3/E3
- DS1/E1 and nxDS0 TDM channelization
- Subrate DS3 support and scrambling according to the Digital Link subrate method on the 4-port and 12-port DS3/E3
- Channel bundles
- ATM IMA version 1.0 and 1.1
- MLFR
- MLPPP
- MLPPP Link Fragmentation and Interleaving (LFI)
- Multi-Class MLPPP

Table 1. Nokia 7750 SR and 7450 ESS* ASAP MDA summary

<table>
<thead>
<tr>
<th>MDA type</th>
<th>Ports</th>
<th>Connector type</th>
<th>Maximum density</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SR-12e</td>
</tr>
<tr>
<td>Channelized DS3/E3 ASAP</td>
<td>4, 12</td>
<td>1.0/2.3 connectors</td>
<td>72, 216</td>
</tr>
<tr>
<td>Channelized OC-3/STM-1 ASAP</td>
<td>4</td>
<td>SFP</td>
<td>72</td>
</tr>
<tr>
<td>Channelized OC-12/STM-4 ASAP</td>
<td>1</td>
<td>SFP</td>
<td>18</td>
</tr>
</tbody>
</table>

* Supported in mixed mode on the 7450 ESS.
Dimensions*
- Height: 3.6 cm (1.4 in)
- Width: 19.0 cm (7.5 in)
- Depth: 17.8 cm (7 in)

Weight*
- 12-port channelized DS3/E3 ASAP MDA; 0.82 kg (1.8 lb)
- 4-port channelized DS3/E3 ASAP MDA; 0.82 kg (1.8 lb)
- 4-port channelized OC-3/STM-1 ASAP MDA; 0.82 kg (1.8 lb)
- 1-port channelized OC-12/STM-4 ASAP MDA; 0.82 kg (1.8 lb)

* Dimensions and weights are approximate and subject to change. Refer to the appropriate Installation Guide for the current dimensions and weights.

Refer to the 7750 SR and 7450 ESS data sheets and product documentation for full system details on safety standards, compliance agency certifications and protocol support.