Atman DWDM

More, Faster, More Secure

The development of information technology and the ongoing digitalization of almost all areas of life are generating exponential growth in data volumes. In order to meet the challenges of the digital age and to comply with good IT practices, it is becoming standard practice to store data in **external, professional data centers** that provide them with physical security and proper maintenance conditions. The model used to store and process the data (colocated or leased servers/arrays, cloud services) is of secondary importance.

The second issue that touches every aspect of ICT systems is the universal **need for security**. For data to be fully secure, all three elements of the triad should be met:

- **Confidentiality** – the inability of unauthorized persons to read the data
- **Integrity** – protection against uncontrolled data modification
- **Availability** – ensuring unrestricted access to one's own data.

Therefore, organizations with a strong focus on security and business continuity use more than a single data center. However, building a **disaster recovery** solution, running regular **backups**, or working in a **geographically dispersed** IT environment requires extremely fast and secure data transfer between data centers.

The only way to meet the triad for high-volume data transfer is to completely isolate the connection from public Internet networks. The most desirable scenario is a **dedicated solution** – such as Atman DWDM.

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DWDM Technology

Transferring gigantic amounts of data and ensuring full security of each bit may seem irreconcilable within a reasonable budget. The solution is DWDM, a technology until recently reserved for carrier links, but now available to companies outside the ICT industry.

DWDM, or **Dense Wavelength Division Multiplexing**, is a technique for multiplexing optical signals in a single optical fiber by assigning a different wavelength (frequency) of light to each signal, enabling the parallel transfer of large amounts of data between two locations.

The unique feature of this technology is full transparency, because in the telecommunications ISO/OSI model we stay in layer one (physical), which gives technological independence – routing, transport and application – closer to the end user.

Why Atman

Atman is one of the country's leading telecom service providers. We have **deployed and are using DWDM-class equipment** in our carrier backbone network (both metropolitan and nationwide). As a result, our engineers have experience and expertise in designing, building and maintaining secure DWDM systems.

On the other hand, Atman's history is inextricably linked with the provision of **fiber optic lines in Poland's largest metropolitan areas**. Our own cable laid in the tele-technical duct is a valuable resource that gives us virtually unlimited potential for providing telecommunication services.

With both assets: cable and equipment – the most important components of secure DWDM systems – and the **knowledge and experience** of more than a hundred telecommunications engineers, Atman is naturally predestined to be the leading provider of such solutions on the Polish commercial market.

Your choice of Atman gives you

- An end-to-end solution that is fully and proactively managed by **top-notch specialists**
- Virtually unlimited **scalability**
- **Quality** of transmission comparable only to that of dedicated fiber optic lines
- At least **99.98% SLA** guarantee
- **Flexibility** with a tailored solution (depending on your needs: short/long distance, low/high bandwidth, ultrafast/normal switching time)
- **Reduced TCO** (total cost of ownership) thanks to equipment provided by Atman and included in the price of the service.

Possible Scenarios/Variations of the Service Architecture

The starting point is to define the desired bandwidth of the client ports. Both **LAN Gigabit Ethernet** (in the range of 10 Gbps – 400 Gbps) and **SAN Fiber Channel** (in the range of FC8G – FC64G) are available.

Determining the **redundancy** requirements is fundamental to planning the architecture of a DWDM service. This can apply to both active equipment and fiber routing. The following combinations are allowed in Atman DWDM:

A. A single pair of active equipment connected via a single metropolitan fiber

- Each element of the architecture is potentially a point of failure, causing the entire service to fail.
- This scenario is only recommended for building backup links where budget constraints are an issue.

B. A single pair of active equipment connected via redundant metropolitan fibers

- Failure of one of the metropolitan fibers will cause an extremely short (measured in milliseconds) interruption in service, but almost immediately (and automatically) services will be switched to the backup route.
- This option is indicated for restrictive service availability requirements where the geographic distance between the connected locations is considerable (the longer the metro fibers, the more points of potential disruption).

C. Redundant equipment connected via a single metropolitan fiber

- Equipment failure does not cause service interruption, but if a metro fiber is damaged, an outage is bound to occur.
- The architecture works well when the distance between connected sites is short but you are not sure of the operational stability within the data center campuses (no power guarantee or the vastness of the campus area).

D. Redundant equipment connected via redundant metropolitan fibers

- No points of failure, real availability close to 100%.
- A design for the most demanding solutions where no interruption or instability of service is acceptable.

Extended Functions

Data security can be further enhanced by using encryption at the DWDM level

In special cases, DWDM network is not only point-to-point connections, but also parallel connections of three objects in a triangle

Provide additional protection to ensure ultra-fast failover

Build future solutions based on GMPLS as an alternative

Monitoring based on information from management system logs

Single 10Gb, 40Gb or 100Gb Gigabit Ethernet connections provided as Lambdas using shared Atman backbone resources

For special long distance (inter-city) cases, the ability to set up connections using Alien Lambda technology

Additional Information

Please visit atman.pl/en/dwdm, fill in the contact form or get in touch with your Atman Account Manager.