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A traditional quarter in Muscat

## SECURING THE PHYSICAL LAYER

Petroleum Development Oman (PDO) finds and develops oil fields in the sultanate, drilling wells and constructing and operating various hydrocarbon treatment and transport facilities. The crude oil that is produced from the fields is not sold by the company but rather delivered to a storage facility, where it is loaded onto sea-going tankers.

PDO also finds, develops and operates natural gas fields and their associated production systems – all on behalf of the government of Oman. Its headquarters in Muscat is connected to eight remote sites, all running on LANs that carry voice, data and video services, including office systems, telemetry/SCADA, control and automation. The LANs are operated and maintained by local PDO staff.

In total, more than 3000 users are connected across the company on a fiber optic network leased from OmanTel, with a total WAN bandwidth of STM-1 (14 Mbps). The LAN in the head office runs up to 1 Gbps, whilst the remote LANs only run up to 100 Mbps.

An upgrade to the existing system was driven by the Shell Group which holds a 34 % stake in PDO. Globally, it was specifying E2000™\* fiber optic solutions for LANs in all its projects and, after an initial tendering process, R&M's enterprise solution based on E2000™\* connectivity across campus, backbone cabling and storage area networking was shortlisted.

"We are an oil and gas company; our core business is not IT," explains Ali Al Lawati, Head of IT Infrastructure Management at PDO. "What we need to do is make sure that we provide what the business needs and work in line with our business requirements. Whether it is a major oil and gas development project or

just maintenance work, we make sure that in the end the business terms are met. We work on value creation."

PDO enjoys the support of a large IT department that is focused on supporting the business. Historically, it has used technology intelligently in order to address specific business requirements across remote sites and offices and the head office.

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*"We have a stringent evaluation process for technology investments."*

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"We have a stringent evaluation process for every technology investment," Al Lawati is keen to point out. "We have a set of functional requirements that includes things like high reliability, scalability and security. Once we have this done, they are matched to the technical requirements. Only then do we evaluate vendor solutions."

On this basis, R&M's end-to-end solution for all physical network requirements was chosen by PDO. It was implemented by local partner Silver Focus, who undertook all consultancy, design, deployment, testing and support.

The R&M E2000™\* fiber optic connectors now form the key components of PDO's fiber optic network, with a low loss broadband data transmission. Designed to be the connector system of the future, the easy handling and unequalled reliability of the E2000™\* make it the best investment protection on the market.

R&M can adapt security systems in fiber optic solutions as well – a key advantage over other manufacturers.

And, for PDO, security was a critical concern in this infrastructure upgrade. The reason is simple: With a mixture of fixed and remote sites, it operates both wired and wireless connectivity, which require high capacity and solid reliability. Remote sites are connected to eight small data centers across Oman, which in turn are connected to the head office via dedicated fiber through a leased line. Having so many possible points of failure makes infrastructure reliability and connective security vital.

"We have everything necessary for security including firewalls, IPS, IDS and security levels across routers. We have had an effective security policy in place for over seven years now and all investments and usage are directed by this comprehensive policy," says Al Lawati. However, PDO felt the need to increase security across the network. "This was because we originally had a mixed network connecting both office and process systems at oil and gas facilities. At the oil gathering stations, this would include everything from e-mail systems, to high-end servers for controlling the various elements of production and maintenance. All of them were working in a mixed network, a mixed environment with a mixed infrastructure."

Al Lawati was reassured to see that R&M's solution had in-built security features covering sockets, design and components.

And what about the future? "We have taken the experience from this project and used it across some of our upcoming fiber-based projects. We are now standardizing more based on the R&M project," says Ali Lawati.

**CUSTOMER QUOTE:**

"When we started to design the network, we looked not just at the active systems, but also the passive components. We wanted to ensure higher levels of security even with cable distribution."

*Ali Al Lawati, PDO's Head of IT Infrastructure Management.*

**CUSTOMER OVERVIEW:**

Petroleum Development Oman (PDO) has been supplying natural gas to the government of Oman for 30 years.

Starting from the Yibal gas-processing plant and its associated pipeline to Ghubrah, PDO's gas business has grown in step with the nation's economy over the last three decades. PDO now provides gas not only for power generation and water desalination but also for several new major domestic industries and for liquefied natural gas (LNG) exports. PDO's natural gas is also the main source of the liquid petroleum gas (LPG) that is used for cooking purposes throughout the country.

To make this gas-fueled growth possible, PDO has drilled more than 250 wells in 30 gas fields, mainly in central and north Oman, that are connected by pipeline to a network of two gathering stations and four major processing plants.

PDO is the major exploration and production company in the sultanate. It accounts for more than 80 % of the country's crude-oil production and nearly all of its natural-gas supply. The company is owned by the government of Oman (which has a 60 % stake), the Shell Group (which has a 34 % interest) and Total (which has a 4 % interest).



The modern Oman-French museum in Muscat



Ali Al Lawati, PDO's Head of IT Infrastructure Management

<p><b>GET MORE – WHY R&amp;M?</b></p> <ul style="list-style-type: none"> <li>– Quality of products</li> <li>– Availability of products</li> <li>– Reliability of products</li> <li>– Ease of installation and maintenance</li> <li>– Flexibility</li> <li>– Customer support</li> <li>– Range of available components – patch panels, face plates, patch guides, consolidation points, voice patch panels, fiber cables, fiber patch panels and fiber connectors.</li> </ul>	<p><b>R&amp;M PRODUCTS USED:</b></p> <ul style="list-style-type: none"> <li>– Cat. 7 UTP cable (more than 105 km)</li> <li>– FO cable (OM3)</li> <li>– IP67/68 industrial LAN components</li> <li>– UniRack panels for data network</li> <li>– All patch cords and connection modules</li> <li>– E2000™ fiber solutions</li> <li>– Venus solutions for oil wells</li> <li>– E2000™* UniRacks</li> <li>– E2000™* 9/125U for campus wiring</li> <li>– E2000™* 62.5/125U for building wiring</li> <li>– IP67 environmental protection</li> <li>– Other security elements, including color coding, key and jack systems</li> </ul>
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