4U Rackmount Industrial Server

Oil Pipeline Monitoring



Captec developed a short-depth industrial computing platform in two configurations for continuous fiber optic pipeline monitoring. The systems addressed restricted installation space, demanding processing and storage requirements, environmental protection and long-term hardware availability for the customer's sensing application.

The Customer

The customer is an optical sensing company whose technology supports the monitoring of energy infrastructure. Its systems detect changes in temperature, strain and vibration to identify potential threats to asset integrity, enabling condition monitoring and detection of potential intrusion where continuous data processing is required.



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The Challenge

- The customer's fiber optic sensing application required continuous data processing to identify changes that could indicate pipeline damage or intrusion
- Accommodate substantial data storage and multiple display outputs within a restricted installation depth
- Round-the-clock operation and exposure to dust and elevated temperatures increased the demands placed on the hardware
- Long deployment lifecycles created risks around component obsolescence and software continuity

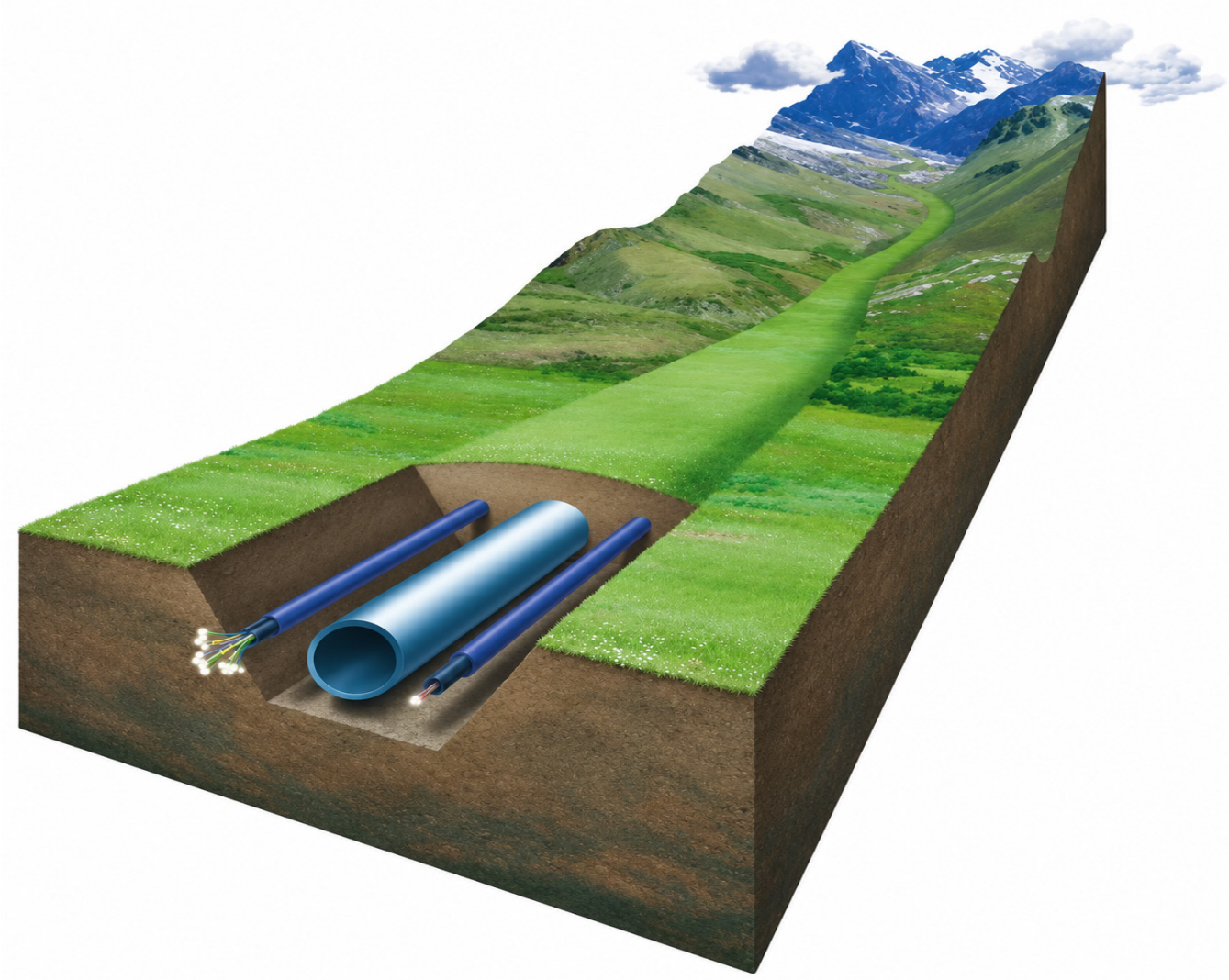
The Solution

- Designed a 408 mm short-depth 4U industrial rackmount computer to fit the available installation space
- Developed dual-Intel Xeon and single-processor AMD configurations to support the customers application
- Incorporated industrial-grade filtration to limit dust and debris ingress
- Designed for operation at ambient temperatures up to 50°C
- Selected the computing architecture around a seven-year product longevity requirement to support continued supply and software continuity



The Outcome

- Deployed two high-specification, short-depth industrial computers for the customer's fiber optic monitoring application, accommodating its processing and storage requirements within the restricted rack depth
- Enabled continuous pipeline monitoring using hardware designed for the installation's demanding operating conditions
- Established a platform for ongoing supply, helping the customer manage hardware obsolescence and preserve software continuity over the application's extended lifecycle



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