

Use Case: Power Generation

Control Center Communications

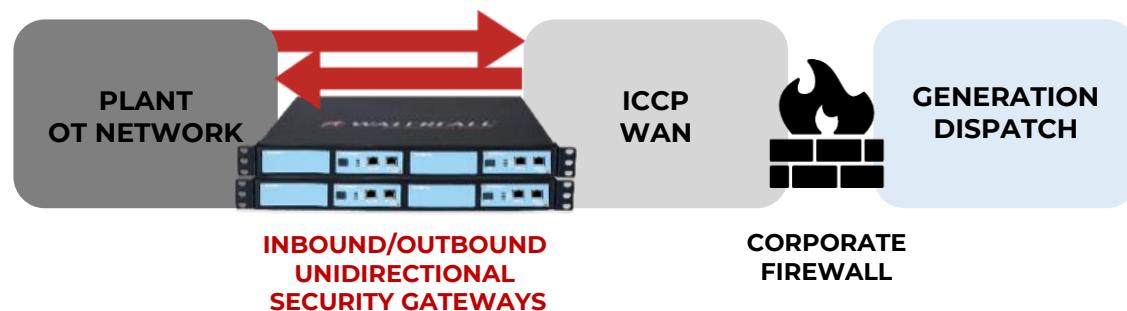
Base-load plants frequently need to communicate with regional authorities such as the power utility's generation-dispatch control center. The protocol of choice is often ICCP, but may also be and of DNP3, IEC 60870-5-104, or 61850 MMS. For some base-load plants, this communication is purely a reporting function; change orders from the regional authority are infrequent and are accomplished through schedules agreed long in advance. Base-load plants can be secured by outbound-oriented Unidirectional Security Gateways, as described in the IT/OT use case above.

Secure Control of Peaking Plants

Peaking plants are more complex: they require continuous reporting to a generation dispatch center, and require a continuous, second-by-second stream of new setpoints from the dispatch center.

Unidirectional Security Gateways replicating the power plant's ICCP salve or other protocol salve devices to a generating dispatch center meet the needs of some base load plants, and inbound/outbound Unidirectional Gateways can be deployed to meet the needs of all remaining plants. The outbound Unidirectional Gateway replicates the plant's ICCP server to the corporate network or to a dedicated DMZ, so that the dispatch center's EMS/SCADA master can poll the plant replica. The inbound Unidirectional Gateway replicates the EMS ICCP server back into the plant where plant systems query the replica for new setpoints.

Theory of Operation



Two Waterfall Unidirectional Security Gateways create independent Inbound/Outbound application replications for secure bi-directional information transmission between the power plant OT network and the Generation Dispatch center network.

SECURITY BENEFITS



Absolute protection against external attacks for plants that do not require continuous commands from a control center



Inbound/Outbound gateway configuration MUCH stronger than firewalls



Permits only reasonable setpoint values to enter the plant control system from generation-dispatch control centers

