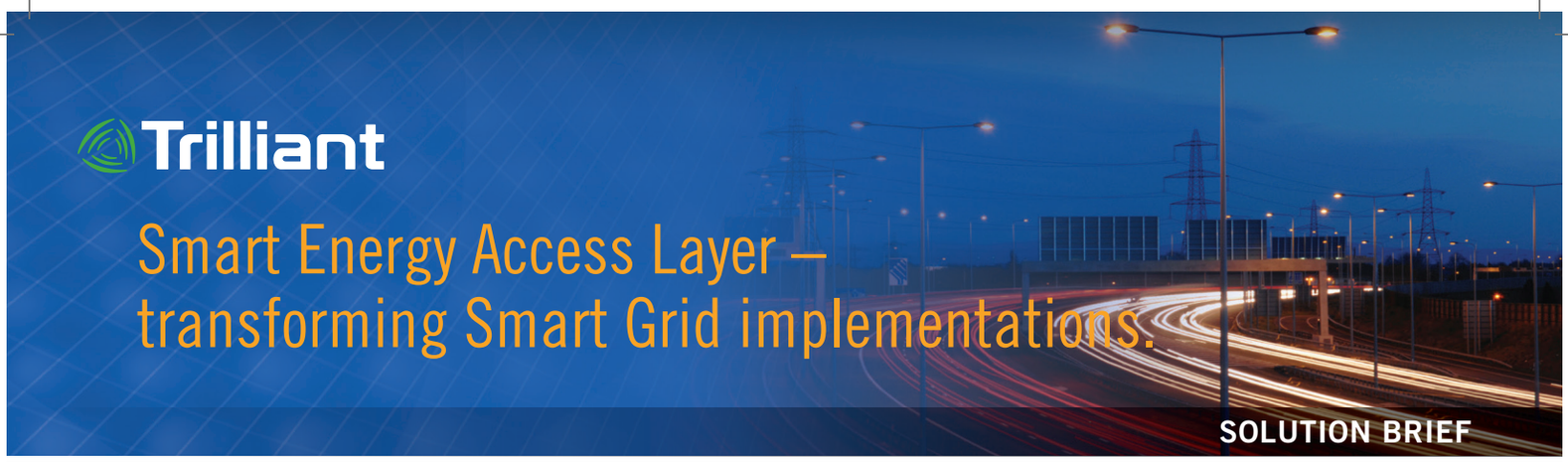

Smart Energy Access Layer – transforming Smart Grid implementations.

SOLUTION BRIEF

Trilliant helps utilities and energy retailers successfully deploy a broad range of smart grid initiatives – from smart metering to smart distribution and smart consumer capabilities. The breadth and depth of the Trilliant Communications Platform delivers the flexible and proven smart grid solutions needed for utilities and energy retailers to deploy mission-critical applications to achieve their business goals and deliver consumers the best energy experience possible.

Increasingly, energy companies are looking to use new technologies to offer new services and improve efficiencies in existing ones. A wide range of grid operations such as Outage Management, Voltage Control, Load Control, Settlements, Revenue Protection and Demand Response are all candidates for integration into the Smart Grid, but in order to introduce them, a fresh look at how device and user access control and data distribution can be managed and secured through the value chain is needed. On the one hand utilities want to ensure that smart grid data and device operations are available to all systems that may benefit from these capabilities, while on the other hand they must ensure that data is shared with authorised parties only, that all smart grid device interaction is secure and that the demands of all these systems are handled in accordance with established business priorities.

Extending the potential of the Smart Grid

Trilliant's Smart Energy Access Layer (SEAL) extends the potential of the Smart Grid to all business and operational support systems in a Utility's data centre by providing these systems access to smart grid data, and enabling them to securely initiate smart grid device operations. SEAL is a software solution and architecture providing secure, TLS-enabled communications for smart metering and grid. This solution is designed to enable either a Smart Meter/Grid System Operator to provide services to energy suppliers, or a utility to manage the communications with their smart device fleet independently. As such the solution supports installation and commissioning of new devices as required. This allows the utility to maintain their asset base, even when devices fail or break and new installations are required.

The Smart Energy Access Layer brings several unique benefits to companies looking to build smart energy systems around management of distributed assets:

Provides a secure, standardised interface for all smart energy device, data operations and communications.

- SEAL provides customers with a scalable device-independent interface that sits between the communications network and the customer's nominated Head-End system. It allows for flexibility in design of message type and structure and enables secure transport of those messages to the device.

Real-time messaging and network updates are available.

- As the layer is linked to both devices and head-end systems, complex data and messaging can be pushed and pulled across the smart meter network – whether it be device or communications network based.

Message brokering across multiple applications.

- By using standard message formats, messaging can be queued, prioritised and routed to the appropriate location and translation can occur at the appropriate interface to ensure message receipt and delivery.

Industry-standard message-based interface.

- Using message formats defined by the Common Information Model (CIM) means that all major messaging requirements for smart meter and smart grid applications are pre-defined and so can be implemented quickly.

Interoperability across multiple device types.

- This is ensured by the use of industry standards, meaning that grid development can be systematic rather than by device type. As a result, deployments utilising SEAL are fast to set up and realise the benefits from.

Message brokering service

SEAL is designed to provide a brokering service across multiple applications. In order to do this, SEAL interfaces with internal and external systems using a message format defined by the Common Information Model (CIM), an open standard described in the relevant International Electrotechnical Commission standards for electrical distribution systems. This has the effect of exposing system functionality. The secondary or external system can submit the CIM-defined commands to a Java Message Service (JMS) message bus and receive events and responses once executed by the Task Manager cluster. This allows SEAL to provide the necessary interface for a Head-End system to manage devices, extract readings, execute commands on devices and publish events from the managed systems. Commands available are exposed either directly from the device driver, where the command is specific to the device, or generic device and asset management commands for all device types. By applying specific command instructions, device specific commands are readily available. The interface allows communication with devices in the field using a variety of proven methods and bearer technologies. The messages delivered to and from SEAL are transportindependent and CIM messages can be wrapped by other wrappers like SOAP, JMS, and REST.

Security

All Smart Meter and Smart Grid messaging, actions and data must be secured at all times to maintain service confidence. SEAL uses industry-standard protocols and TLS-enabled communications to ensure that all data transfers and communications with smart energy assets are secure and that data privacy regulations are enforced. The CIM standard itself also ensures that messages remain secured through the mandatory use of digital signatures, ensuring only authenticated access to the system is allowed.

Conclusion

By shielding business and operational support systems from smart grid network complexity SEAL enables utilities to implement or improve smart energy processes more quickly and at a lower cost. For example, using SEAL, smart meter reads can be distributed to interested third parties outside a utility, while demand response applications can be designed to optimise the effectiveness of a demand response program via real-time interaction with network nodes.

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