Open**ADR:** In a Nutshell

OpenADR provides a non-proprietary, open, standardized and secure demand response (DR) and Distributed Energy Resources (DER) interface that allows electricity providers to communicate demand side management signals directly to existing customers and resources using a common language and existing communications such as the Internet.
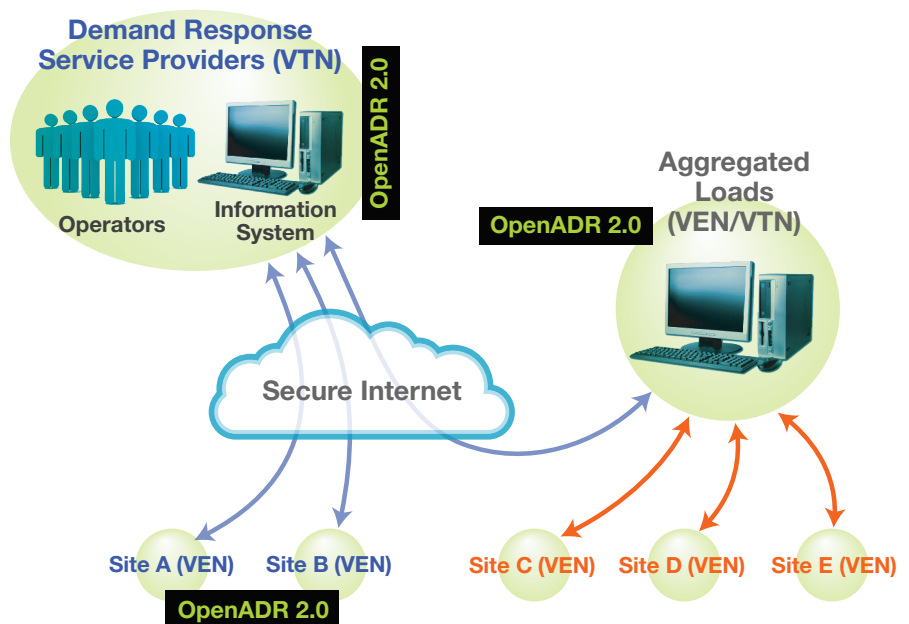

Join the OpenADR Alliance

Industry stakeholders worldwide are working together to foster the development, adoption and compliance of the OpenADR standard through collaboration, education, training, testing and certification.

The OpenADR Alliance brings system operators, utilities, aggregators, controls vendors and solution providers — to facilitate and accelerate the use and adoption of this international standard.

The Alliance operates a testing and certification program to ensure interoperability between service providers and aggregated loads. Typically, utility DRMS or DERMS systems implement a compliant server-side, Virtual Top Node through their chosen vendor companies, and aggregators either implement a client-side Virtual End Node, or can in turn aggregate smaller distributed energy resources by enacting the VTN role as well.

The OpenADR 2.0 Profile Specifications provides an implementable and highly secure framework that describes all aspects of the OpenADR interfaces, including servers or Virtual Top Nodes (VTNs) and clients or Virtual End Nodes (VENs). It describes services, interactions, transport protocol and security combined with strict conformance statements which enable intra-vendor interoperability.

The OpenADR 2.0 Profile Specifications (Profiles A and B) are uniquely equipped to be used with most Demand Response programs used world-wide. Many trials and successful installations have taken place in the US, Asia and Europe.

More information on key services follows on page 2, along with details on the transport and cybersecurity mechanisms. The Alliance operates its own Certificate Authority management system with multiple experienced third party PKI vendors to ensure system-wide secure communication.

Key Services

Opt Service (EiOpt) – Used by VENs to communicate temporary availability schedules to VTNs or to qualify the resources participating in an event. This helps both the DR/DER program operators and the participants to better plan their resources.

Registration Service (EiRegisterParty) – Initiated by the VEN, and used by both VEN and VTN to exchange information required to ensure interoperable exchange of payloads.

Poll Service (OadrPoll) – Used by VENs to poll the VTN for payloads from any of the other services. This is specifically important for simpler devices that cannot fully support additional messaging.

Transport Mechanisms and Security

In addition to the services mentioned above, OpenADR 2.0 also defines the following transport mechanisms and security.

Simple HTTP Transport – This transport mechanism is ideal for simple implementations that let the VENs (clients) pull information from the VTNs (servers). It essentially represents a scaled down REST implementation.

XMPP Transport (Extensible Messaging and Presence Protocol) – This transport protocol is used by many messaging applications that require close to real-time information exchange. It is very well suited for bidirectional exchanges of OpenADR messages and therefore ideal for fast DR/DER and ancillary services.

TLS Security – OpenADR 2.0 uses TLS with Digital Certificates on both the server and client side. The OpenADR Alliance has established their own Certificate Authority management system with a third party vendor to ensure system-wide secure communication.

Digital Signatures – If additional non-repudiation is needed, each message can also be encrypted with individual digital signatures.

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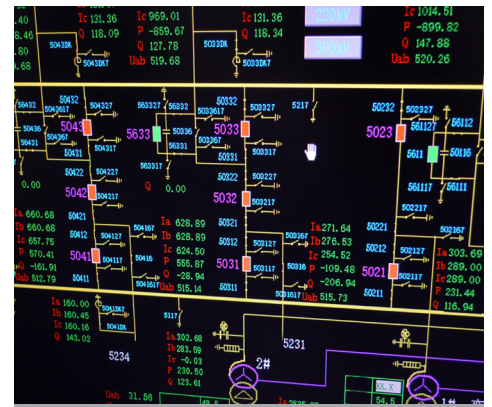
The OpenADR 2.0 Profile Specifications (Profiles A and B) are uniquely equipped to be used with most DR and DER programs used world-wide.

More information on the OpenADR Alliance is available at www.openadr.org

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