OpenADR 3 – *In a Nutshell*



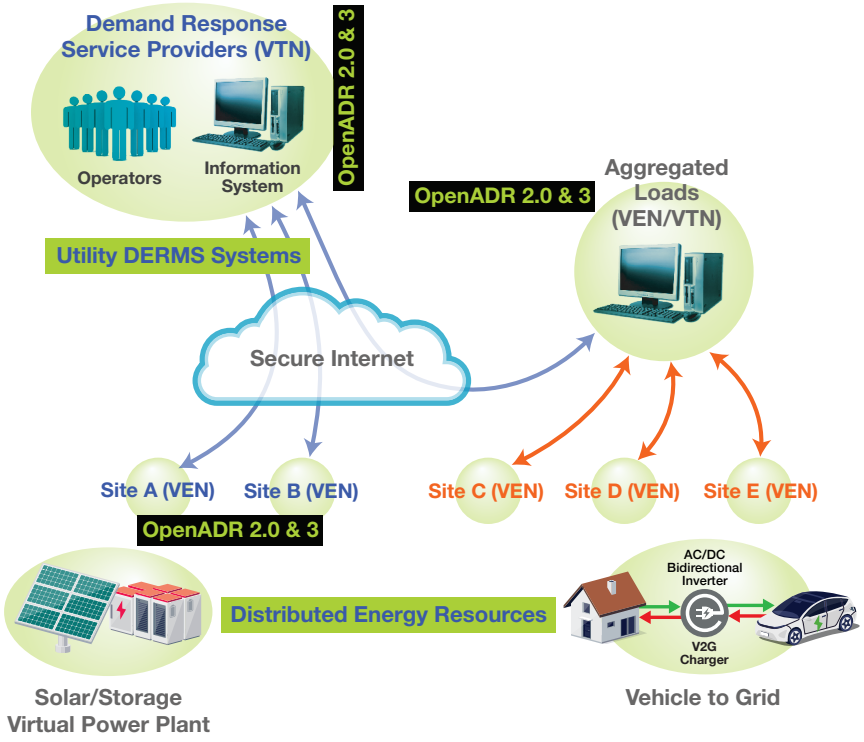
Join the OpenADR Alliance

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.

OpenADR 3 is a natural progression to the long established OpenADR 2.0 standards. It maintains the general aspects of 2.0 while pairing them with modern technology (REST, JSON, MQTT) and making them extremely flexible and versatile. Aside from the traditional OpenADR services, it also simplifies DER Management including Dynamic Operating Envelopes, Volt-Var settings, and other functions. Price communication – including GHG and emergency messaging – was made so easy that virtually any system from cloud platform to mobile app can incorporate a VEN in record time.



Just like OpenADR 2.0, version 3 of the specification (OADR3 for short) 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, transport protocol and security. The interaction patters (called business logic or BL now) are more flexible than in 2.0 and can be tailored to specific regional requirements without changing the underlying standard. OADR3 resides in a GitHub repository which can be accessible to any interested party (email info@openadr.org for access).

Security is still a top priority. It needs to fit the purpose and the implementation without hindering innovation and scalability. OAUTH2 is currently one of the most widely used security frameworks for online services from banks to Google accounts. With mandatory server certificates, implementations can now decide whether client certificates are necessary or to use the mandatory OAUTH2 functions.

On page two we will outline a few more new functionalities of OpenADR 3.

Some Additional Aspects of OpenADR 3

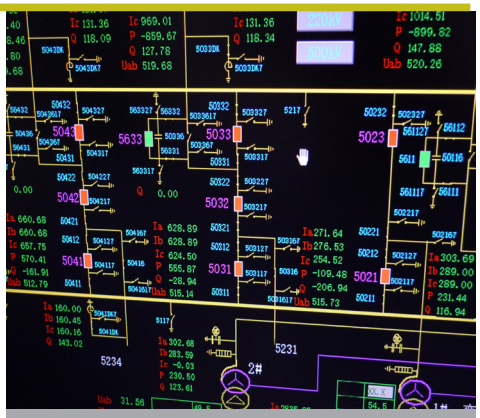
Dynamic Pricing: More and more utilities are testing and experimenting with various pricing models. These may include rapid changes based on location, tariff, and time. One of the goals of OADR3 was to simplify the price messaging. We were able to reduce the message size to a few lines and the latest version of the spec (3.1) also includes price clusters – the ability to send any number of price intervals in a couple of lines of text.

Subscriptions via MQTT (push notifications): OpenADR 3.1.0 adds MQTT as a notifier alongside webhooks: clients discover broker URIs with GET /notifiers and fetch per-object topic names (e.g., programs, events, VEN-scoped topics) to subscribe. Messages mirror standard notification JSON, so VENs handle identical payloads whether pulled or pushed. Deployments use MQTTS; brokers must enforce topic ACLs aligned with VTN authorization.

OAuth2 security (modern, token-based): OpenADR 3 uses OAuth 2.0 Client Credentials for machine-to-machine auth: VENs trade client ID/secret for short-lived bearer tokens and call the VTN over HTTPS. Scopes/roles defined in the OpenAPI govern exactly which operations each client may perform; discovery is via /auth/server (and optional /auth/token). TLS 1.2+ is required; tokens can also drive object privacy and filtering.

Dynamic Operating Envelopes (DOE): OpenADR 3 communicates import/export limits as schedules using IMPORT_CAPACITY_LIMIT and EXPORT_CAPACITY_LIMIT payloads—often in 30-min (or custom) intervals. Utilities can re-announce updated envelopes anytime; VENs can be asked to report voltage and active/reactive power alongside. If comms drop, VENs fall back to IMPORT/EXPORT_CAPACITY_SUBSCRIPTION defaults until fresh limits arrive.

Volt/Var curves (inverter management): OpenADR 3 carries Volt-VAR/Volt-Watt profiles as CURVE payloads in events: a list of (x,y) points defines the inverter characteristic to apply over a given interval. Programs declare CURVE capability; VENs consume events and adjust behavior accordingly. Example curves (e.g., per Rule-14H testing) map directly to the CURVE values structure.



OpenADR 3 is logical follow up to OpenADR 2.0 and is flexible enough to help with any present and future needs.

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

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