Open Source OpenADR 2.0 Project

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The Electric Power Research Institute

Independent
Objective, scientifically based results address reliability, efficiency, affordability, health, safety and the environment

Nonprofit
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Collaborative
Bring together scientists, engineers, academic researchers, industry experts

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Our Role…

Help Move Technologies to the Commercialization Stage…

“Technology Accelerator!”
OpenADR and Ancillary Services Demonstration (4-Year Demo)

Objectives and Scope
- Advance Standards for DR-provided Ancillary Services (Fast DR) through Utility Demonstrations
- Address Research Questions
  - Quality of Service, Reliability, Security, Privacy, Scalability, etc.
- Develop Utility DR Technology Roadmaps

Value
- Increase Adoption and Innovation of Products
- Understand Utility Migration Strategies
- Characterize Load Classes for Ancillary Services

Advance Standards for Automated DR & Ancillary Services
## Auto DR Demo Participants

<table>
<thead>
<tr>
<th>Company</th>
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<tr>
<td>American Electric Power (AEP)</td>
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<tr>
<td>California Independent System Operator (CAISO)</td>
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<td>Électricité de France (EDF)</td>
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<td>Electricity Supply Board (ESB)</td>
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<td>Kansas City Power &amp; Light (KCP&amp;L)</td>
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<td>New York Independent System Operator (NYISO)</td>
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<td>Southern Company</td>
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<td>Tokyo Electric Power Company (TEPCO)</td>
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Hosting of Demonstrations

- Research what OpenADR can do (capabilities)
- Explore what applications can be enabled
- Evaluate responsiveness of types of loads
- Evaluate architectures that preserve existing (legacy) DR systems
- Evaluate certified products in utility host-site demos
- Feed information to standards bodies to help with identified gaps
EPRI Open Source OpenADR 2.0b Implementations

- VTN: http://sourceforge.net/projects/openadr2vtn/
- VEN: http://sourceforge.net/projects/openadr2bven-pull/
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The EPRI OpenADR VTN User Interface

- The Admin Menu consists of the following options: Accounts, VENs, Resource Types, Market Contexts, Groups, Events, Schedules, VTN Parameters, and Test Case Prompts.

- Non-admin users have limited access to the system. Their User Menu consists of five links: Account Settings, VENs, Create Test Event, Dashboard, and Download VEN.

More information about the EPRI OpenADR software is available in Automated Demand Response and Ancillary Services Demonstration Project Update: Volume One (Product ID 3002002782) and OpenADR Technical Workshop DVD – 6.19.2013 (Product ID 3002001822).
The EPRI OpenADR VEN User Interface

1. **Settings:** This section has the following controls and actions: Default Opt, URL, Client Certificate & Password, SSL/TLS, VEN Name, Password, Poll Interval, and Auto Scroll Log.

2. **Log/Communication History:** All OpenADR messages exchanged between the VEN and VTN are captured in the log list view. Selecting a message in the list view causes the associated request and reply messages to display in the request and reply XML areas.

3. **OpenADR Services:** This area has tabs that show the status and state of the four OpenADR services: Events, Reporting, Opt, and Registration.

4. **Status:** The status bar, located at the bottom of the VEN’s user’s interface, displays information regarding the current state of VEN polling, the last message status, the VEN version, and the OpenADR registration state.
Features and Capabilities

- Demonstrate each of the four services (EiEvent, EiReport, EiRegisterParty, and EiOpt)
  - Reference Implementation
- View request and response XML messages (VEN)
- Create events on a schedule
Coming Soon

- C++ library
  - Implements OpenADR 2.0b VEN pull
  - Generates compliant messages for all 4 services
  - Manages HTTP/s connection with curl and openssl libraries
  - Can be used to create a compliant VEN
  - Intended for embedded applications
- Certified versions of the VTN and desktop VEN software
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Thank You