

Utility Guide to OpenADR Program Design

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Topics

- OpenADR VENs and VTNs
- OpenADR Demand Response Program Guide
 - Why it was developed
 - Where we are in the process
 - A quick glance
 - How to get a draft copy

OpenADR VENs and VTNs

- OpenADR is a Demand Response message exchange protocol
- Messages contain the when, who, and how much of a DR Event
- Two actors...
 - VTNs (utilities/aggregators) send events
 - VENs receive events, act upon them, and provide telemetry data

Program Designs Deployment Scenarios



- There is no such thing as a standardized DR program
- Each DR program design tends to be unique based on the structural, regulatory, and regional needs
- And each program has numerous possible deployment scenarios involving a variety of actors

OpenADR Optionality

- OpenADR 2.0 clearly specifies expected DR message exchange behavior
- However...
 - Event signals
 - Report formats
 - Targeting
- ...must be specified on a deployment specific basis

Needs

- Utilities need examples of typical DR Programs so they can be used as models for their own programs
- VTN/VEN manufacturers need to understand typical DR usage models so they can validate interoperability independent of DR program deployment

Solution

- The OpenADR Alliance is working on a DR Program guide to address these
- The guide will...
 - Define DR program templates
 - Define deployment scenarios
 - Define OpenADR best practices
 - Aid utilities in selecting templates and deployment scenarios

DR Program Templates

- DR program Templates in Guide
 - Critical Peak Pricing
 - Capacity Bidding Program
 - Residential Thermostat Program
 - Fast DR Dispatch (Ancillary Services)
 - Electric Vehicle (EV) Program
 - Distributed Energy Resources (DR) Program
- Each template defines
 - Program characteristics
 - OpenADR characteristics for the program

DR Template

- Goal is to define in general terms the nature of each program
 - The “Program Characteristics”
- Follow by how to apply OpenADR to the program
 - The “OpenADR Characteristics”

Program Characteristics

- Load Profile Objective
- Primary Drivers
- Program Description
- Customer Incentive
- Rate Design
- Target Customer
- Target Loads
- Prerequisite
- Program Time Frame
- Event Constraints
- Event Days
- Event Duration
- Notification
- Opt Behaviour
- Certification Events

Critical Peak Pricing – Sample Program Characteristics



Load Profile Objective	-Peak demand reduction
Primary Drivers	-Reduced capital expenditures and reduced energy costs
Program Description	When utilities observe or anticipate high wholesale market prices or power system emergency conditions, they may call critical events during a specified time period (e.g., 3 p.m.—6 p.m. on a hot summer weekday), the price for electricity during these time periods is substantially raised.
Customer Incentive	Customers may be offered discounted energy prices during non-peak times as an incentive to participate in the program.

OpenADR Characteristics

- Event Signals
- Opt Responses
- Event Descriptor
- Event Active Period
- Baselines
- Event Targeting
- Reporting Services
- Opt Services
- Registration Services

Critical Peak Pricing – Sample OpenADR Characteristics



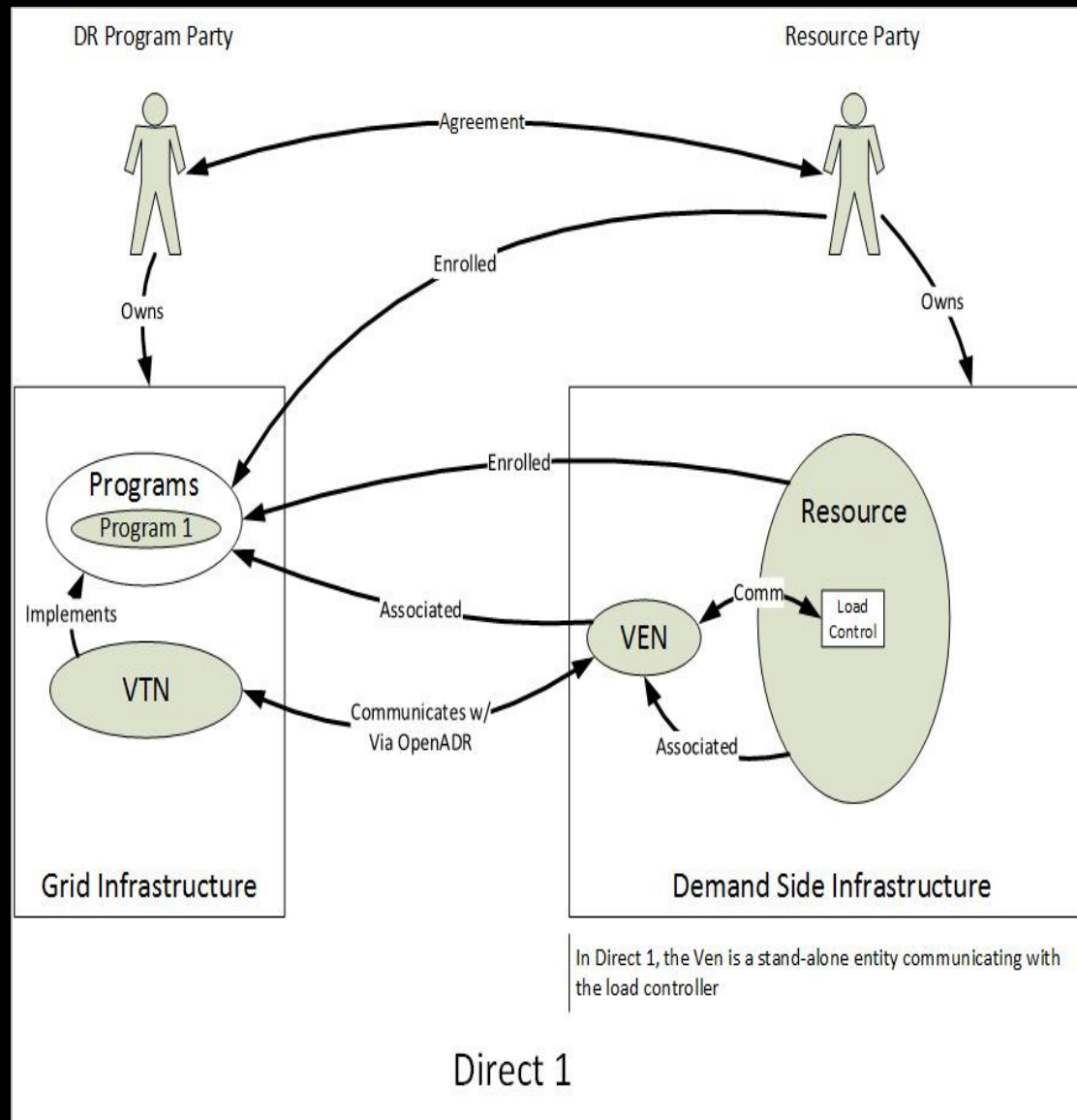
Event Signals	<p>-A SIMPLE signal with levels 1 to 3 mapped to the pricing impact of the CPP event. If a CPP program has a single pricing component it should be mapped to level 1.</p> <p>-If the deployment supports B profile VENs, in addition to the SIMPLE signal, an ELECTRICITY_PRICE signal may be included in the payload with a type of priceRelative, priceAbsolute, or priceMultiplier depending on the nature of the program.</p>

Deployment Scenarios

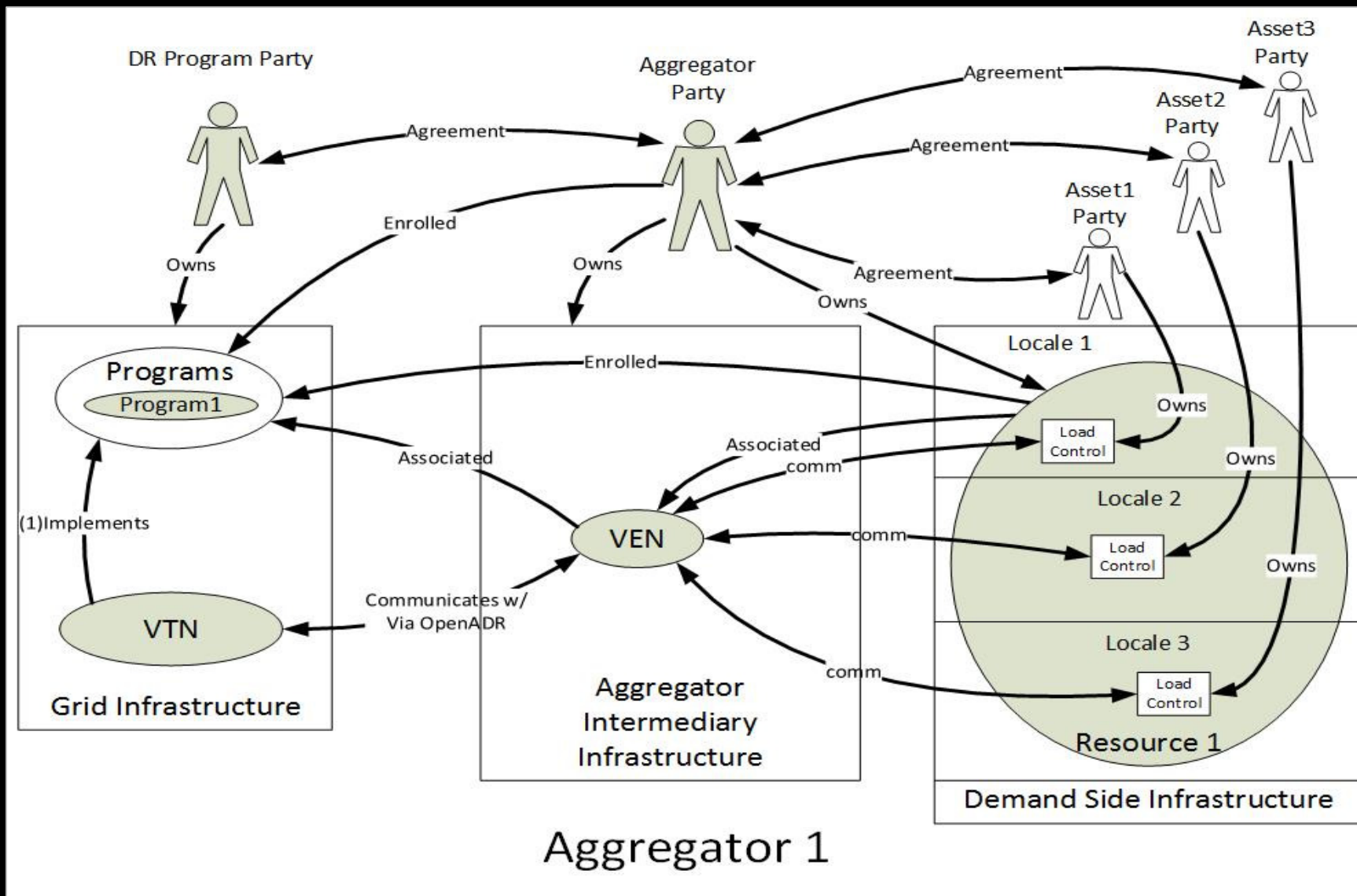
- The way a DR Program is deployed is independent of the characteristics of the program.
- The Alliance Program Guide defines a number of Deployment Scenarios, then provides typical mapping against the DR Program Templates

Sample Deployment Scenario

Direct 1



Sample Deployment Scenario Aggregator 1



Summary

- Draft version of the Program Guide is available from the OpenADR Alliance
- Work to be completed includes:
 - Complete details for EV and DER templates
 - Complete sample data and payloads
 - Template to real program cross reference
- Longer term goal is to develop test scenarios that validate support of specific templates

Questions?