The Changing Role of Cloud Servers

What are the concerns of different parties to meet the growth in cloud deployments?

Where can cloud services exist in OpenADR implementations?
Customers (through vendor offerings) are embracing the cost effectiveness and simplicity of cloud-based solutions...but this needs to be balanced with...

Utilities’ need to address resource reliability and long-term availability of services, esp. where rate-payer funded incentives are provided to encourage adoption

The purpose of the panel discussion is to understand differing parties perspectives and suggest ideas to enhance DR participation using cloud solutions
Any endpoint (VEN or even VTN) could be implemented as a cloud based service.

VENs are the primary concern, since ultimately, load control devices need to respond to VTN requests whether they receive a direct or “translated” (to their local protocol) request from a VTN.
Panel Discussion

- **Albert Chiu, Pacific Gas & Electric**  
  Senior Program Manager, Demand Response

- **Carl Besaw, Southern California Edison**  
  Senior Project Manager, Mass Market Solutions, New Program Development & Launch

- **Mark Kerbel, REGEN Energy**  
  Co-founder & EVP Business Development

- **Peter Hunt, SmartCloud**  
  Director of Sales, Energy & Utilities
Cloud based solution pros and cons (utility perspectives)

- **Pros**
  - When the cost benefit becomes a barrier if the VEN client is built within the devices
  - Program design options
  - Interoperability risk

- **Cons**
  - Stranded Assets
  - Cost to use the “toll road”
  - DR signal liability
  - Program M&E
Why Cloud based Solutions?

- Intelligence moved from devices to the cloud
- Lower cost devices (not as intelligent, no EMS, etc.)
- Solution for Small Commercial Customers
- Leverages existing OpenADR infrastructure
- Simpler Installation
- Easier Upgrades
Cloud Considerations

- **Security**
  - How does the security of DR cloud solutions compare to Financial and other security conscious institutions?
  - What are the risks associated with a potential breach?

- **Stranded Assets**
  - Do lower cost solutions mitigate this concern?
  - What is the potential for connecting devices to an alternative cloud?
  - Can this concern be mitigated with contractual obligations?
  - What if the cloud provider becomes a DR aggregator?

- **OpenADR 2.0b capabilities**
  - Can a cloud based solution implement 2.0b capabilities?
  - Are vendors willing to provide feedback on a per device level to an aggregation point in the cloud?
Range of C&I Deployments

VTN
VEN

Utility / Load Aggregator Dispatch

Swarms Energy Cloud

VEN*

Mid & Large Buildings
Integrated Controls

Small Buildings
IoT Devices
SmartCloud - DR Applications

- SmartCloud founded in 2009
  - DR applications since 2010
  - Rockwell Automation investment in 2013
  - Deep experience in software and systems integration for mission critical data & decision management
    - Real-time, expert systems, artificial intelligence (AI)

- Hosting: Cloud and/or NERC-CIP environment

- SmartCloud DR role:
  - DRAS (Demand Response Automation Server)
  - Broker between loads, dispatching entity and the ISO
Example: NYISO DSASP (Demand Side Ancillary Response Program)

- Capture real-time telemetry from energy consumers
- Simultaneously receive DR commands from NYISO
- Reasoning applied in real-time for aggregator to issue curtailment notifications and track actual curtailment performance for aggregator (logs)
- Match bids every 6 seconds
Current: Industrial (no OpenADR)

- Dispatch Notification (MIR-3)
- Pager Duty (Tech Ops)
- Dashboard
- Analysis (Validation)

NERC-CIP Compliant Data Center

SCI AssetDLM Cloud (Azure) (3 copies)

Knowledge Base

Comms Relay

Event & Resource Mgmt

Meter Data Mgmt

Message Bus

NYISO T1

ICCP

DNP3

Direct Connect To Azure

Public Internet (SSH)

Resources

- Traditional DRMS in NERC-CIP environment
- DRAS in the Cloud
Next: Integrate OpenADR 2.0b for Commercial Apps

- VTN added to DRAS; VEN software in the device
- Resources added dynamically
Future: Prioritize Dispatch via OpenADR 2.0b

- Embed resource prioritization for dispatch
- E.g. Zone3/Feeder5, Zone3/Feeder2