



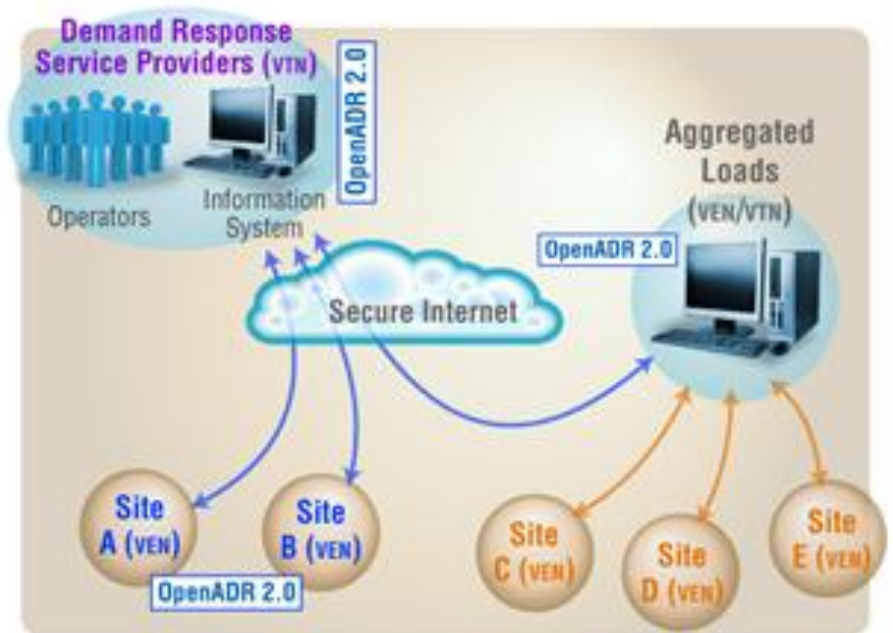
Standardize. Automate. Simplify.

E2DC Panel - Data Center Challenges, Standards Landscape, and Future Requirements

Rolf Bienert – Technical Director OpenADR Alliance
OpenADR Alliance © 2013

Standardized DR Automation

Open Automated Demand Response (**OpenADR**) provides a non-proprietary, open standardized DR interface that allows electricity providers to communicate DR signals directly to existing customers using a common language and existing communications such as the Internet.



Problem Statement

- Demand Response (DR) programs represent a very efficient way to cope with rising energy needs
 - However, DR is more effective if at least partially automated
 - A large amount of data must be processed to effectively control DR
- Transport, storage, and access of data is a key element of the Smart Grid and becomes even more critical for real-time systems.



Numbers...

| # of meters | 15 minute interval | 1 minute interval | 1 second interval |
|-------------|--------------------|-------------------|-------------------|
| 10,000 | 32.61 GB | 489.0 GB | 114.6 TB |
| 100,000 | 326.10 GB | 4.8 TB | 1.1 PB |
| 1,000,000 | 3.18 TB | 47.7 TB | 11.2 PB |

Increasing Granularity of Data



Unprecedented Levels of Data



Y2E2 Building @ Stanford



1 Year



2,600 points



1 min reads



100 GB



1,000 Y2E2 Buildings @ 1 second intervals



6 PetaBytes

= the entire US Library of Congress X 50!

Source: Presentation by AutoGrid

Solutions?

- Cloud?
- Better data centers?
- Future?

Thank You!

Rolf Bienert
Technical Director

rolf@openadr.org

+1 925 336 0239

www.openadr.org