



Standardize. Automate. Simplify

OpenADR 2.0

The simple way to execute DR Programs

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Introduction



ISO or Utility

- Manage generation
- Monitor consumption
- Create Demand Response strategy

What is needed?



Timing info

Price info

Amount



Acknowledgment

Telemetry

Reports

Opt in/out

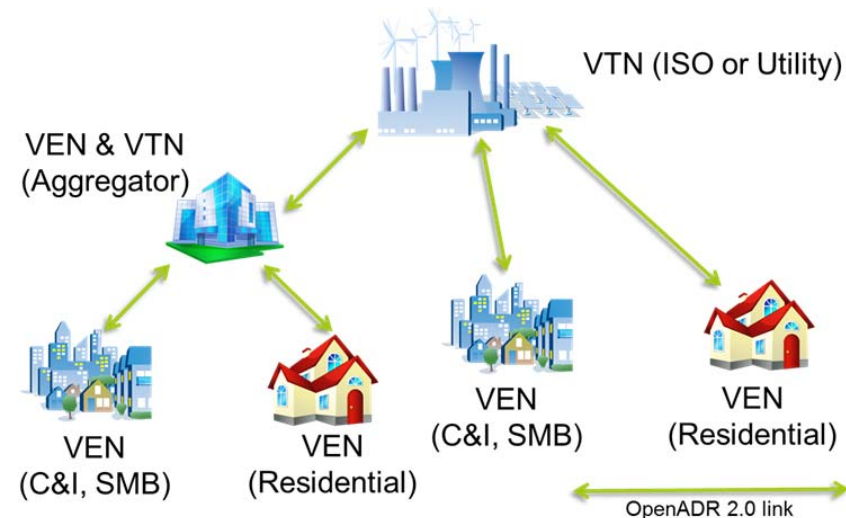


Utility Customer

- Conservation strategies
- Automates Processes
- Manages manual cuts

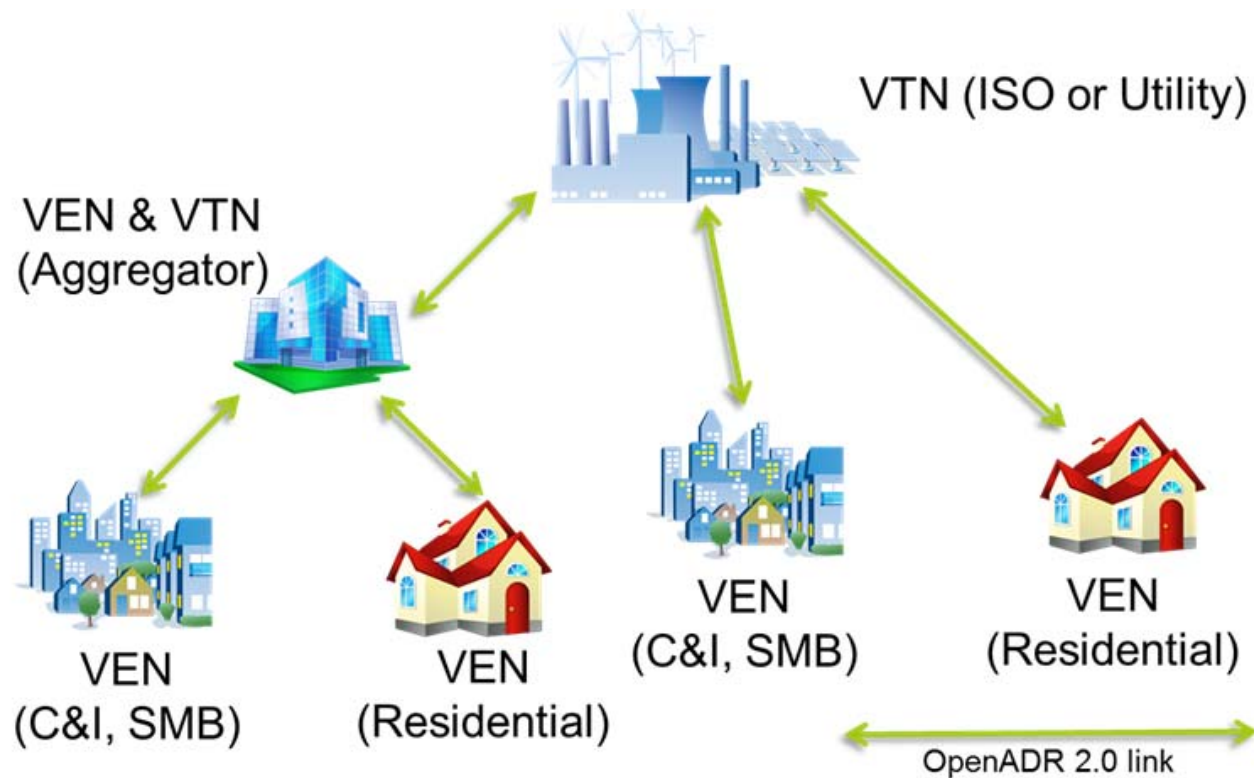
OpenADR in a Nutshell

- 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.



VTN – Virtual Top Node (Server)
VEN – Virtual End Node (Client)
C&I – Commercial Industrial
SMB – Small/Medium Business

OpenADR in a Nutshell



OpenADR 1.0 and 2.0

OpenADR 1.0

- ❑ Limited number of vendors
- ❑ No certification program
- ❑ Geared towards local DR programs
- ❑ Not a national or international standard
- ❑ Limited to basic DR application

OpenADR 2.0

- ❑ Large ecosystem of vendors
- ❑ Test tool, test plan & certification
- ❑ Flexible to adjust to most DR programs
- ❑ Based on OASIS standard
- ❑ Expanded architecture to include pricing, telemetry and other services

What is the OpenADR Alliance?

- Member-based organization comprised of a diverse set of industry stakeholders interested in fostering global OpenADR adoption
- Supports development, testing, and deployment of OpenADR technologies across a broad range of services (i.e. real time demand markets)
- Leverages Smart Grid-related standards efforts from NIST SGIP, OASIS, UCAIug and NAESB (Spell out in footnote)
- Enables stakeholders to participate in automated DR, dynamic pricing, and electricity grid reliability

Alliance Goals

- ❑ Coordination with standards organizations for development of OpenADR technologies
- ❑ Implementation of global testing and compliance
- ❑ Education on the standards, implementation, policy and markets
- ❑ Adoption and market acceptance and of OpenADR

Enabling Global Scaling of Automated Demand Response To Meet Generation Needs for Peak and Renewable Integration

Certification & Testing

- Alliance created
 - Profile Specification
 - PICS documents
 - Test plan and testing
 - Certification documents
 - Certification test tool

- Test facility and test tool validated by the Alliance

- Members can obtain test tool for pretesting and do final certification testing at the test lab

OpenADR Members

Sponsors



Contributors



Adopters



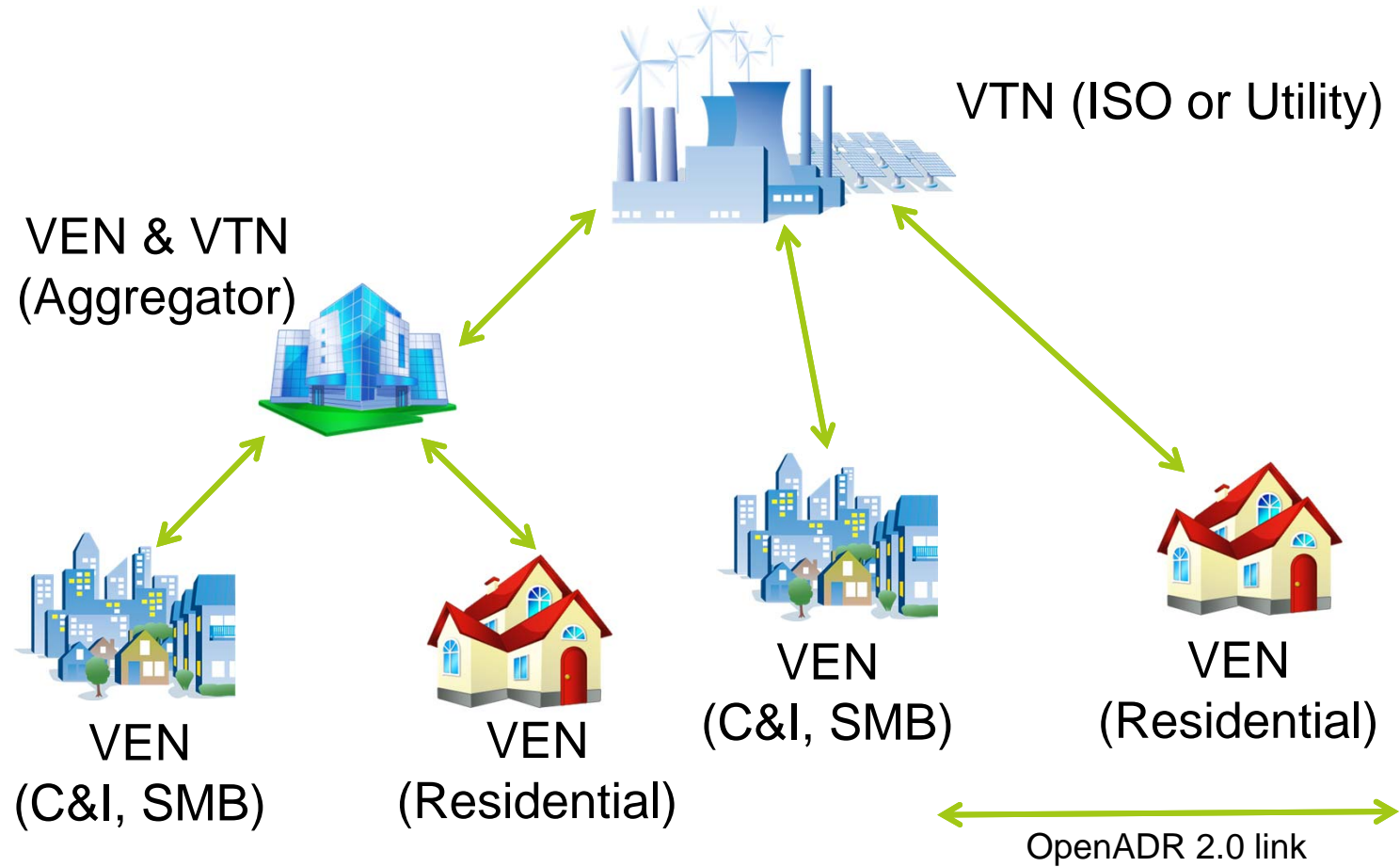
Benefits for You!

- Larger ecosystem of vendors → greater variety
- Different product types to include OpenADR 2.0
- DER systems that are OpenADR 2.0 ready
- Interoperability through testing and certification
 - Look for OpenADR Certified products
- Defined use cases for easier adoption



Profile Architecture

High level architecture

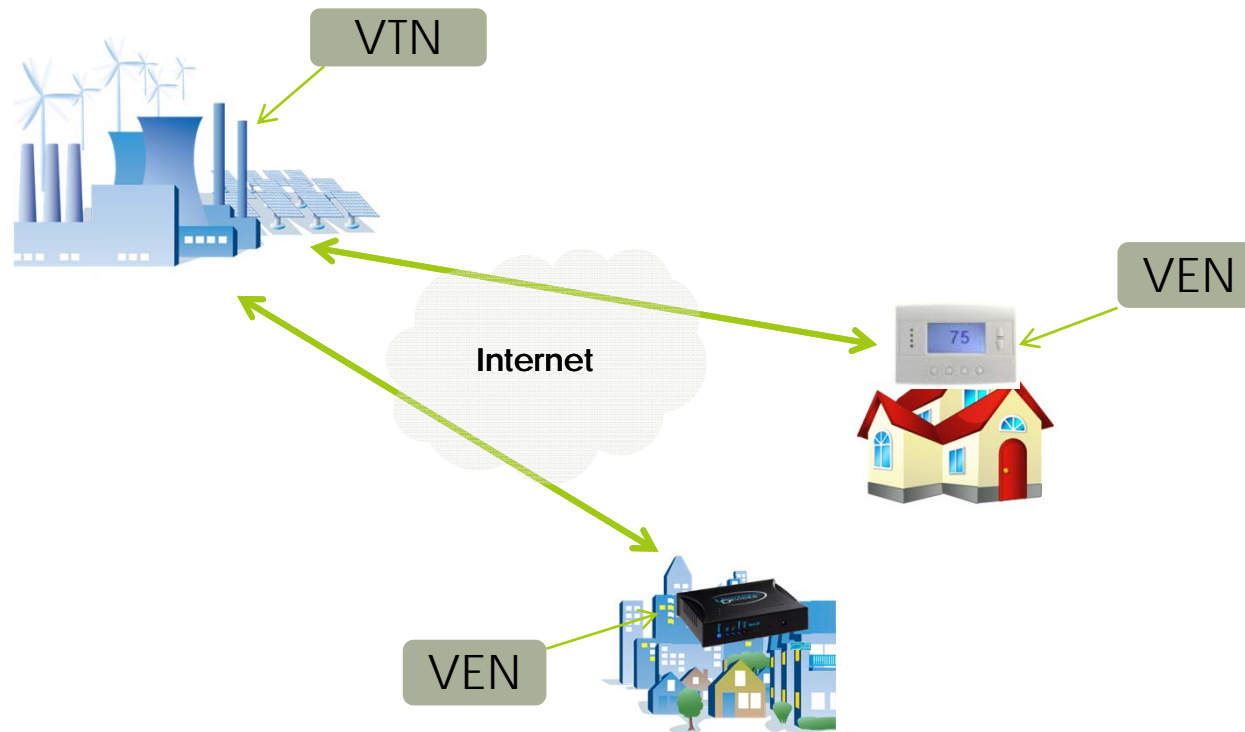


Profile Architecture

- Separation into 3 implementation classes
 - Simple implementations looking to transfer DR event and price information. Low end devices (e.g. thermostats) → OpenADR 2.0**a** profile
 - Higher end implementations adding more complex event and price processes as well as feedback and additional services (e.g. EMS, BAS) → OpenADR 2.0**b** profile
- Possible future profiles

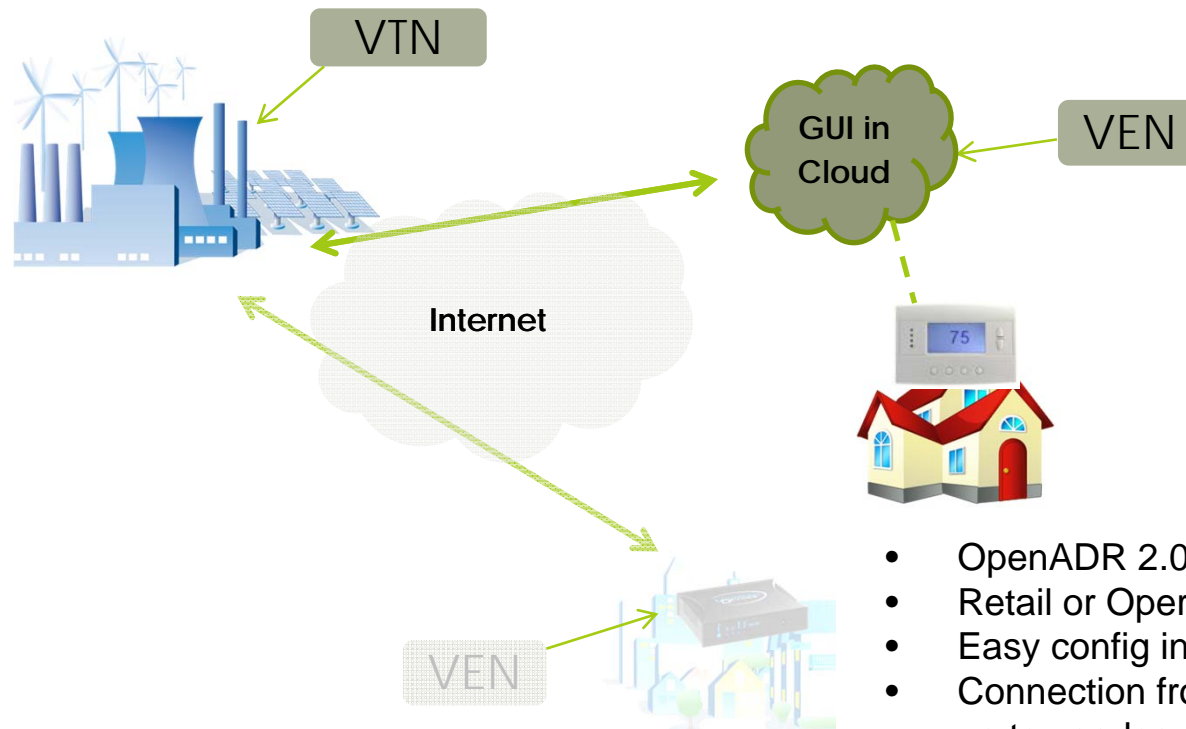
Implementation configurations

Direct Connect



Implementation configurations

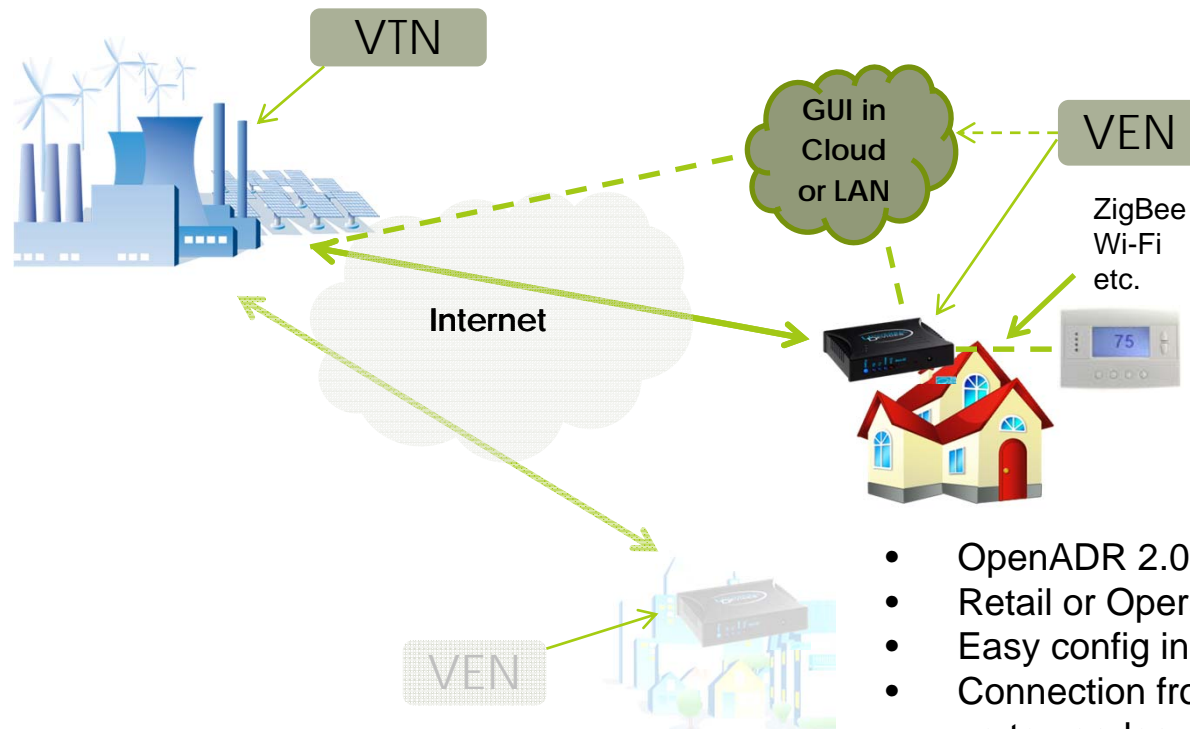
Direct Connect – Cloud Interface (RI)



- OpenADR 2.0a or b enabled
- Retail or Operator provided
- Easy config in cloud interface
- Connection from cloud to device up to vendor
- No resource constraints
- Feedback possible

Implementation configurations

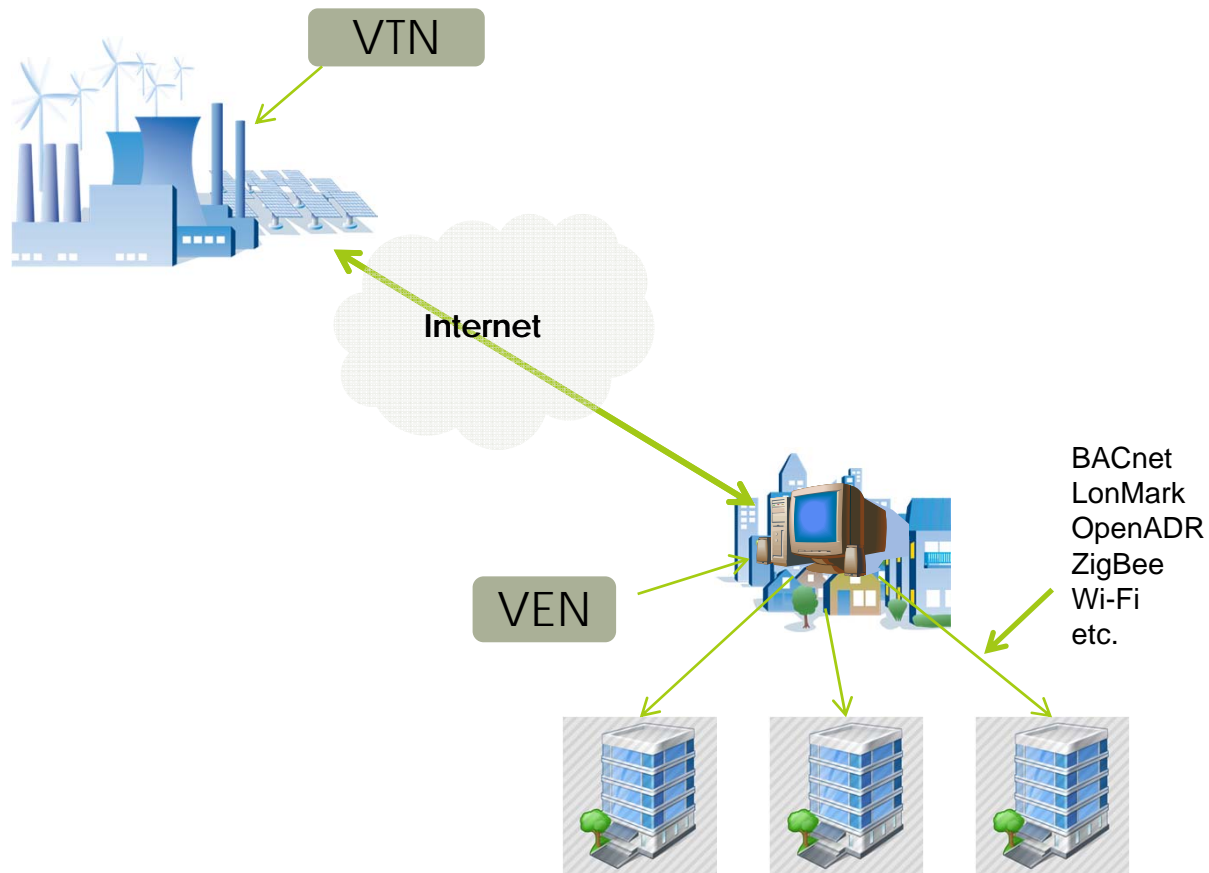
■ With EMS – Energy Management System



- OpenADR 2.0a or b enabled
- Retail or Operator provided
- Easy config in cloud interface
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- No resource constraints
- Feedback possible

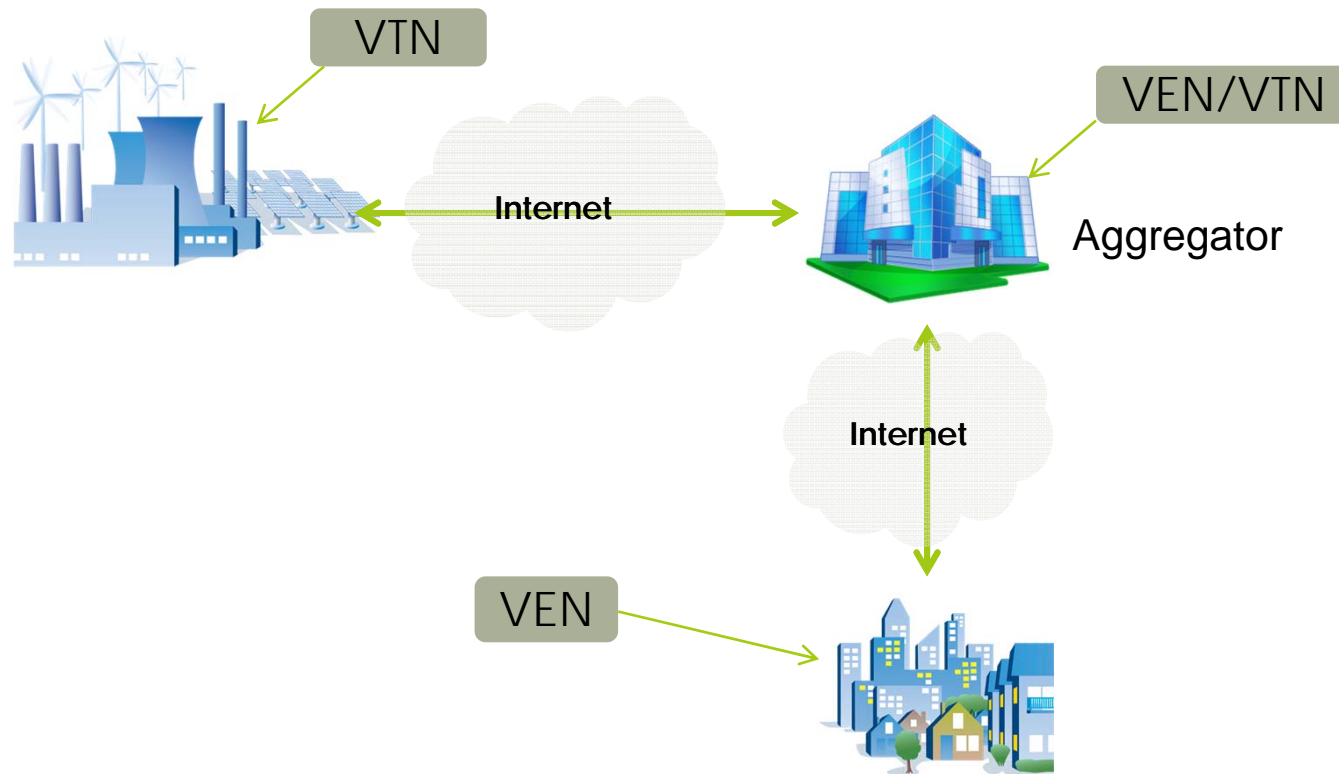
Implementation configurations

Commercial & Industrial



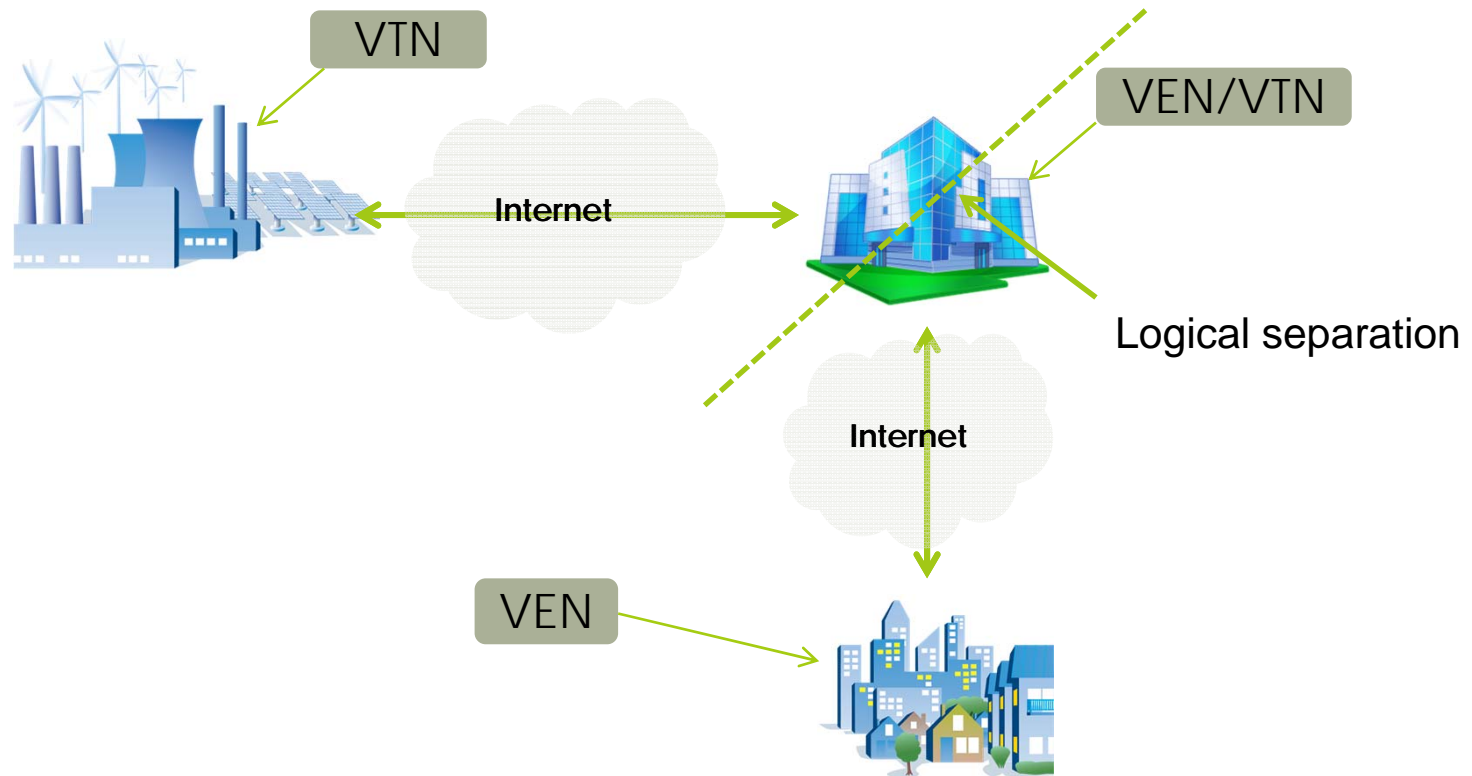
Implementation configurations

■ Aggregator model



Implementation configurations

■ Aggregator model



Thank You!

Q&A

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