



# IPKeys

SECURE TECHNOLOGY INTEGRATION  
CONSULTING & SOFTWARE

## Energy Interop Server & System Offerings – EISS™

Stand Alone and Embeddable



# IPKeys

SECURE TECHNOLOGY INTEGRATION  
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## Standalone Products

# EISS™

- OpenADR 2.0a-certified virtual top node (VTN) server suitable for utility or aggregator use
- Highly secure certificate based security model
- Demand Response (DR)
- Price Conveyance
- Real Time Meter Telemetry

# Account Setup

## EISS™ Web Administration

Accounts

DR Programs

**DR Resources**

DR Events

Pricing

Service Provider

### Resources

- + Best Buy
- Clipper Creek
  - + Car Charger
- ipkeys.com
  - + California
  - + **New Jersey**
  - + Virginia
- + Jim
- + nist.gov
- Perfectly Green
  - + Co Gen
- + pjm.com
- + Premier

**Resource:** New Jersey



Manage Asset Enrollment



Asset Opt-Out Schedules

- + Add an Asset to this Resource
- Edit this Resource
- Delete this Resource

View Meter Data

Manage EISSBox

Send Event to this Resource

Resource Name:	New Jersey
Opt-Out:	false
Resource Type:	remote
Sending Method:	poll
Sending Address:	
Receiving Method:	push
Receiving Address:	



# Events

EISS™ Web Administration

Logged in to System: Administrator

[Logout](#)

[Accounts](#)

[DR Programs](#)

[DR Resources](#)

**[DR Events](#)**

[Pricing](#)

[Service Provider](#)

[+ Create New Event](#)

[➡ Sent Events](#)

[⊖ Canceled Events](#)

[⚠ PRD Status](#)

[📄 Sent Event Log](#)

## Select Event Criteria

DR Program :

City :

State :

ZIP Code :

Pricing Provider :

Zone :

Grid Location :

Level :

Start Date :

Start Time :

End Date :

End Time :

Random Interval (seconds) :

[i Edit Comment](#)

[🔍 Search](#)

[↺ Reset Form](#)

[➡ Send Event](#)

## Matching Assets:

Account	Resource	Asset	Load
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Select event criteria and click Search

# Events

EISS™ Web Administration

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[+ Create New Event](#)

[➔ Sent Events](#)

[- Canceled Events](#)

[! PRD Status](#)

[📄 Sent Event Log](#)

Sent Events		<a href="#">View Comment</a>	<a href="#">Acknowledge Event</a>	<a href="#">Modify Event</a>	<a href="#">Cancel Event</a>	<a href="#">Resend Event</a>	Turn Auto-refresh off	
Start Time	End Time	Program	Level	Resource	Asset	Status	Response	
01/07/2013 11:24 AM	01/07/2013 12:24 PM	PJM Full Emergency Load Response	Normal	Best Buy@Best ...	ipk001	Pending	Accepted	
01/07/2013 11:24 AM	01/07/2013 12:24 PM	PJM Full Emergency Load Response	Normal	Car Charger@Cl...	ipk018	Pending	Accepted	
01/07/2013 11:24 AM	01/07/2013 12:24 PM	PJM Full Emergency Load Response	Normal	New Jersey@ipk...	NJ Office	Pending	Accepted	
01/07/2013 11:24 AM	01/07/2013 12:24 PM	PJM Full Emergency Load Response	Normal	PJM@pjm.com	PJM Lobby	Pending	Declined	
01/07/2013 11:24 AM	01/07/2013 12:24 PM	PJM Full Emergency Load Response	Normal	Virginia@ipkeys....	VA Office	Pending	Accepted	

# Price Conveyance

EISS™ Web Administration

Logged in to System: Administrator

[Logout](#)

[Accounts](#)

[DR Programs](#)

[DR Resources](#)

[DR Events](#)

**[Pricing](#)**

[Service Provider](#)

## Live Price Feed Status

Select Provider :

PJM  
PJM  
CAISO  
ERCOT  
Test Price Feed

Select Zone :

AECO  
Available  
29.60

## Current Prices:

Select Account : ipkeys.com

Provider	Zone	Resource	Asset	Price
CAISO	SP15	California	San Diego Office	0.0956
PJM	COMED	Virginia	VA Office	28.00
Test Price Feed	zone1	New Jersey	NJ Office	80.00

# Real Time Meter Telemetry

EISS™ Web Administration

Logged in to System: Administrator

Logout

Accounts DR Programs **DR Resources** DR Events Pricing Service Provider

## Resources

- + Best Buy
- + Clipper Creek
- ipkeys.com
  - + California
  - + **New Jersey**
  - + Virginia
- + Jim
- + nist.gov
- + Perfectly Green
- + pjw.com
- + Premier

Resource: New Jersey

✓ Manage Asset Enrollment

Asset Opt-Out Schedules

Select Meter : 1

+ Add Meter

- Delete Meter

Select Date : Jan 7 2013

🕒 Current Rate: 0.0047999998 kW

🔄 Get / Refresh Daily Usage by Date

Time	Event Active	PRD Active	Pulse Count	Rate KW	Total KWH	Data Missing
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.33441	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334396	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334381	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334368	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334352	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.33434	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334324	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.33431	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334295	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334282	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334267	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334253	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334238	No
2013-01-07 11:2...	Yes	Yes	0	0.0047999998	17.334225	No



# OTW Configuration

Also available as a stand alone element manager

**EISS**™ Web Administration

Logged in to System: Administrator

[Logout](#)

Accounts DR Programs DR Resources DR Events Pricing **Service Provider**

Manage Administrators

Provider Account

EISSBox Resources

EISSBox Software

Data Download

Settings

System Information

**Manage EISSBoxes:**

Add

Delete

Manage

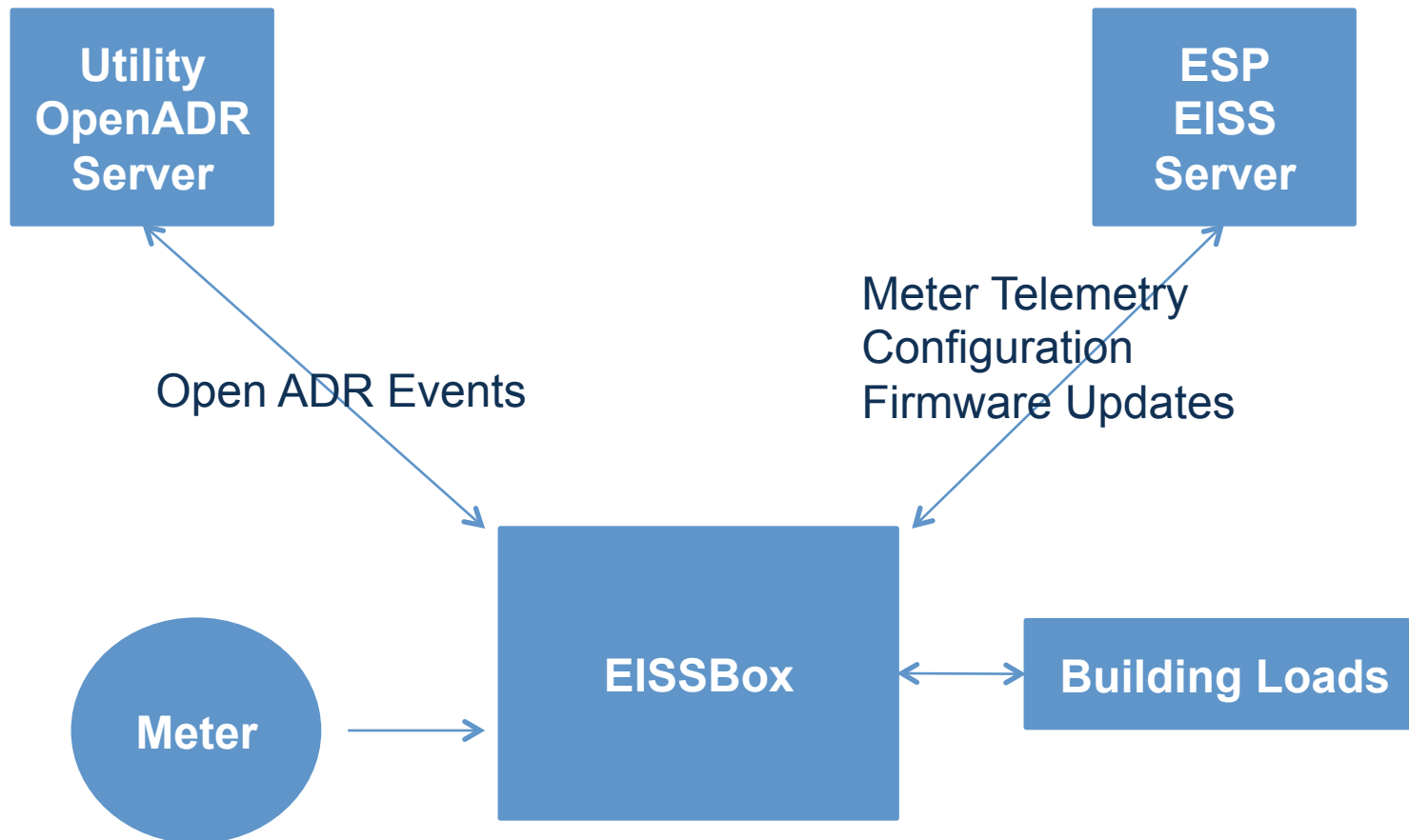
Authorize

Deauthorize

ID	Online	Account	Resource	Status	Version
ipk001	Yes	Best Buy	Best Buy	Running	base-0.9.2
ipk002	Yes	ipkeys.com	New Jersey	Running	base-0.9.2
ipk006	Yes	ipkeys.com	Virginia	Running	base-0.9.2
ipk018	Yes	Clipper Creek	Car Charger	Running	base-0.9.2
ipk023	No	Jim	test1		base-0.9.2
ipk025	No	Premier	ipk025		base-0.9.2
ipk032	No	Jim	test2		base-0.9.2
ipk0900	No				



# OpenADR 2.0-capable Metering Solution for ESP/Demand Aggregators





# EISSBox

- An OpenADR 2.0a-certified virtual end node (VEN) endpoint
- Designed to act as a gateway between OpenADR 2.0 and existing building automation systems
- Available in dry contact and Modbus versions
- Eliminates the need to replace building automation systems in order to participate in AutoDR programs

# EISSBox – Dry Contact



- 2 - 10A Dry Contacts standard
- 2 additional relays optional
- 7 KYZ pulse meter / CT inputs
- Opt-in button option
- Tropos mesh radio option
- Ethernet, WiFi, Cellular

# EISSBox Modbus (Slave)



- Events, Prices, opt
- Count down timers
- Meter data
- 2 NIC ports

Tx = 0: Err = 0: ID = 1: F = 02: SR = 50ms  
No Connection

	Alias	00000
0	Error	0
1	Event Status	0
2		
3		
4		
5		
6		

Tx = 0: Err = 0: ID = 1: F = 15: SR = 50ms  
No Connection

	Alias	00000
0	PRD	1
1	OPT	1
2		
3		
4		
5		
6		

Tx = 0: Err = 0: ID = 1: F = 04: SR = 50ms  
No Connection

	Alias	00000
0	Asset #	0
1	Price (cents)	1710
2	Time to start	0
3	Time to end	57
4	Program #	1
5	Signal Level	2
6		

Tx = 0: Err = 0: ID = 1: F = 16: SR = 6000  
No Connection

	Alias	00000
0	Meter KW	225
1	Meter KWH	224
2	Time	2012
3	Time	4093
4	Time	50
5	Meter count	
6	MeterID	



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## Embedded Solutions

# EISSClient Embedded

- EISSClient uses the following methods to send information to an external Java programs:

- Set initial Properties `public void initialize(Properties properties) {`
- Shutdown `public void shutdown() {`
- Event Details `public void receivedEvent(Map<String, Object> event) {`
- Event Start Notification `public void startEvent(String id, String program, String level, List<String> assets) {`
- Change Signal Level `public void changeSignalLevel(String id, String program, String newValue, List<String> assets) {`
- Event Stop Notification `public void stopEvent(String id, String program, List<String> assets) {`
- Pricing Data `public String priceEvent(String assetName, float price) {`
- Returns opt state `public String getOpt() {`
- Timer to event start `public void pendingEvent(String program, int minutesToStart, int minutesToEnd) {`
- Timer to even start `public void activeEvent(String program, int minutesToStart, int minutesToEnd) {`
- Returns meter data `public String getMeterData() {`
- Sets error state `public void setError(String errorType) {`
- Clears error state `public void clearError() {`
- Configures meters `public void setMeters(Map<String, String> meters) {`
- Configures Assets `public void setAssets(Map<String, String> assets) {`
- Sets opt state `public void setOpt(String opt) {`

- Designed to be directly embedded into OEM equipment to be OpenADR 2.0 compliant
- JAVA-based for maximum flexibility

# EISS Embedded

Calling DR as Generation

IPKeys Technologies LLC:

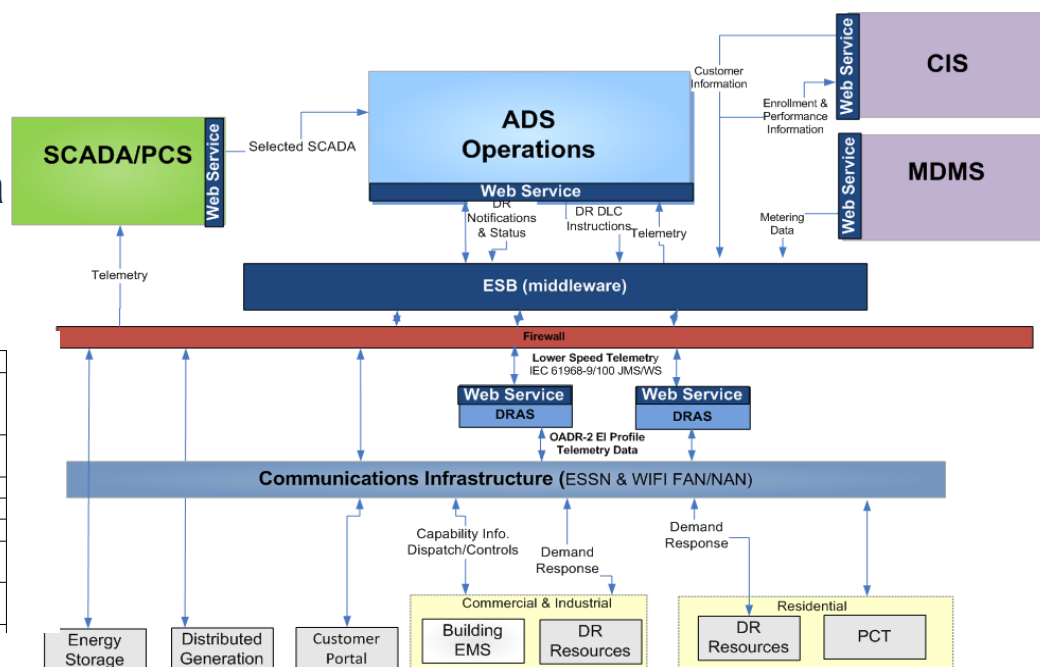
## EISS™ OpenADR 2.0 Virtual Top Node (VTN) Web API

A web-based API for provisioning and initiating events with an EISS™ OpenADR 2.0 VTN.

## External System Integration via REST web services API

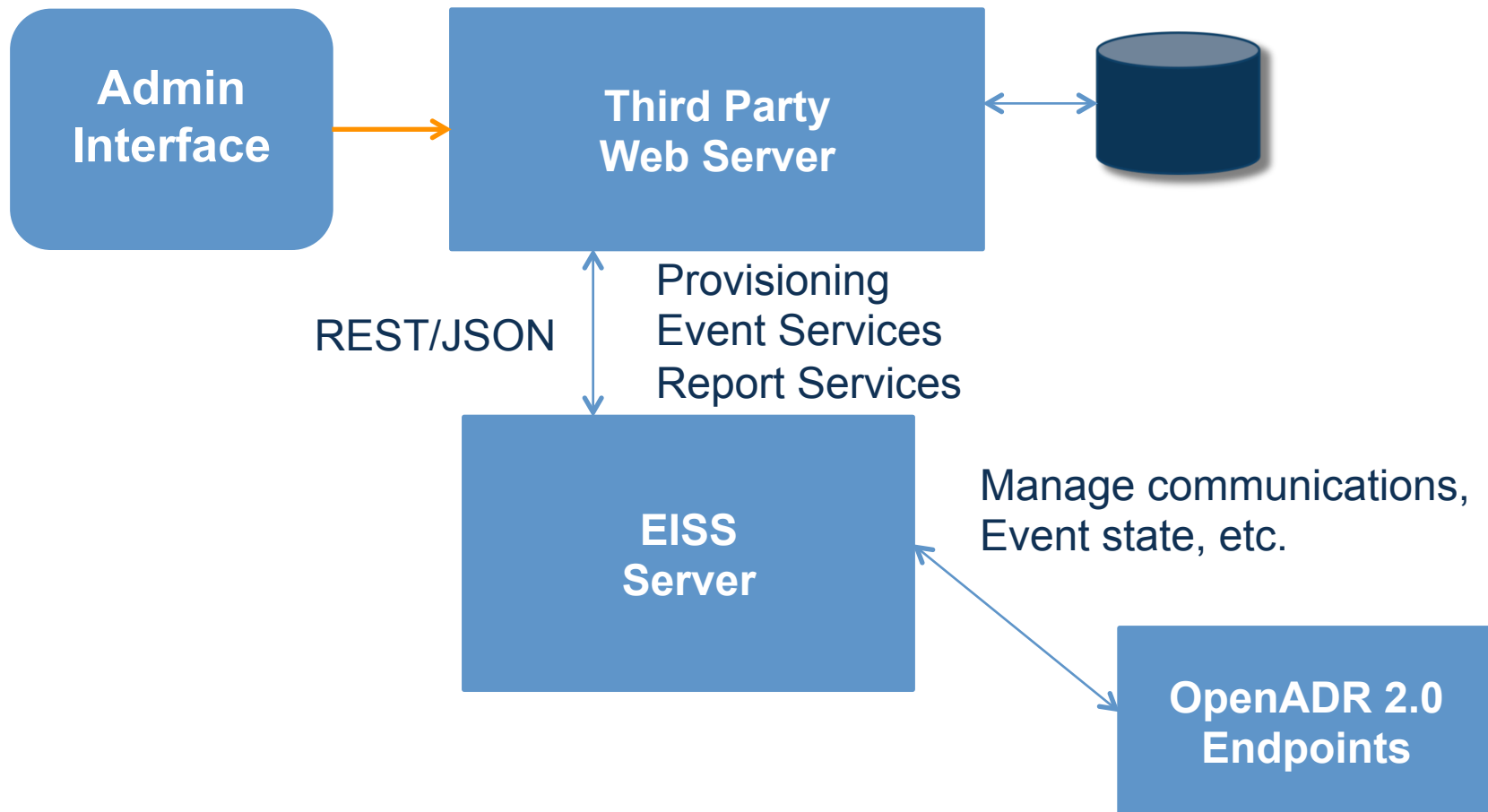
Event Properties	Description
eventID	Required. A globally unique ID for the event. Although a required property, the user of the API may omit the property and EISS™ will automatically generate one.
modNumber	Required. This is an integer that starts at 0, and is incremented by 1 each time and event is modified. EISS™ will automatically manage this property.
program	The name of the program for this event.
vtnComment	Optional. Arbitrary message text included in the event as a comment.
modReason	Optional. Arbitrary message text included when an event is modified.
priority	Optional. An integer indicating the events priority. Higher numbers indicate higher priority.
modificationTime	A timestamp indicating the time the time an event was modified. EISS™ automatically manages this property.

## Energy Management Integration via IEC 61968-9

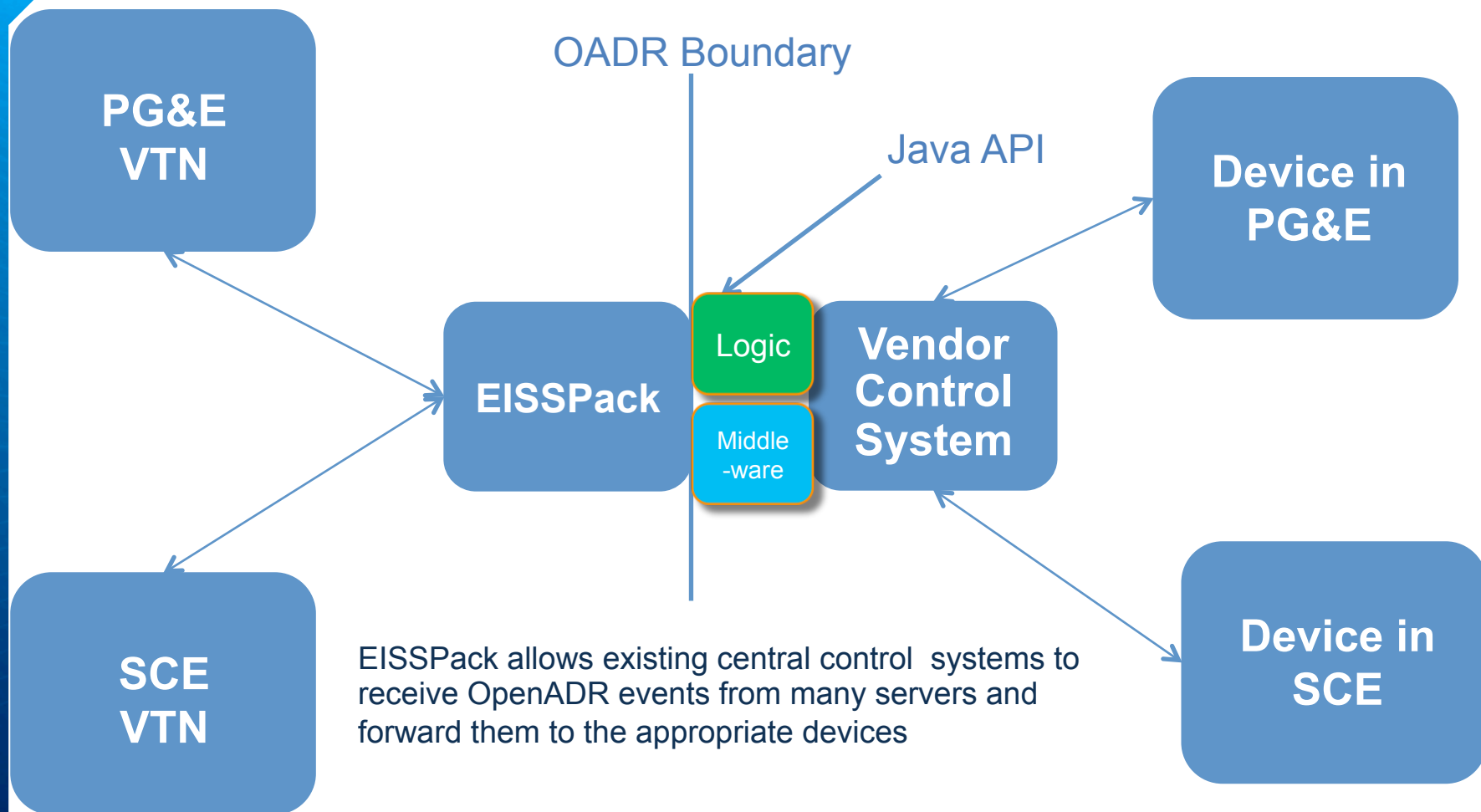




# EISS Server Embedded



# EISSPack Architecture





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EISS Product information available at:

*<http://eiss.ipkeys.com>*