

Title 24 ADR Using a Vive System

Demand response, also called “DR”, is a change in the power consumption of an electric utility customer to better match the demand for power with the supply. In the context of lighting control systems, demand response often involves lowering the intensity of lighting when a demand response signal is received.

Title 24 requires that buildings larger than 10,000 ft², excluding spaces with a lighting power density of 0.5 watts per square foot or less, must be able to automatically reduce lighting power in response to a demand response signal by a minimum of 15 percent below the total installed lighting power.

- Title 24 2019, which goes into effect on January 1, 2020, has updated the requirements for demand response for lighting controls in section 110.12. Lutron’s Vive system complies with this requirement with native OpenADR™ support in the Vive hub with software version 1.9.7 or later.
- Title 24 2016, which is active from January 1, 2017 through December 31, 2019, did not require the lighting control to support OpenADR™. It allowed demand response to be activated in other ways, such as the 3 options below.
 - Via the Vive app or web browser interface. For details see http://www.lutron.com/TechnicalDocumentLibrary/041571_Web.pdf
 - Via the contact closure. For instructions, see the programming guide mentioned above, or the Vive app
 - Via BACnet. For details see the Vive BACnet PICS at <http://www.lutron.com/TechnicalDocumentLibrary/369996.pdf> (requires HJS-2-xx or BACnet license)

References

To get the most out of this document, here are four important resources to provide background information

- Vive System Programming - covered in the Vive Programming Guide (http://www.lutron.com/TechnicalDocumentLibrary/041571_Web.pdf)
- Title 24 of the California Code of Regulations - (<https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards>) Section 110.12 discusses demand response.
- Specific utility programs and requirements - for example PG&E (http://pge-adr.com/wp-content/uploads/2013/04/PGE-DRAS-Connection-Guide_2016.pdf)
- If using BACnet, the Vive system’s BACnet capabilities - described in the Vive BACnet PICS (<http://www.lutron.com/TechnicalDocumentLibrary/369996.pdf>)

OpenADR™ Support in Vive

OpenADR™ is required by Title 24 2019, but is not required by Title 24 2016. Vive hub software version 1.9.7 and later natively supports OpenADR™, while earlier versions do not natively support OpenADR™. The Vive hub firmware can be upgraded (example: you can add OpenADR™ support to a hub with version 1.7.12 by upgrading to version 1.9.7). Instructions to update the Vive hub firmware can be found in the Vive Software Programming Guide (http://www.lutron.com/TechnicalDocumentLibrary/041571_Web.pdf).

The OpenADR™ Alliance created the OpenADR™ 2.0a and b Profile Specifications to provide specific implementation related information to build an OpenADR™ enabled device or system. Developers must use this Profile.

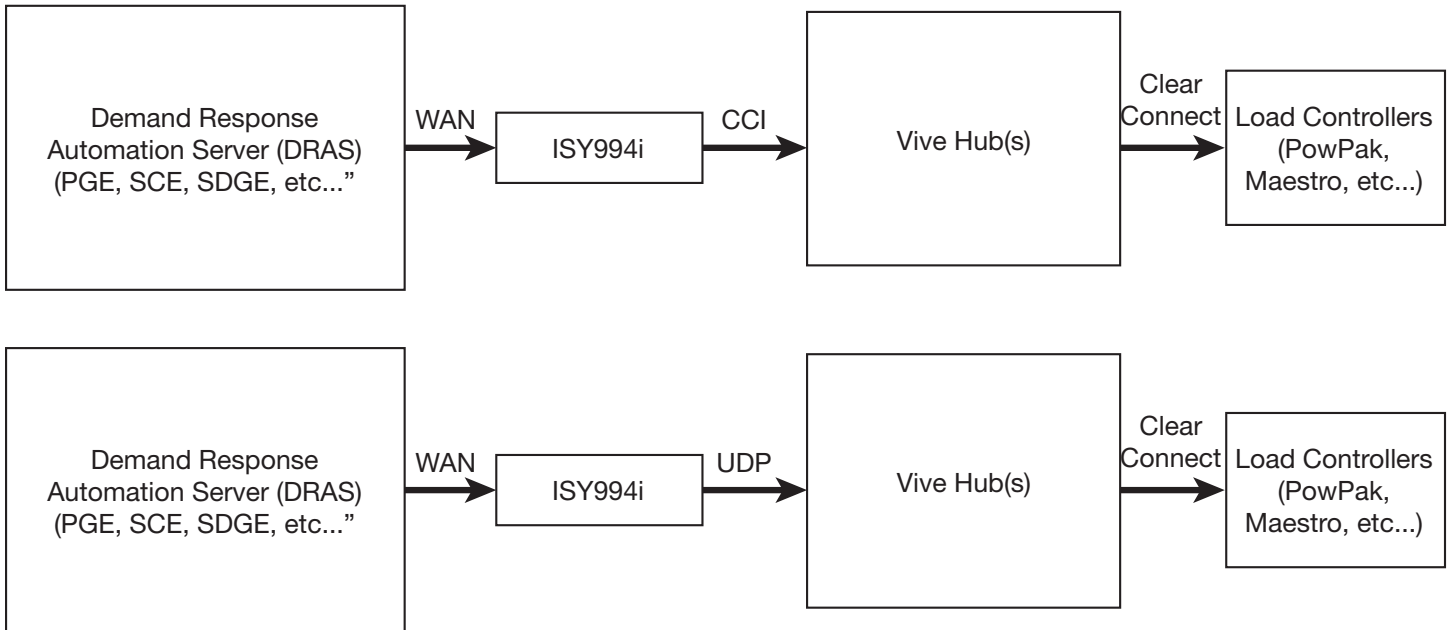
What if I have a Vive hub with earlier firmware before 1.9.7, which doesn’t support OpenADR™?

The recommended solution to add OpenADR™ to an older Vive hub is to firmware upgrade to 1.9.7 or later. Instructions to update the Vive hub firmware can be found in the Vive Software Programming Guide (http://www.lutron.com/TechnicalDocumentLibrary/041571_Web.pdf)

In the unlikely case when firmware upgrading is not possible for some reason, below are two (of many) possible approaches to adding openADR capabilities to a Vive system with firmware earlier than 1.9.7 via a third-party device (VEN). Again, this should not be necessary since the Vive hub firmware can be upgraded.

- **Method 1 – ISY994i by Universal-Devices:**
 - Requires ISY994r relay to be connected to CCI1 and COM on the Vive hubs
 - Works by sending a dry contact closure to the hubs
 - Will work with HJS-0, HJS-1 and HJS-2
 - The network module can be purchased/installed later to enable support for method 2
- **Method 2 – ISY994i by Universal-Devices with network module:**
 - Requires ISY994 to be networked with Ethernet to the Vive hubs
 - It works by sending UDP BACnet commands to the Hubs via IP
 - Requires BACnet to be enabled, and each Hub to have a unique IP and Instance ID
 - Will only work with the HJS-2-xx (or Hub with BACnet license)
 - Contact your local Lutron representative for more information

Connection Diagrams



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BACnet is a registered trademark of ASHRAE.

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