# Combining OpenADR and EEBUS for Energy Control

How integrations of OpenADR and EEBUS work together to enhance energy management and the smart grid

An OpenADR / EEBUS system will seamlessly connect the grid and end-customer domains to realize full end-to-end communication. Both, OpenADR and EEBUS use cases are fully specified and are widely in use within the industry. The system delivers high value in end-to end security, capacity and tariff management.

Energy supply systems have high security requirements to make sure there will be no external intervention. Thus, the secure communication from the grid to the device level is one of the key elements that the integration of OpenADR and EEBUS technology provide, including consistent TLS based security starting from OpenADR's VTN server on the grid side through the building's gateway at the grid connection point, to the EMS or devices at the end-customer side.
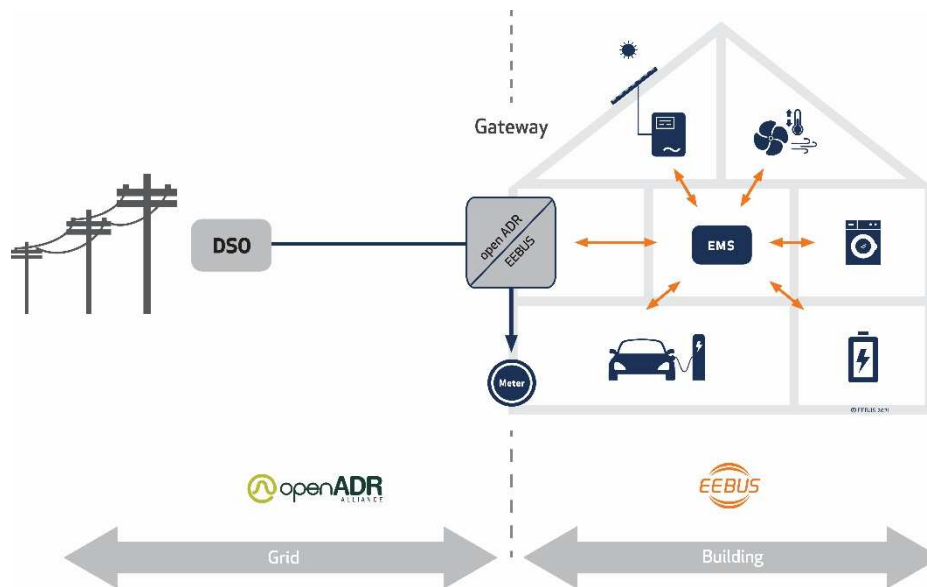
If the communication behind the grid connection fails, the heartbeat mechanism of the EEBUS ensures that the devices operate in a fail-safe mode and return to normal operation as soon as the communication is re-established. The configurable polling mechanism within OpenADR allows periodic message exchange between the VEN and VTN to indicate proper communication with the building. The OpenADR/EEBUS end-to-end security enables the following use case to be securely implemented:

Capacity management - the DSO will be able to manage critical grid situations without static power limitations on end-user device (e.g., no charging of EVs between 4 p.m. and 6 p.m.). Such regulations have been introduced in some countries, but this is not in line with the overall transition in mobility and heating. Both, the EV and HVAC system do have high flexibility in their energy behavior which makes them ideal for flexible loads for grid support: in times where energy is short, flexible loads can be operated with reduced power and in times of over production they will take as much energy as possible. A static limitation in power is not required anymore. This managed approach will significantly reduce over and underload scenarios in the low voltage grid.