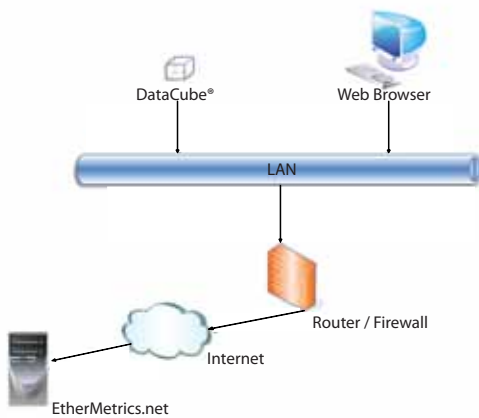


Overview

This document describes the connectivity required to provision a DataCube® on an existing network. The document also describes the data collected and how it is securely communicated to EtherMetrics.net. Finally, this document provides a testing procedure to ensure the network is ready to deploy the DataCube® energy information system.

General Network Diagram



The DataCube® is an Ethernet connected energy monitor that connects to your utility meter and optionally provides an output to a building management system. The DataCube® respects physical or virtual segmentation of your networks. The DataCube® reads the utility meter and signals the building automation system in a way that cannot act as a network bridge and does not cross contaminate physically or virtually distinct networks.

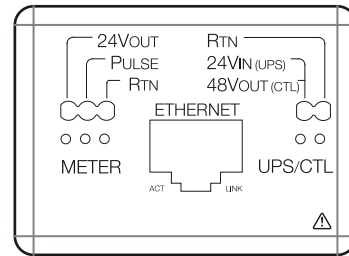
The DataCube® performs all of its functions with outgoing communications only. To your network, its traffic appears similar to a secure web browser. It requires outbound HTTPS (TCP Port 443) to ethermetrics.net and outbound NTP (UDP Port 123) to

pool.ntp.org. If required, the DataCube® can be configured to use a local NTP server. Currently, the DataCube® does not support HTTPS proxies for outbound access.

Detailed Description

The EtherMetrics DataCube is a small, Ethernet device that collects energy consumption information from a utility meter and reports it to an external server. As a system administrator it is useful to understand how the DataCube® works at a high level to make sure that deployment is fast and maintenance free.

Besides the Ethernet jack on the DataCube, there are two inputs / outputs.

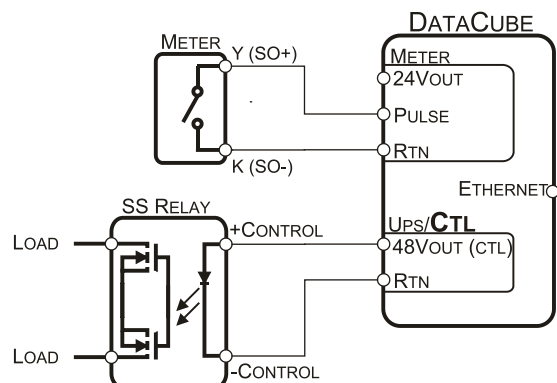


METER

The DataCube collects energy consumption information by means of a pulse output provided by the utility meter. A pulse output is simply an electrically isolated switch located at the meter. The energy meter indicates each amount of energy the meter registers by momentarily closing the switch. The DataCube watches for these pulses and records their occurrence.

CONTROL

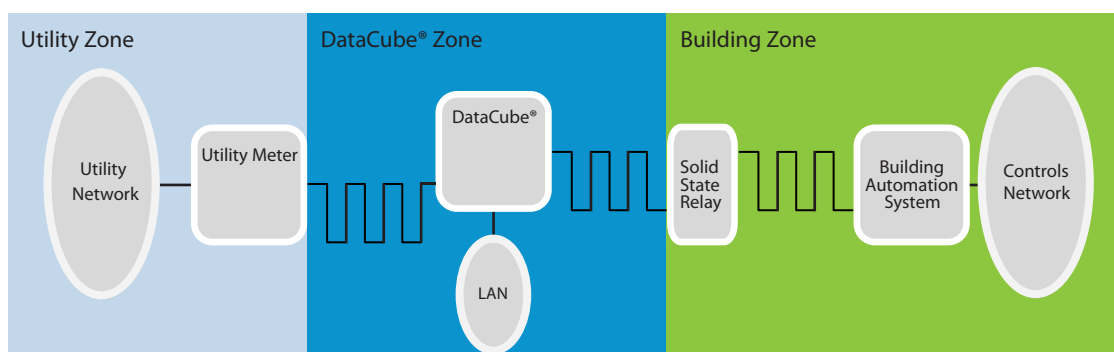
The DataCube is optionally capable of providing an output to be read by a building automation system. Similarly, this is done with an electrical pulse and is electrically isolated through an external solid state relay.



network setup

Architecture

The DataCube® cannot act as a bridge between any external networks (e.g., the utility's network) and your internal Ethernet network, or as a network bridge between your internal building management system and the internet if configured with a relay. The DataCube® does not interrupt physical or virtual isolation of networks.



Network Configuration

The preferred method for the DataCube® to fetch network configuration is through DHCP. The DataCube® MAC addresses are in the range 00:50:C2:9C:80:00 - 00:50:C2:9C:8F:FF. The preferred method of using static IPs for the DataCube® is to grant permanent leases through DHCP, but the device can also be statically configured with hard-coded IP addresses and other networking parameters if necessary.

For local network configuration, the DataCube® runs a web server on TCP port 80 (HTTP). This server comes online for several minutes when rebooted if static IP settings and DHCP are both unsuccessful. This web configuration interface is only accessible at IP address 169.254.0.200. It is meant to be accessed from a direct connection to a computer using a crossover cable.

The DataCube® does not have any other open TCP or UDP ports.

Quick Connectivity Checklist

- Network provides IP addresses via DHCP
- IP addresses are private (NAT) IP addresses
- Outbound access to HTTPS (TCP port 443) is allowed to ethermetrics.net
- Outbound access to NTP (UDP port 123) is allowed to any host (or the DataCube® is configured with a local NTP server)

Testing

- Use a laptop with network settings configured as they would be for the DataCube® (i.e.: DHCP or Static)
- If MAC addresses were used in the configuration of the network, soft-set the laptop's MAC address to 00:50:C2:9C:80:00. Soft-set your Microsoft Windows® computer's MAC address using this tool: <http://www.technitium.com>
- Connect the laptop at the DataCube® location
- Navigate to <https://ethermetrics.net/DataCubeServices>

To obtain more information or to purchase EtherMetrics metering products, please call EtherMetrics at 1-(888) 838-4736.

Product information is also available on our web site.

Please visit www.ethermetrics.com for more information.

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