C H A P T E R **1**

Introduction

The Cisco Connected Grid Device Manager is a tool used to troubleshoot a Cisco Connected Grid Field Area Router (FAR or router). This chapter contains the following topics:

Overview

The Device Manager is an application used to troubleshoot a FAR (or Connected Grid router), as well as test devices connected to the FAR. The Device Manager reads FAR configuration information, displays data, and manages individual FARs. You can connected to the Device Manager using a secured Ethernet or WiFi link for first-time deployment or troubleshooting.

The following illustration lists the functionality of the Device Manager.

Cisco Connected Grid Device Manager

Troubleshooting Functionality

System:
- Ping / Traceroute devices / meters to verify connectivity
- Load / upgrade software configuration
- Load / upgrade FAR Image
- Power cycle / reset FAR

Interface:
- Reset interface

Status Monitoring Functionality

System:
- Hardware inventory (serial no, modules, battery)
- Software information (configuration, image version)
- Export detailed log information

Interface:
- Interface state (IP address, up/down, L2 / L3 connectivity)
- 3G WAN: 3G connection state

Security Functionality
- X.509 Certificate based Authentication / Authorization
- Command set (user role), DAP-id, visit parameters digitally signed by Utility CA: Role Based Access Control
- Logging of commands issued, user-id, time stamps, visit parameters (for audit records)

The Device Manager enables you to:

- Troubleshoot connectivity between a FAR and the devices connected to the router (see Test Connectivity, page 3-5)

- Check and update the current FAR configuration (see Advanced Command, page 3-19 and Change Configuration, page 3-12)

- Update the FAR image and reset the router (see Update Image, page 3-15)

- View real-time FAR configuration information for troubleshooting (see Retrieve Report, page 3-18)

- Use advanced commands to troubleshoot the FAR (see Advanced Command, page 3-19)

Once the Device Manager connects to a Field Area Router (FAR), the system information displays at the bottom of each screen. The example screen below shows that the FAR has two Connected Grid Modules installed (WiMAX in slot 3 and Cellular in slot 6), and the LEDs flash indicating the modules are operating.

Other information that displays at the bottom of each screen includes:

- Name of the router

- Software build version

- Model number of the FAR

- Serial number of the FAR

- Door (system casing) status

- Battery status (if a backup battery is installed)

- Storage status including amount of storage available

- Connection method (WiFi or Ethernet)

- Certificate status

- Authorized user (Administrator)

Information can be refreshed at any time by using the Refresh icon, located in the lower right-hand of the screen.

The Connected Grid Network

Cisco's Connected Grid Field Area Network (FAN) solution is a two-tier architecture containing both the Neighborhood Area Network (NAN) and the Wide Area Network (WAN). The NAN provides network connectivity to end-points such as smart meters and devices. The WAN tier provides network connectivity from the FAR to the utility's control center over either public 2G/3G network, or over a utility-owned (private) WiMAX or Ethernet network.

The Connected Grid FAN solution is comprised of the Cisco 1000 Series Connected Grid Router, the Connected Grid Network Management System, and the Connected Grid Device Manager. The FAR (or Connected Grid Router) connects the NAN to the WAN. The Connected Grid Network Management System is management tool which manages a number of FARs, while the Connected Grid Device Manager provides access to a single FAR (at a time), for the tasks described in this guide.

The following illustrates the FAN topology.
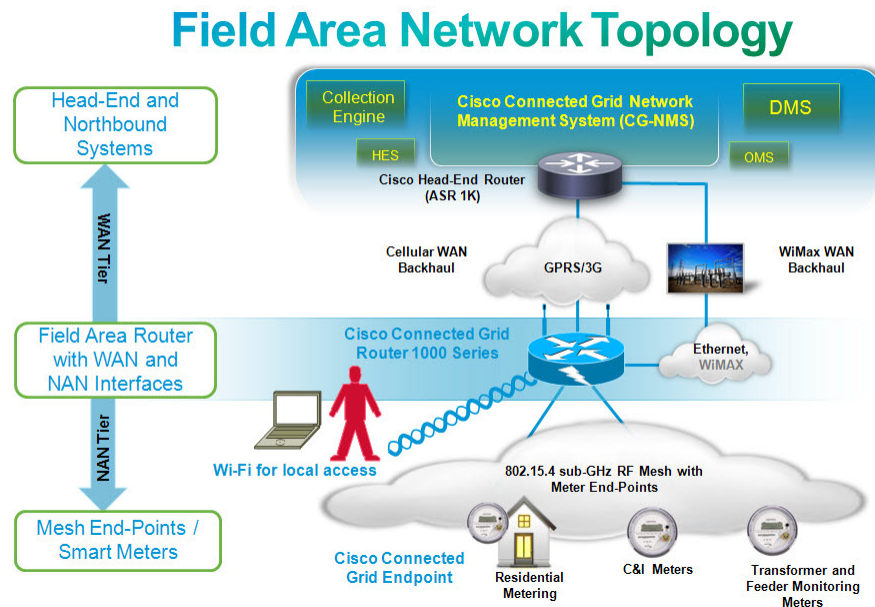
Field Area Routers

Unlike traditional routers and switches that reside in locations such as utility data centers or an enterprise Network Operations Center (NOC), a FAR (router) connects equipment in the field such as meters, sensors, and control equipment to the utility's control center.

The Cisco 1000 Series Connected Grid Router is a multi-service communication platform designed for use in FARs. The Connected Grid Router is designed to operate reliably in various types of harsh environments, including outdoor pole-top deployments. The Connected Grid Router is modular and supports a variety of communication interfaces including WiMAX, Cellular, 900 MHz RF Mesh, Ethernet, and WiFi.

Additional Information

Please use the following links for additional information on Cisco Connected Grid products:

- For Cisco Solutions for Utilities/Smart Grid, see
  http://www.cisco.com/web/strategy/energy/external_utilities.html

- For Cisco 1000 Series Connected Grid Routers, see
  http://www.cisco.com/en/US/products/ps12256/index.html