

EZNet™ Fixed Network Meter Reading System Frequently Asked Questions

What is EZNet™?

EZNet is a fixed network meter reading system comprised of two key components: the EZGate™ Data Collector units and the EZNet host software. The system is designed to automatically obtain data from commercial & industrial (C&I) meters and MIUs. C&I meters typically account for 60% of a utility's water revenues yet only account for 5-7% of the meter population. Therefore it is strategic and effective for a utility to focus on this meter segment given the value of the data associated with these types of meters.

How does EZNet work?

The EZGate unit collects signals from R900 MIUs and stores the data temporarily. On a daily basis, the data is transmitted through public communication networks (cellphone or landline modem) to the EZNet host software at the utility. The EZNet host software receives the data and deposits the meter reading information into the database. Within the database, meter reading statistics and customer usage patterns can be analyzed. Additionally, meter reading data can be interfaced with the utility's billing software according to the utility's billing schedule.

Which meters can it read?

EZNet is targeted to collect readings from C&I meters. The information is received from R900 MIUs, therefore, only those meters/registers that are compatible with R900 MIUs can be read by the EZNet system. Currently, Neptune ARB®, ProRead™ (ARB VI), E-Coder™, and Invensys ECR® II and ECR III* meters/registers are supported by the R900 MIU**.

Is there a difference between receiving readings from different generations of the R900?

No. All R900 MIUs utilize the same format and communication protocol; however, given the improved range of later generation R900s, fewer EZGate units are required. This translates into a more cost-effective targeted Fixed Network solution for the utility.

Is there a limit to the number of MIUs that can be supported by an EZGate unit?

It is anticipated that each EZGate unit will realistically service approximately 25-50 metered accounts. At this quantity, there is ample capacity available in the EZGate unit to manage the volume of data expected. In fact, with respect to data storage capabilities an EZGate unit has the capacity to manage 1,000 meters (96 readings per day). An EZGate unit is designed to store up to 3 days of daily meter reading data in the event that WAN communications fail temporarily. With 25-50 metered accounts per EZGate unit, the communication of the data to the host is expected to take less than 5 minutes on a daily basis.

Should the situation occur where approximately 200 C&I meters are within range of an EZGate unit, the receiver may begin to experience congestion. In this event, we would recommend the installation of an additional unit and moving the first EZGate such that the 200-meter load is shared between the EZGate units.

Meter reading data received from the EZGate unit can be archived in the EZNet host software system. Meter reading data is stored in the active database for 120 days on a rolling basis. After 120 days, the meter reading data is archived to a "zip" file. In order to access and retrieve the archived data, the user would run the "un-archive" routine.

How often can readings be obtained?

With the EZNet system, an EZGate unit (fixed data collection unit) collects meter readings transmitted from R900 MIUs that are in range on a continuous basis. The readings are received according to the transmission interval of the R900 transmitter.

The EZGate unit stores the latest meter reading obtained from each MIU which effectively provides up to 24 meter readings per day when using ProRead and 96 meter readings per day when using the E-Coder register.

* The ECR® III register is supported when programmed with the same format used in the "6 wheel ECR II register".

** When connected to second generation R900 or later.

The 60-minute read interval for ProRead and 15-minutes for the E-Coder is fixed as it is anticipated that the utility desires frequent data collection from its “high revenue” C&I customers.

On a daily basis, an EZGate unit will communicate the meter readings obtained for each account back to the host software. In the event more frequent downloads are required, the utility has the option to directly contact the EZGate unit and request the current day’s data be downloaded to the host software.

How is the EZGate unit powered?

Currently there are two power supply options available. The EZGate unit can be equipped with a 110 volt AC power supply, or if electricity is not available, a solar cell and battery can be used to provide power to the unit.

Where can the EZGate unit be installed?

These units can typically be installed on building rooftops or walls, utility poles, water towers, etc.

How is the ideal site selected?

The ideal site is selected by identifying a central location for the EZGate unit that will receive readings from R900 MIUs that are within range. This can be done on a preliminary basis by plotting the metering points on a map versus the proposed location. To determine if the EZGate unit is in the optimum location, a DAP handheld device with an HHIU interface receiver is used to determine reading range. The person completing the propagation study determines the central location where all the C&I meters/MIUs can be read. Activated MIUs can be located at the furthest locations to be read. If signals from MIUs are received from all locations to the proposed EZGate unit location at a 50% message success rate, then the site is qualified. The proper configuration for the EZGate unit will then have to be determined, i.e. solar power vs. AC, cellphone vs. landline communications, etc.

How far away can an EZGate unit be from an MIU?

The system is designed such that a second generation wall mount R900 can be up to 1.1 miles* away from the EZGate unit. The pit MIU will have less range. We anticipate approximately 1500 feet* range with the second generation pit R900 MIU.

How many configurations are available with an EZGate unit?

There are four configurations available.

1. Solar power with cellphone modem
2. Solar power with landline modem
3. AC power with cellphone modem
4. AC power with landline modem

Depending on the location, the unit can be installed on a rooftop, wall, or pole setting.

Which cellphone service supports the EZNet system ?

Currently, the EZNet system utilizes a digital cellphone modem using the CDMA format. As a standard, the cellphone modem is supported on the Verizon Wireless Network. Verizon provides coverage for most of the USA. For locations not supported by Verizon, please consult Neptune for other options available.

What phone service is supported?

The EZGate unit incorporates a landline modem that will operate within most major landline telephone company networks.

Who installs the EZGate unit?

The unit is designed to be installed by a utility employee with technical aptitude or a 3rd party contractor. A complete set of manuals is provided to guide the installer through the installation process.

Do we develop files transfer?

No. However, for those utilities that do not have the resources, Neptune can suggest companies that can develop transfer files for them.

What is the functionality of the EZNet host software?

The software will provide the utility the opportunity to manage meter readings identifying successful, unsuccessful, and non-numeric readings. The software will also provide Customer Service benefits by way of account consumption tables and graphs. The billing function is facilitated through EZRouteMAPS. EZNet software will also provide the utility the capability to monitor the network of EZGate units.

How does EZNet facilitate the billing process?

The billing function is facilitated through the Equinox™-MR software package. As billing routes are downloaded to Equinox-MR, the Equinox-MR software can poll the EZNet software for applicable accounts on the billing route. EZNet will transfer the relevant data to Equinox-MR such that it can be uploaded through the existing interface to the billing software.

* Range estimates are based on open field, line-of-sight testing, with 50% message success rate, conducted with the new R900 transmitters. The pit MIU range was based on installation of a cast iron lid.

Can data logging information be obtained from the EZNet system?

The EZGate unit is designed to store meter reading data received from the R900 MIUs allowing data resolution up to every 60 minutes for ProRead equipped meters and 15 minutes for E-Coder equipped meters. The data that is obtained is transferred to the EZNet host software on a daily basis. Reports are available within EZNet that format the data into a graph showing data logging/consumption pattern information. The data from the EZNet host software can also be exported into an Excel spreadsheet format for generating customized reports.

It is also possible to mount an EZGate unit on a mobile platform (such as a trailer) and position it in a location for a temporary period to evaluate a group of meters (with R900 MIUs) that are not within range of a fixed network EZGate unit. This “mobile” data collector could be parked for a 1 week period, for example, to collect data and transmit information back to the EZNet host software for analysis. After the one-week period, the unit could be moved to another desirable location.

Can meters be grouped?

The EZNet host software system has the capability to group meters, by customer, for meter reading purposes. Neptune would need to consult with the utility to define the presentation format of the grouped meter information.

Can meter readings be obtained “On-Demand”?

The EZNet system can provide reads “On-Demand”. In the event the operator requires an On-Demand read for an individual account, they would contact the applicable EZGate unit associated with the account requiring the demand read and request the EZGate unit to communicate with the host software. The EZGate unit would download all the current readings available to the host. The communication process would take less than 5 minutes to complete. The operator would then select the specific account required in the EZNet software and obtain the required meter reading information.

The EZNet system receives meter reading information from the EZGate unit on a daily basis. In the event the operator requires an “off-cycle” or special read, they could access the EZNet software and select the account to obtain the required information. The operator could obtain up to and including the previous days’ meter reading download from the EZGate unit.

Should the utility require a number of meters to be read and billed off-cycle, the operator could create a route and download it into the Equinox-*MR* software. Equinox-*MR* would then communicate with the EZNet host software and obtain the meter readings for the off-cycle/special read accounts listed in the route file. When complete, the off-cycle route would then be uploaded from Equinox-*MR* to billing to complete the process.

Can leak detection be performed with the system?

Leak detection capabilities are available utilizing the E-Coder register in combination with the new R900 RF MIU. The EZNet system has the ability to capture this information and present it in the Advanced Usage Analysis Report Module. This report generates a tabular list of accounts showing leak status indicators from the E-Coder (flags).

The E-Coder provides leak detection through a two-bit flag indication of the current leak threshold value during the previous 24-hour period. Algorithm: 24 hours is broken up into 96 15-minute intervals. When a minimum volume (V_{\min}) is exceeded in all 96 intervals, the current leak state is considered continuous. When a minimum volume (V_{\min}) is exceeded in a percentage of the 96 intervals, the current leak state is considered intermittent. V_{\min} is factory programmed depending on meter size. Leak state information is communicated through E-Coder PLUS protocol. Leak state can also be viewed locally when LCD is active. A leak icon indicates leak state (FLASHING for intermittent leak; SOLID ON for continuous leak).

The EZNet host software system also has the ability to identify potential leak conditions within its graphing reports. When evaluating the consumption graph, if flow never approaches zero over the course of a number of days, then it may be presumed that a leak is taking place. Further investigation should be performed on site to confirm the leaking condition or high-resolution data logger should be undertaken to confirm the leaking condition. Without the use of high-resolution measuring equipment, it is difficult to predict leak conditions.

Can “No-flow” occurrences be identified with the system?

No-usage capabilities are available utilizing the E-Coder register in combination with the new R900 RF MIU. The EZNet system has the ability to capture this information and present it in the Advanced Usage Analysis Report Module.

The EZNet host software system also has a No-Usage identification capability. It has the ability to show this two ways, depending which registers are installed – ARB VI (ProRead) or E-Coder.

For ARB VI (ProRead) registers, No-Usage capability is provided using the Management Reports feature. EZNet can generate a list of meters that registered “no consumption” using a user selectable date range.

For E-Coder registers, a summary report is available showing the total number of accounts experiencing no flow according to a user selectable date range. A summary report is available showing the total accounts experiencing no flow status based on the number of consecutive days a no-low condition was identified.

How do I know if I have a problem in the network?

The EZNet software includes a system monitoring and diagnostic application that identifies problematic EZGate units within the network.

Can EZNet be used with handheld systems and/or mobile systems?

Yes. This is one of the true differentiating aspects of the system. EZNet facilitates system “migratability” and the coexistence of hybrid data collection systems. The EZNet software is part of the Neptune software suite which includes Equinox-MR, MRX920, and EZNet mobile collection software. All three are designed to work together so that a hybrid of technologies can be deployed within a utility. EZNet and MRX920 data are transferred to Equinox-MR in order to upload the meter reading data to the billing software through a single interface.

What are the EZNet software system requirements?

Client or Standalone System Requirements:

The **minimum** hardware requirements for EZRoutePLUS Client include:

- Windows 2000® Professional / Windows XP® Professional*
- Intel 800-megahertz (MHz) processor or faster
- At least 256 megabytes (MB) of RAM (512 MB is recommended)
- At least 1.5 gigabytes (GB) of available space on the hard disk
- CD-ROM or DVD-ROM drive
- Keyboard and Microsoft Mouse or some other compatible pointing device
- Video adaptor and monitor with Super VGA (1024 X 768) or higher resolution
- Additional items **required** for standalone installation
 - 56 kilobits per second (Kbps) or higher-speed modem
 - If client/server installation, network adapter appropriate for the type of local area, wide-area, wireless, or home network you wish to connect to, and access to an appropriate network infrastructure; access to third-party networks may require additional charges

Server:

The **minimum** recommendation for EZNet Server installation:

- Windows Server 2000® / Windows Server 2003®*
- Intel 800-MHz, Dual Pentium II 500-MHz or compatible processor or higher, depending on your system configuration
- 256-MB RAM (512-MB RAM or higher recommended), depending on your system configuration
- For dial-up: 56 kilobits per second (Kbps) or higher-speed modem
- For networking: Network adaptor appropriate for the type of local-area, wide-area, wireless, or home network you wish to connect, and access to an appropriate network infrastructure; access to third-party networks may require additional charges
- CD-ROM drive
- Video graphics adapter capable of 256 colors and 1024 X 768 pixels
- 4-gigabyte (GB) available hard disk space
- Neptune Technology Group Inc. recommends using a RAID configuration for the EZNet server installation.

Is EZNet software compatible with other software programs?

The EZNet software is compatible with other software programs. However, Neptune recommends only installing EZNet on a system with other Neptune products. Software testing has confirmed the compatibility of our product lines. If other software is installed after EZNet, abnormalities can occur. Neptune is not responsible for third party installations creating system errors.

* Consult the factory for current versions supported.

