

# TCP/IP Network Connectivity and ION Meters

This technical note describes how PowerLogic™ ION8800, ION8600, ION7550 and ION7650 meters are able to interact with several types of external servers that are commonly deployed on TCP/IP networks:

- ◆ DNS Server
- ◆ NTP Server
- ◆ SMTP Server

Refer to “Meter Firmware Support” on page 2 to see which meter firmware versions support networking features on the ION™ meters.

## In This Document

◆ <b>Network Configuration</b> .....	<b>2</b>
Meter Firmware Support .....	2
◆ <b>Domain Name Resolution (DNS)</b> .....	<b>3</b>
◆ <b>Network Time Synchronization (NTP)</b> .....	<b>4</b>
◆ <b>Email (SMTP)</b> .....	<b>5</b>
◆ <b>Sample Applications</b> .....	<b>6</b>
Local Area Network (LAN) Application .....	6
Wide Area Network (WAN) Application (Modem) .....	7
Wide Area Network (WAN) Application (Cable/DSL) .....	8

ION, ION Enterprise, PowerLogic, Schneider Electric, and WebMeter are either trademarks or registered trademarks of Schneider Electric in France, the USA and other countries. All other trademarks are property of their respective owners.

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

© 2009 Schneider Electric.  
All rights reserved.

www.powerlogic.com

## Additional Information

- ◆ Your meter’s technical documentation
- ◆ *ION Reference*
- ◆ *WebMeter Internal Web Server Feature* technical note
- ◆ *MeterM@il Internal Email Client Feature* technical note

# Network Configuration

ION8800, ION8600, ION7550 and ION7650 Ethernet meters have several configurable parameters that are used in TCP/IP communications, such as IP address, default gateway, subnet mask, etc. These parameters can be set manually (via the meter's front panel, the meter's Network Setup web page or ION software).

Some ION7550 / ION7650 meters (firmware version 350 and later) also come preconfigured with IP addresses automatically assigned from the factory. The default IP address is 172.16.xxx.xxx, where the last two bytes of the address (decimal) match the last two bytes of the meter's MAC address (hex). This ensures unique IP addresses. For example:

MAC address = 00607801**12DC**

**12** (hex) = **18** (decimal) and **DC** (hex) = **220** (decimal)

Default IP address = 172.16.**18.220**

To learn how to configure meter network settings manually with the meter's front panel, refer to your meter's Installation Guide and your meter's User Guide.

To learn how to configure meter network settings manually with the meter's Network Setup web page, refer to the *WebMeter Internal Web Server Feature* technical note.

## Meter Firmware Support

The following table outlines which meter models and firmware versions support network configuration:

Meter Type	DNS	NTP	SMTP
<b>ION7550 / ION7650</b>	V310 or later	v310 or later	v310 or later
<b>ION8600</b>	Not supported	Not supported	V311 or later
<b>ION8800</b>	v320 or later	v320 or later	v320 or later

# Domain Name Resolution (DNS)

A DNS (Domain Name System) server is used to resolve a domain name to a corresponding IP address. If a meter is configured to use a DNS server by specifying the IP address of the DNS server to the meter, then the meter can access other network resources (e.g. NTP and SMTP servers) by domain name rather than by IP address.

## Preparing the meter to use DNS

Configure the following registers in the meter's Ethernet Comm module:

Register Name	Type	Description	Notes
Primary DNS Server	String Setup	This register specifies the IP address of the primary DNS server that the meter sends name queries to. This value must be an IP address in the format aaa.bbb.ccc.ddd.	<ul style="list-style-type: none"> <li>◆ Domain name resolution is required if a fully qualified domain name has been entered for either the SMTP server address or the NTP server address.</li> <li>◆ Use the front panel, ION Setup, Designer or a web browser.</li> </ul>
Secondary DNS Server	String Setup	This register specifies the IP address of the secondary DNS server that the meter sends name queries to. This value must be an IP address in the format aaa.bbb.ccc.ddd.	<ul style="list-style-type: none"> <li>◆ Domain name resolution is required if a fully qualified domain name has been entered for either the SMTP server address or the NTP server address.</li> <li>◆ Use the front panel, ION Setup, Designer or a web browser.</li> </ul>

# Network Time Synchronization (NTP)

NTP (Network Time Protocol) is a protocol that synchronizes computer clock times in a network.

## Preparing the meter to use NTP

Configure the following registers in the meter's Clock module:

Register Name	Type	Description	Notes
Enable NTP Time Sync	Enumerated Setup	This register enables NTP time synchronization when set to Yes, and disables it when set to No.	Default setting is No.
NTP Time Sync Interval	Numeric Setup	This register specifies the frequency at which the meter attempts to time synchronize via NTP. Values between 60 seconds and 1 year are acceptable.	Default is 1 day (86,400 seconds).

Configure the following registers in the meter's Ethernet Communication module:

Register Name	Type	Description	Notes
NTP Server	String Setup	Use this register to specify the IP address of the NTP server that the meter synchronizes its clock to: <ul style="list-style-type: none"> <li>◆ This value can be either an IP address in the format aaa.bbb.ccc.ddd or the fully qualified domain name of an NTP server (for example, ntp.domainxyz.com).</li> <li>◆ Maximum 80 alphanumeric characters, dot and dash allowed.</li> </ul>	<ul style="list-style-type: none"> <li>◆ You cannot change this register using the front panel (use ION Setup, Designer or a web browser).</li> <li>◆ If you enter a fully qualified domain name for the NTP server you must also specify a DNS server.</li> </ul>

# Email (SMTP)

SMTP (Simple Mail Transfer Protocol) is a TCP/IP protocol that sends and receives email.

## Preparing the SMTP Server

See the *MeterM@il Internal Email Client Feature* technical note for more information.

## Preparing the meter to use SMTP

Configure the following registers in the meter's Ethernet Comm module:

Register Name	Type	Description	Notes
SMTP Connection Timeout	Numeric Setup	This defines the time period the meter will wait when establishing a connection to an SMTP server: <ul style="list-style-type: none"> <li>◆ The default setting is 60 seconds, which is sufficient time if the SMTP server resides on your local network.</li> <li>◆ If the SMTP server is accessed using a dial-up connection, you should increase the SMTP Connection Timeout value to allow the meter sufficient time to establish the connection.</li> </ul>	
SMTP Server	String Setup	This register specifies the IP address of the email server that the meter sends outgoing email to: <ul style="list-style-type: none"> <li>◆ This value can be either an IP address in the format aaa.bbb.ccc.ddd or the fully qualified domain name of an SMTP server (for example, smtp.yourcompany.com).</li> <li>◆ Maximum 80 alphanumeric characters, dot and dash allowed.</li> </ul>	<ul style="list-style-type: none"> <li>◆ You cannot change this register using the front panel (use ION Setup, Designer or a web browser).</li> <li>◆ If you enter a fully qualified domain name for the SMTP server you must also specify a DNS server.</li> </ul>
SMTP Port Number <sup>1</sup>	Numeric Setup	This register specifies the TCP/IP port the meter uses to communicate with the SMTP server. Default is 25.	<ul style="list-style-type: none"> <li>◆ You cannot change this register using the front panel (use ION Setup, Designer or a web browser).</li> </ul>

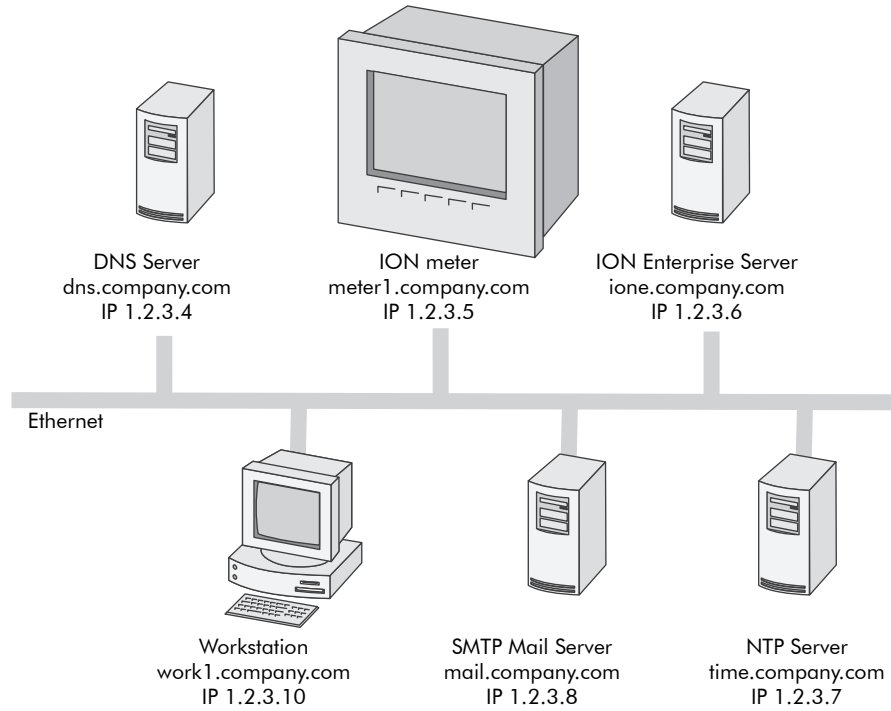
<sup>1</sup> This register is only available on some meter models and firmwares. Check your meter's technical documentation for details.

# Sample Applications

ION meters can be configured in a variety of different network applications/ situations.

## Local Area Network (LAN) Application

The ION meter is located on the same LAN with all the other network components.

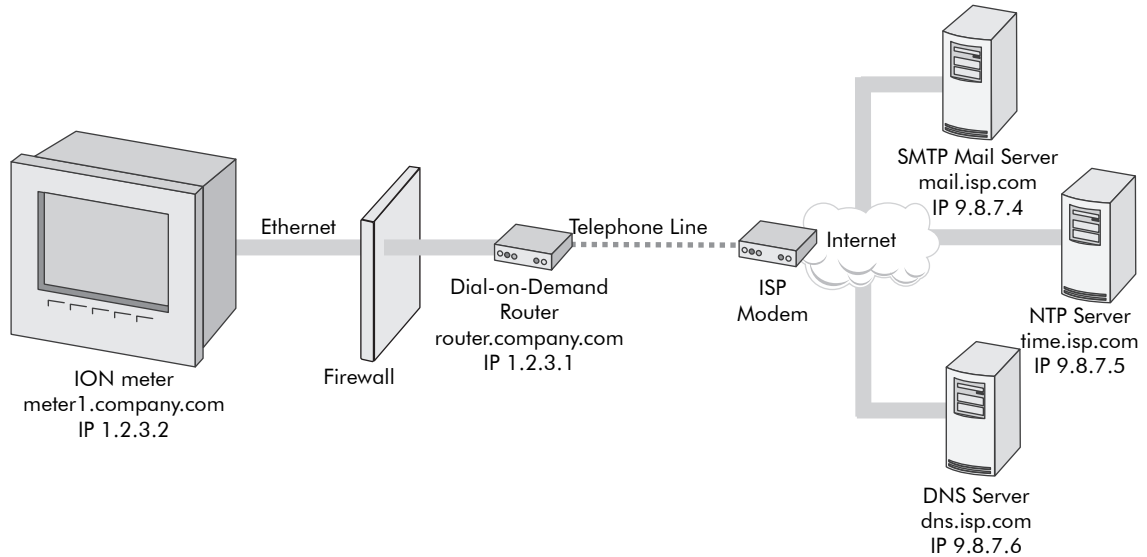


In this example, the meter’s network settings are configured for use with an ION Enterprise server.

Component	Configuration
ION meter	Manual network configuration: IP address = 1.2.3.5 DNS server = 1.2.3.4 SMTP server = mail.company.com NTP server = time.company.com
ION Enterprise Server	IP address of meter = 1.2.3.5

# Wide Area Network (WAN) Application (Modem)

The ION meter is located on a remote LAN, while the SMTP, NTP and DNS servers are on the Internet.

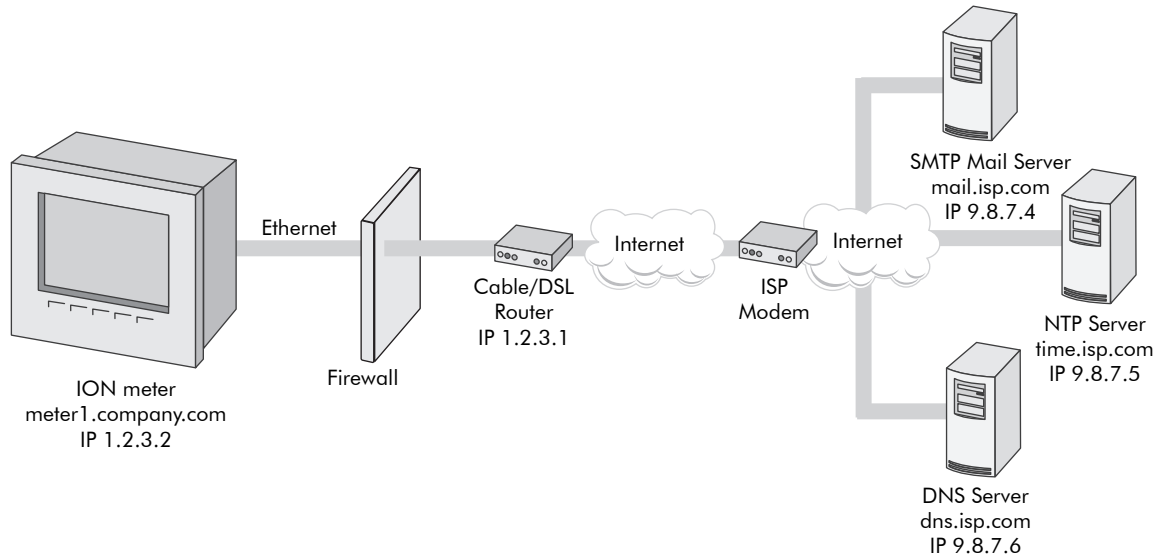


In this example, a dial-on-demand router is used to access the Internet (and the servers situated there) via telephone when required. Generally, the meter in this example would only access the Internet to send data (perform a “data push”).

Component	Configuration
ION meter	Manual network configuration: IP Address = 1.2.3.2 DNS Server = 9.8.7.6 SMTP Server = mail.isp.com NTP Server = time.isp.com

# Wide Area Network (WAN) Application (Cable/DSL)

The ION meter is located on a remote LAN, while the SMTP, NTP and DNS servers are on the Internet.



In this example, a cable/DSL router is used to access the Internet (and the servers situated there). The meter in this example has constant access to the Internet to send or receive data.

Component	Configuration
ION meter	Manual network configuration: IP Address = 1.2.3.2 DNS Server = 9.8.7.6 SMTP Server = mail.isp.com NTP Server = time.isp.com