GENERAL

This application note describes a method and the required hardware components to implement an Ethernet type communications connection between an Aries Communication Server computer and an ASC/2M Master Controller.

Note: This Rev. A of this application note includes a new section, Master-to-Locals Communication, on Page 2 that references other application notes that explain how to connect from an ASC/2M Master Controller through Ethernet to local controllers.

There are many factors involved in a successful implementation of an Ethernet type Communications Network. Most of these are beyond the scope of this Application Note and will not be discussed. It is assumed that the reader is knowledgeable with the various Microsoft Windows® operating systems, administrative functions, and general LAN/WAN terminology and topologies.

Figure 1 shows the basic design discussed in this document.

Figure 1 – Basic Design

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MASTER-TO-LOCALS COMMUNICATION

There are two major parts to the communications infrastructure of an Aries Closed Loop system. Conceptually, if we view the Master as the dividing line, it is easy to picture the two parts:
- The communications path from Aries to the Master and
- The communications path from the Master to the Locals

This application note is only intended to deal with the first part. For the second part of the communication infrastructure, refer to the three application notes listed below.

<table>
<thead>
<tr>
<th>Application</th>
<th>Document No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASC/2M Master with ASC/3 locals</td>
<td>AN2116</td>
<td>ASC/2M to ASC/3 Ethernet Connection Using Digi PortServer TS2 H MEI</td>
</tr>
<tr>
<td>ASC/2M Master with ASC/2S locals</td>
<td>AN2106</td>
<td>ASC/2M to ASC/2S Ethernet Connection Using Digi PortServer TS2 H MEI</td>
</tr>
<tr>
<td>Older ASC/2 controllers and/or a mixture of ASC/2 and ASC/2S controllers</td>
<td>AN2107</td>
<td>ASC/2M to ASC/2 Ethernet Connection Using Ruggedcom Terminal Servers</td>
</tr>
</tbody>
</table>
HARDWARE

The Aries Communications Server function supports only Dial-up and Direct Connection type of communications to an ASC/2M Master. The core component of the Ethernet design shown in Figure 1 is the Single Port, Device Master – RTS unit from Comtrol Corporation, www.comtrol.com.

The Device Master unit in conjunction with its Driver software, NS-LINK, allows configuring a remote COM Port accessible via an Ethernet connection. The remote port appears as and is accessed as a local hardware COM Port from Windows. This design provides the equivalent of a basic direct connection between the server computer and the ASC/2M Zone Master.

Following is a complete list of the hardware components and their function as shown in Figure 1.

- **Computer**: This unit is the typical Aries computer. It may be either a standalone “server” hosting the Aries Communications Server function as may be found in a Networked Aries system or a single-computer Aries installation.

- **Layer-2 LAN Switch**: This device is a typical LAN Switch. It may be either a managed type or unmanaged. Units are available from a variety of manufactures such as 3Com, etc. and come in a variety of port configurations (4, 8, 16 and 32-port units are most common). Allow one port for the Aries Communications server computer, and one or more ports for connections to the field (depending on LAN design) and additional ports for other computers.

- **Device Master-RTS**: The Device Master unit is available in a variety of configurations including single, 4, 8 and 16-port units. Each unit is supplied with a separate plug-in power supply. The Device Master unit does not meet the NEMA temperature range specification, however it is temperature hardened for operation from –20C to +60C. The unit supports both 10base-t and 100base-tx Ethernet speeds and auto negotiates the correct duplex operation. RS232 connections to the Master are accomplished via a DB-9, male type connector.
  - **NOTE**: This application note only applies to Comtrol brand Terminal servers and does NOT apply to other manufacturers or brands.

LAN DESIGN CONSIDERATIONS

The preferred method of addressing the Device Master unit is via its MAC address. This is the simplest and most reliable method. If the LAN design incorporates Routers or other devices that perform Layer 3 switching it will be necessary to configure the unit with and address it via a TCP/IP address.
Device Configuration: (Device Master RTS-Aries-ASC/2M)

- **Install Driver for the Device Master RTS**
  1. In the Windows Control Panel - Select **Add Hardware**

![Add/Remove Hardware Wizard](image)

To continue, click Next.

2. Select **Add or I've Already connected the hardware**

![Add/Remove Hardware Wizard](image)

Select the hardware task you want to perform, and then click Next.

- **ADD/Disable a device**
  Choose this option if you are adding a new device to your computer or are having problems getting a device working.

- **Uninstall/Unplug a device**
  Choose this option to uninstall a device or to prepare the computer to unplug a device.
3. Select **Add a new device**

4. Select the **Multi-port serial adapter**
5. Select **Have Disk**

Add/Remove Hardware Wizard

**Select a Device Driver**
Which driver do you want to install for this device?

Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.

![Have Disk](image)

6. Use the Browse button to locate the unzipped installation files and select **Open**

Locate File

![Locate File](image)

This screenshot shows a system that had drivers previously installed.
It is not necessary to select a file, just browse to the directory and select Open.

7. Select OK

8. From the Models list, highlight the **DeviceMaster RTS 1 Port** and click Next.
9. Start Hardware Installation, click **Next**

Start Hardware Installation
Windows is ready to install drivers for your new hardware.

DeviceMaster RTS 1 Port

Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.

10. Select the **Finish** button to complete the driver installation process

Completing the Add/Remove Hardware Wizard

The following hardware was installed:
DeviceMaster RTS 1 Port

Windows has finished installing the software for this device.

To close the wizard, click Finish.
11. Right click on **My Computer** and select **Manage**
12. Right click on the **DeviceMaster RTS 1 Port** and select **Properties**

13. Select **MAC MODE** and select the MAC address of the unit (The MAC address is listed on the back of the RTS 1 unit)
14. **Program Address into Device**
15. Select the **Port Settings** tab
16. Click **Properties**

![Port Settings Tab](image)

17. Select **RS Mode = 232**

![RS Mode Selection](image)

- Click on the pull down and select RS232 communications.
- This is your virtual comm port that the driver created.
Setup Aries Communications Server

1. From the Aries Zone Manager – **Launch the Communications Server**

2. Select File, Setup and Wizard
3. Select **Next**

![Aries Communications Channel Setup Wizard](image)

This wizard will help you quickly install a new communications channel.

To begin installing your new communications channel, click Next.

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4. Select an unused *Aries* channel

![Aries Communications Channel Setup Wizard](image)

First you must specify the channel number. Channels can be numbered from 1 to 16. It is recommended that you pick a number corresponding to the communication port you will be assigning to this channel.

Please enter the channel, then click Next.

![Channel Selector](image)
5. Enter your **Virtual Comm Port Number**, created by NS Link Driver for the DeviceMaster RTS 1 Port.

6. Select **Direct**
7. Select **9600**

You have chosen to use this channel for direct connection. You must now select the communications data rate. This rate must match the rate of the communication port to which you wish to connect.

8. Select **Use this channel to initiate calls** and **Use this channel to answer incoming calls**

The communications mode determines whether the channel will be used to initiate calls to field devices, answer calls from field devices, or both.

Select one or both check boxes, then click Next.
9. Deselect **Use this channel to initiate calls to any zone**

The channel will be used to initiate calls to field devices such as zone masters, intersection controllers, and Intersection Monitors. You have the option to use the channel for any zone, or to restrict call initiation to a set of zones that you select.

Check the box below, to select all zones, or leave the box unchecked, and click Next to select from a list of zones.

- [ ] Use this channel to initiate calls to any zone

10. Select the **Zone** that has the Comtrol Device Master

Select from the list below, the zones that this channel will initiate a call to.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

[Next]
11. Select **Zone Number Verification**

An option exists to verify zone number when connecting to a zone master, or zone number and intersection number when connecting to a local controller or Intersection Monitor.

Setting this option is recommended unless this channel will be used to access multiple zones with the same zone number, as may be the case when monitoring zones from different jurisdictions.

- Enable Zone Number Verification

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12. Select **Finish**

Click Finish to save the channel configuration and end the Aries Communications Channel Setup Wizard. If you want to review your settings, click Back.
Setup ASC/2M-1000 master controller

1. MM 1,0,6

2. Select Next Screen (F2) and Cursor Down Arrow

- COMM TYPE=DIRECT
- CONNECTS VIA=PORT 2
- SPEED (bps) = 9600
- DATA FORMAT = 7,E,1
3. Open door on ASC/2M and set Switch S1 to TERM

4. Plug a standard Straight thru DB9F RS232 cable from the Comtrol RTS 1 Port to the ASC/2M PORT 2 DB25M.

5. Plug a CAT 5 cable into the RJ45 of the Comtrol RTS Port 1 to the Ethernet switch.