

[Tech Note 949](#)

Managing Wonderware DAServers and Modem Connections

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Introduction

More and more customers are introducing various modems (data, radio, wire or wireless modems) in to their SCADA networks in the recent years due to the availability of new technology and the need to expand their control network coverage farther, to even more remote areas and to greater distances.

This *Tech Note* describes modem connections using DAServers and provides some guidelines on how to make the modem connection work.

IMPORTANT: This *Tech Note* should be used as a guideline and **at your own risk**. Modem connections using Wonderware DAServers are not supported.

Wonderware DAServers (DASABCIP, DASABTCP, DASMBTCP, DASGESRTP, DASS7, DASSiDirect) have not been tested to support modem communication. However, DAServer-to-modem communications can work in most cases.

Because most DAServers are not tested, Wonderware Support might not have sufficient information to determine the cause of a problem in this context. However, most of the time the DAServers will work perfectly with a wide range of modems.

Application Versions

- N/A

Details

For the details on how to configure any hardware modem, please refer to the manufacturer's recommendations.

As seen in Figure 1 (below), there are no modem objects available in Wonderware DAServers' Configuration Editor.

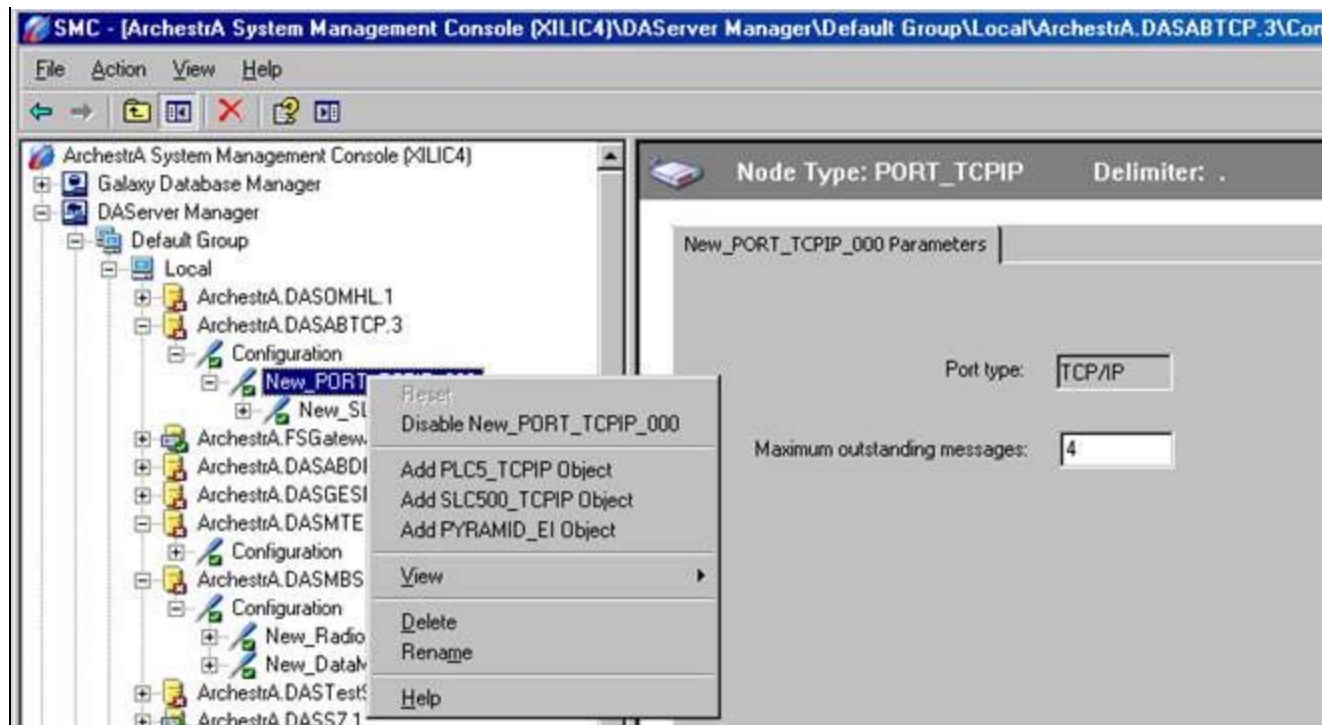


FIGURE 1: NO MODEM OBJECTS AVAILABLE FOR OTHER DASERVERS

Recommendations for DAServer Modem Connections

For DAServers (most commonly the TCP type of DAServers), the secret of success is making sure that the modem connection is "transparent" to the DAServer.

In general, the modem device is connected to the field/end devices. The configuration is done independently of the DAServer configuration using the modem manufacturer's recommended procedures.

Once the configuration is done, the modem becomes the "proxy" for the field device that the DAServer will be communicating with.

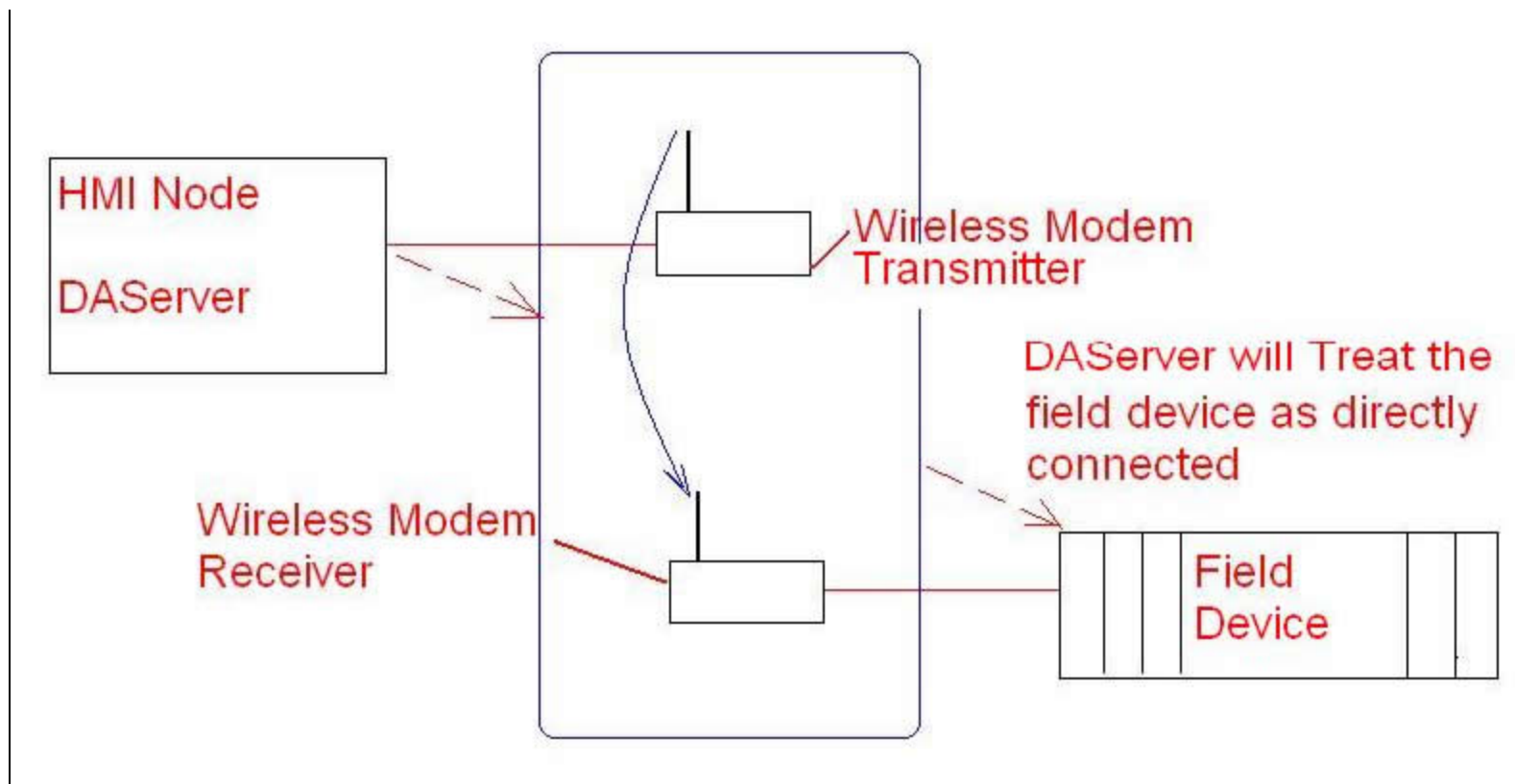


FIGURE 2: LOGICAL ARCHITECTURE FOR MODEM COMMUNICATION

So in most cases, good communication between the DAServer and the field device depends on successful modem device configuration.

Monitoring the Communication

Wonderware DAServers usually use the `sysstatus` tag as communication monitors. This is a built-in communication monitoring system tag that exists in all DAServers.

Some customers monitor the modem connection by setting up a heartbeat signal in the PLC, such as a toggle bit or a running clock register of some kind. Then you can use a graphic display, or write a simple logic in the client application (InTouch or IAS) to read and display the heartbeat signal. If that value does not change in a preset time range (10, 15, 30 seconds) you can trigger the communication failure alarm.

Common Remote Modem Connection Issues

Physical Distance

Most commonly, the modem connection covers great distances. The communication speeds in this setup are subject to the network conditions, load, interference, quality and availability of an intermediate station (such as a satellite or booster) and the field device(s).

In Wonderware's experience, in order to secure the quality of the communication, the update interval setting in the DASer configuration needs to be longer than the direct connection type configuration. The longest update interval that we have seen can go beyond minutes, where the wireless connection is made to field devices in rotations.

Network and Traffic

Physical network connections are very important to remote connection quality. When using modem connections, the more robust the network connection (cables, connectors, etc), the better communication quality you will receive.

Wonderware highly recommends that you separate the corporate network from the Control network by using separate NIC interface cards with different IP address segments. This will avoid heavy traffic from data flows in the control network.

Troubleshooting Tips

Ping

Pinging is a most common troubleshoot tool when you are not getting data updates from the modem and end devices. In the TCP network, you should ping both the modem and the end device successfully.

TCP Port

Depending on which DAServer and which protocol is in the subject of discussion, the TCP port number must be open to communicate in **both** directions (read and write).

Some intelligent modem devices come with a hardware or software firewall (switches and routers). You need to make sure the proper TCP port number(s) are opened in both directions.

The following list of port numbers are used by our major DAServers:

- DASABCIP: **44818**
- DASABTCP: **2222**
- DASMBTCP: **502**
- DASGESRTP: **18245**
- DASSiDirect: **102**

Send and Receive Flags

In many cases, by turning on the DAServer log viewer flags **DASsend**, **DASreceive**, and **DASverbose**, you can catch logviewer protocol communication information. You can then use the data for troubleshooting purposes.

In certain cases, Wonderware Technical support may ask for the send/receive information for analysis.

The log flags are found in the SMC/Logviewer/Action/Log Flags (Figure 4 below).

SMC - [ArchestrA System Management Console (XILIC4)\Log Viewer\Default Group\xilic4]

File Action View Help

Configure...
Log Flags...
Open Log File...
Connect
Messages
Refresh
Help

Start Time: 12/31/1900 11:59:59 PM End Time: 12/31/2100 11:59:59 PM

No:	Date	Time	Milliseconds	Process ID	Thread ID	Log Flag	Component
201031821	3/26/2013	12:11:34 AM	102	684	2928	Info	UNKNOWN
201031822	3/26/2013	12:11:34 AM	102	684	2928	DASProtWarn	DASS7
201031823	3/26/2013	12:12:04 AM	102	684	2928	Info	UNKNOWN
201031824	3/26/2013	12:12:04 AM	102	684	2928	Info	UNKNOWN
201031825	3/26/2013	12:12:04 AM	117	684	2928	Info	UNKNOWN
201031826	3/26/2013	12:12:04 AM	117	684	2928	Info	UNKNOWN
201031827	3/26/2013	12:12:04 AM	117	684	2928	DASProtWarn	DASS7
201031828	3/26/2013	12:12:34 AM	102	684	2928	Info	UNKNOWN
201031829	3/26/2013	12:12:34 AM	102	684	2928	Info	UNKNOWN
201031830	3/26/2013	12:12:34 AM	102	684	2928	Info	UNKNOWN
201031831	3/26/2013	12:12:34 AM	102	684	2928	Info	UNKNOWN
201031832	3/26/2013	12:12:34 AM	102	684	2928	DASProtWarn	DASS7
201031833	3/26/2013	12:13:04 AM	102	684	2928	Info	UNKNOWN
201031834	3/26/2013	12:13:04 AM	102	684	2928	Info	UNKNOWN
201031835	3/26/2013	12:13:04 AM	118	684	2928	Info	UNKNOWN
201031836	3/26/2013	12:13:04 AM	118	684	2928	Info	UNKNOWN
201031837	3/26/2013	12:13:04 AM	118	684	2928	DASProtWarn	DASS7
201031838	3/26/2013	12:13:34 AM	102	684	2928	Info	UNKNOWN
201031839	3/26/2013	12:13:34 AM	102	684	2928	Info	UNKNOWN
201031840	3/26/2013	12:13:34 AM	118	684	2928	Info	UNKNOWN
201031841	3/26/2013	12:13:34 AM	118	684	2928	Info	UNKNOWN
201031842	3/26/2013	12:13:34 AM	118	684	2928	DASProtWarn	DASS7
201031843	3/26/2013	12:14:04 AM	087	684	2928	Info	UNKNOWN
201031844	3/26/2013	12:14:04 AM	087	684	2928	Info	UNKNOWN
201031845	3/26/2013	12:14:04 AM	102	684	2928	Info	UNKNOWN
201031846	3/26/2013	12:14:04 AM	102	684	2928	Info	UNKNOWN
201031847	3/26/2013	12:14:04 AM	102	684	2928	DASProtWarn	DASS7
201031848	3/26/2013	12:14:34 AM	103	684	2928	Info	UNKNOWN
201031849	3/26/2013	12:14:34 AM	103	684	2928	Info	UNKNOWN
201031850	3/26/2013	12:14:34 AM	118	684	2928	Info	UNKNOWN
201031851	3/26/2013	12:14:34 AM	118	684	2928	Info	UNKNOWN
201031852	3/26/2013	12:14:34 AM	118	684	2928	DASProtWarn	DASS7
201031853	3/26/2013	12:15:04 AM	103	684	2928	Info	UNKNOWN
201031854	3/26/2013	12:15:04 AM	103	684	2928	Info	UNKNOWN
201031855	3/26/2013	12:15:04 AM	103	684	2928	Info	UNKNOWN
201031856	3/26/2013	12:15:04 AM	103	684	2928	Info	UNKNOWN
201031857	3/26/2013	12:15:04 AM	103	684	2928	DASProtWarn	DASS7
201031858	3/26/2013	12:15:34 AM	103	684	2928	Info	UNKNOWN
201031859	3/26/2013	12:15:34 AM	103	684	2928	Info	UNKNOWN

Configure Log Viewer and Logger

FIGURE 3: LOG FLAGS

1. From the left panel, select the DAServer of interest.
2. In the upper-right panel, find the **DASSend**, **DASReceive**, and **DASVerbose** flags and check them.
3. On the main menu click **File/Apply** to activate the flags.
4. Make sure you turn these flags off after few minutes, so the log viewer is not cluttered with excessive entries.

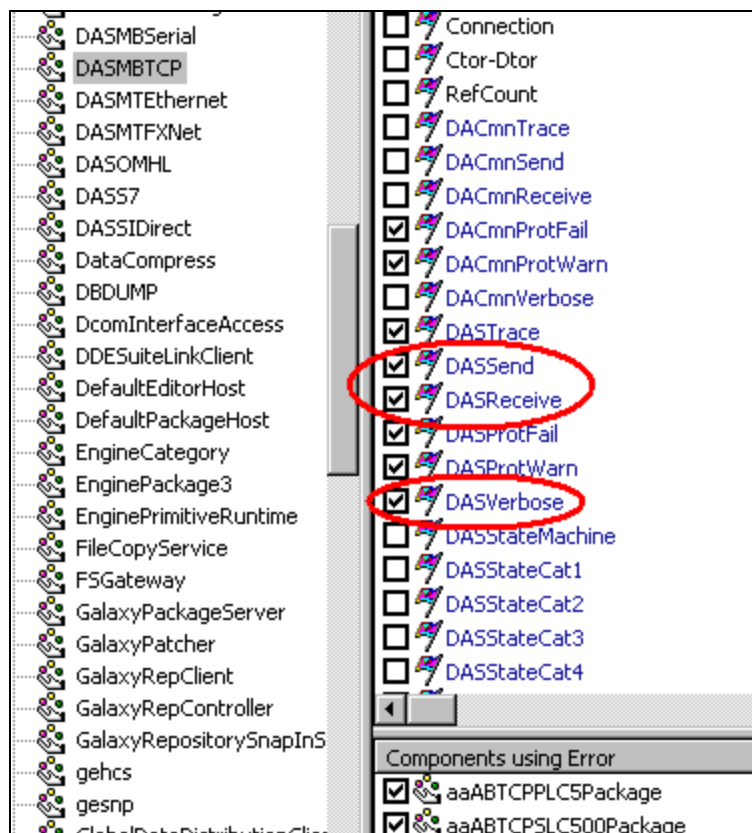


FIGURE 4: FLAG LOG ITEMS

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