Chipkin
Automation Systems

Driver Manual

(Supplement to the FieldServer Instruction Manual)

FS-8705-14
Driver for
XML HVAC Building Automation Schedules

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after May 1, 2001

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1. XML HVAC Building Automation Schedules Driver

The XML Schedule driver will use the HTTP protocol over TCP/IP to poll for XML Schedule data from a configurable URL. The data will be parsed according to fixed filter criteria and stored in Data Array locations that are configurable for each zone. This data may then be served or written to a remote device/system by using another FieldServer driver such as BACnet/IP.

The driver will be a client only. This means that it can poll for the XML data but will not be able to process unsolicited XML pages sent to the FieldServer.

Server functionality is provided only to support our ongoing quality assurance program by facilitating automated testing of the driver. It is not documented or supported. If required please contact the FST sales group to discuss your requirements.

The Driver will process an XML file looking for <Schedule> objects. It will identify the zone. For each zone the driver will compare the Start time against the FieldServer current time and find the <Schedule> object for that zone that is currently active or that will be active next. The start date and time will be extracted from the object and stored in FieldServer Data array configured for that zone. Each element of the date and time will be stored in a different data array location.

Since FieldServer allows any Data Array locations to be mapped onto another protocol it will be possible to serve or write this data to another device using another protocol such as Bacnet/IP.

For example – if this object

```
<Schedule>
  <Zone>MRC Zone 1</Zone>
  <Start>2008-10-07T11:30:00</Start>
  <End>2008-10-07T14:30:00</End>
</Schedule>
```

The driver allows for a remote device to periodically synch the time of the FieldServer.

Max Nodes Supported

FieldServer Mode	Nodes	Comments
Client	Many	The FieldServer will be able to poll multiple XML servers
Server	0	Not supported or documented.

2. Driver Scope of Supply

2.1. Supplied by FieldServer Technologies for this driver

FieldServer Technologies PART #	Description
-	No specific cables are shipped with this driver. A generic RJ45 Ethernet cable must be shipped with this driver.
-	A generic male and Female connector kit must be shipped with this driver.
FS-8705-14	Driver Manual.

2.2. Provided by the Supplier of 3rd Party Equipment

2.2.1. Required 3rd Party Hardware

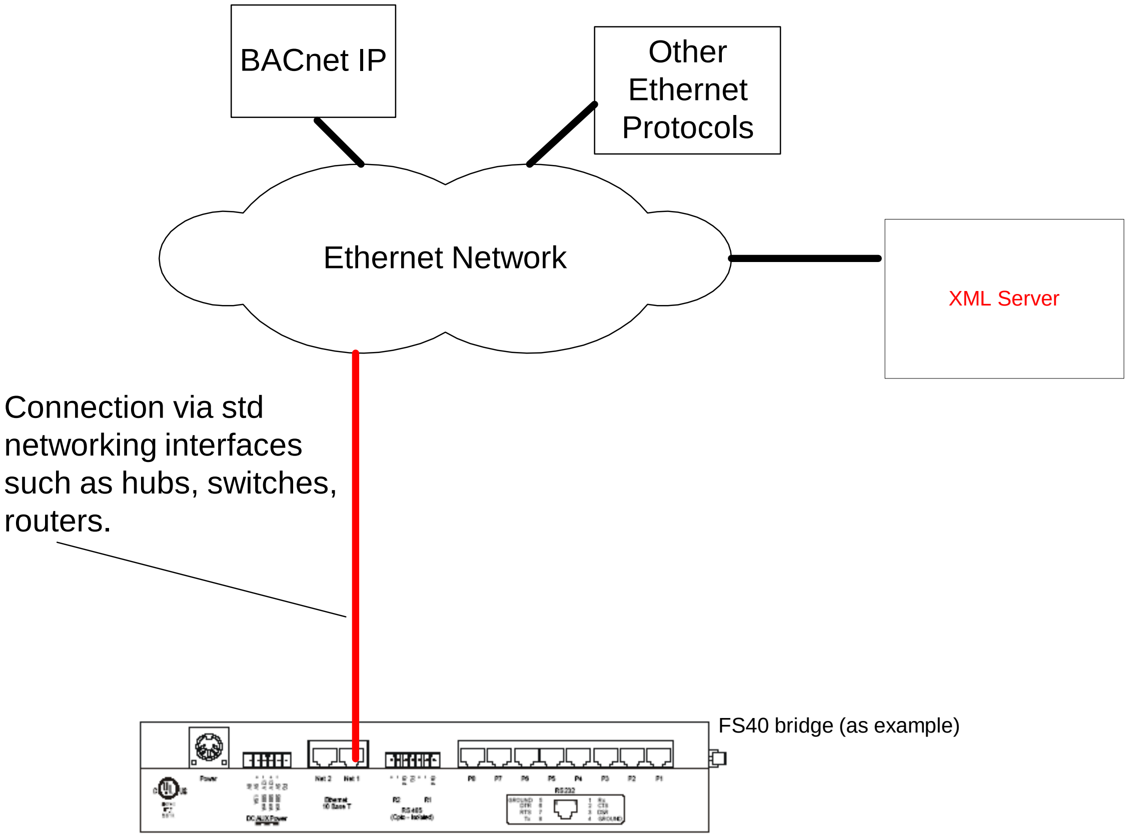
Part #	Description

2.2.2. Required 3rd Party Software

2.2.3. Required 3rd Party Configuration

None Known.

3. Hardware Connections



3.1. Hardware Connection Tips / Hints

None.

4. Configuring the FieldServer as XML Schedule Client

For a detailed discussion on FieldServer configuration, please refer to the FieldServer Configuration Manual. The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer (See ".csv" sample files provided with the FS).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with an XML Schedule Server

4.1. Data Arrays/Descriptors

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for FSC - Electronic Siren Controllers Serial Driver communications, the driver independent FieldServer buffers need to be declared in the "Data Arrays" section, the destination device addresses need to be declared in the "Client Side Nodes" section, and the data required from the servers needs to be mapped in the "Client Side Map Descriptors" section. Details on how to do this can be found below.

Note that in the tables, * indicates an optional parameter, with the bold legal value being the default.

Section Title
Data_Arrays

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Array_Format	Provide data format. Each Data Array can only take on one format.	Float, Bit, UInt16, Uint32, SInt16, Packed_Bit, Byte, Packed_Byte, Swapped_Byte
Data_Array_Length	Number of Data Objects. Must be larger than the data storage area required by the Map Descriptors for the data being placed in this array.	1-10,000

Example

```
//   Data Arrays
Data_Arrays
Data_Array_Name,          Data_Format,       Data_Array_Length,
DA_AI_01,                 UInt16,            200
DA_AO_01,                 UInt16,            200
DA_DI_01,                 Bit,               200
DA_DO_01,                 Bit,               200
```

4.2. Client Side Connection Descriptions

Create one connection for each XML Server. Each connection can only be used to connect to a single XML Server.

Section Title		
Adapters		
Column Title	**Function**	**Legal Values**
Adapter	Specify which port the device is connected to the FieldServer	N1,N2
Protocol	Specify protocol used	xml_schedule
Poll _Delay*	Time between internal polls	0-32000 seconds, **0.2 second**

Example

```
//        Client Side Connections

Adapters
Adapter,        Protocol,
N1,             xml_schedule,
```

4.3. Client Side Node Descriptors

Create one Node per connection only.

Section Title
Nodes

Column Title	Function	Legal Values
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Node_ID	Station address of physical server node This parameter is not used directly by the driver. We recommend that a unique Node ID's be given to each node.	1-258
Protocol	Specify protocol used	xml_schedule
Adapter	Specify which port the device is connected to the FieldServer	N1,N2
IP_Address	IP Address of the XML Server	Valid IP Address in the format 192.168.1.101
XS_PortNumber	Default is Port 80. Specify Port number for TCP Socket.	Positive Integer.
timeout	Default is two. Large pages from slow servers may require settings at large as 5.0seconds	

Example

```
Nodes
Node_Name,     Node_ID,    Protocol,          Adapter,    IP_Address
XMLServer1,    1,           xml_schedule,     N1,         72.29.75.91
```

4.4. Client Side Map Descriptors

4.4.1. FieldServer Related Map Descriptor Parameters

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	One of the Data Array names from "Data Array" section above
Data_Array_Offset	Starting location in Data Array	0 to maximum specified in "Data Array" section above
Function	Function of Client Map Descriptor. Alert ! These keywords have an additional meaning for the XML Schedule driver. RDBC tells the driver to read the XML file and store its contents internally. WRBC tells the driver to use the current time to select an active schedule for each zone and to copy that data to a Data Array named using the DA_Byte_Name parameter. Read Example 2 for more info.	RDBC, WRBC

4.4.2. Driver Related Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type This commonly used parameter is not used by this driver.	
Length	Length of Map Descriptor Reserves space in the Data Array. Set the value large enough to allow all the zone data to be stored.	1,2,3 …
Address	This commonly used FieldServer parameter is not used by this protocol.	
XS_Host	The "Host-Name" field in the HTTP get is set to this value. Some servers require it be specified. Some servers ignore the contents in which case any string will do.	Eg. chipkin.com
XS_URL	The URL of the page to be served. A HTTP GET will be sent requesting this URL. Some servers might require you to send a full path name including the http:// You may need to experiment.	Eg. "/script/hvac_schedules.xml" The double quotation mark is used in the configuration file.
XS_GetFromIniFile	If specified the XS_URL and XS_Host are ignored. The driver reads the contents of the ini file (once, on startup) and	Eg. get.ini

	uses the contents to send as the GET. The file is read in binary mode although generally the file contents are text. The binary read allows you to insert special control characters such as CR-LF's.	
DA_Byte_Name	This parameter is mandatory. When the driver determines a zone schedule is active, the schedule data is copied to location in the Data Array specified with this parameter.	One of the Data Array names from "Data Array" section above

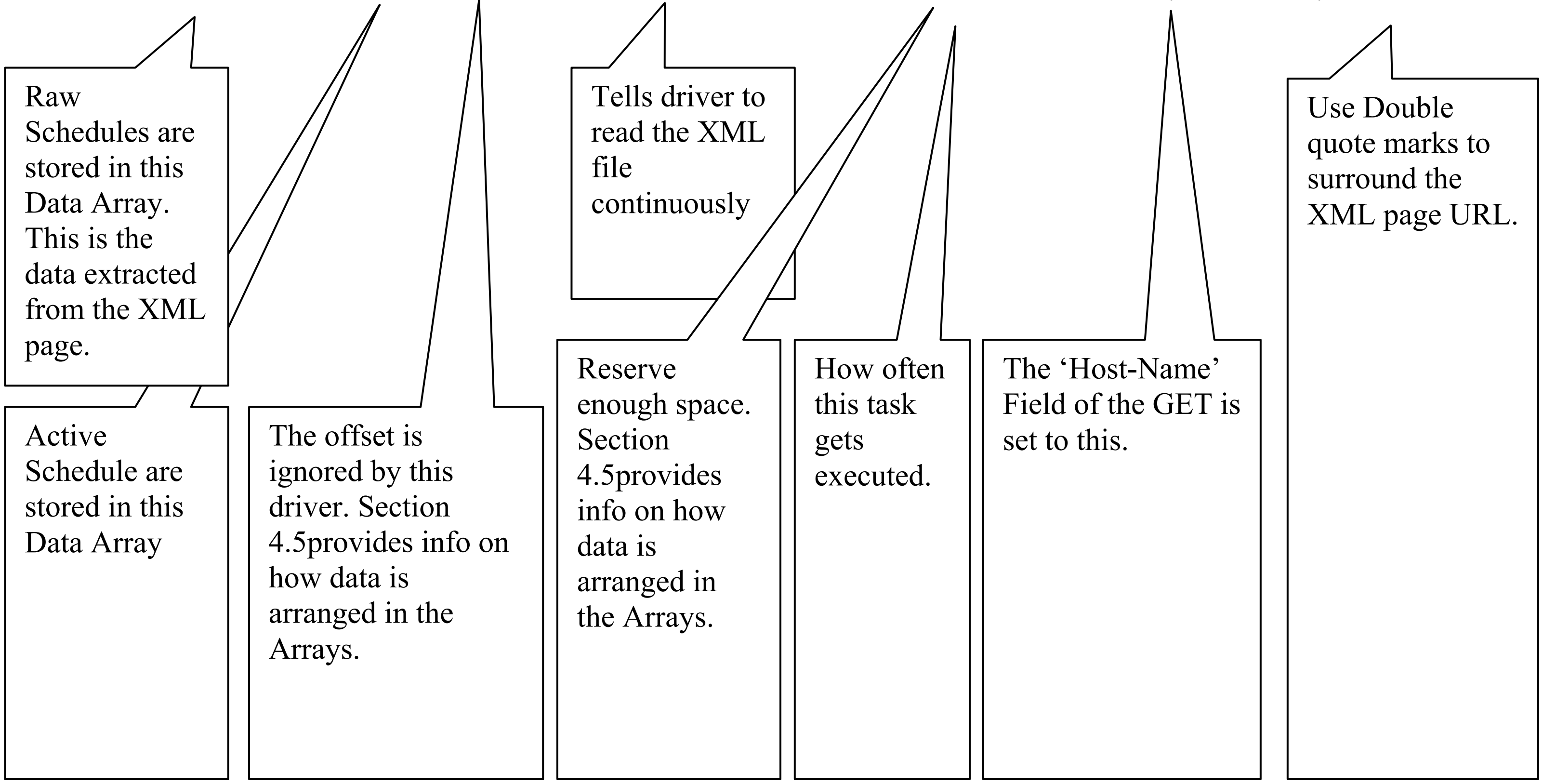
4.4.3. Timing Parameters

Column Title	Function	Legal Values
Scan_Interval	Rate at which data is polled	≥0.001s

4.4.4. Map Descriptor Example 1 – Get XML Schedule Page.

In this example the driver sends and HTTP GET to the IP Address specified in the definition of the Node Named 'XMLServer' every 10 seconds. The Get includes the following field – "Host-Name:chipkin.com" and the URL that is requested is `,"/script/hvac_schedules.xml".` The driver will use the Data Array DA_SCHED to store the schedule records extractedfrom the XML page. When active schedule selection is done then the active schedule records will be stored in the Array named DA_ZONES.

```
Map_Descriptors
Map_Descriptor_Name ,Data_Array_Name ,DA_Byte_Name ,Data_Array_Offset ,Function ,Node_Name ,Address ,Length ,Scan_Interval ,XS_Host     ,XS_URL                       ,
ReadSched           ,DA_ZONES        ,DA_SCHED     ,0                 ,rdbc     ,XMLserver ,1       ,100    ,10s           ,chipkin.com ,"/script/hvac_schedules.xml" ,
```



Raw Schedules are stored in this Data Array. This is the data extracted from the XML page.

Active Schedule are stored in this Data Array

The offset is ignored by this driver. Section 4.5provides info on how data is arranged in the Arrays.

Tells driver to read the XML file continuously

Reserve enough space. Section 4.5provides info on how data is arranged in the Arrays.

How often this task gets executed.

The 'Host-Name' Field of the GET is set to this.

Use Double quote marks to surround the XML page URL.

4.4.5. Map Descriptor Example 2 – Determine Active Schedules

This Map Descriptor causes the driver to execute the schedule selection task. The Data Arrays used by the task are specified on the Map Descriptor shown in example 1.

```
Map_Descriptors
Map_Descriptor_Name ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name ,Address ,Length ,Scan_Interval ,
EvaludateSched      ,DA_DUMMY        ,0                 ,wrbc     ,XMLserver ,1       ,100    ,2s
```

Ignored. See Example 1 for how Data Arrays are specified.

Tells the driver to execute the Schedule Selection Task.

Reserve enough space. Section 4.5provides info on how data is arranged in the Arrays.

Execute the task every 2 seconds.

This Configuration Fragment Illustrates a server BACnet-IP configuration to serve data from 4 zones numbered 1-4.

```
Map_Descriptors
Map_Descriptor_Name    ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name            ,Data_Type ,Object_ID ,Property      ,Units
MRC_Zone_1_StartYear   ,DA_ZONES        ,021               ,Server   ,FieldServer_Schedule ,AI        ,01001     ,Present_Value ,Years
MRC_Zone_1_StartMonth  ,DA_ZONES        ,022               ,Server   ,FieldServer_Schedule ,AI        ,01002     ,Present_Value ,Months
MRC_Zone_1_StartDay    ,DA_ZONES        ,023               ,Server   ,FieldServer_Schedule ,AI        ,01003     ,Present_Value ,Days
MRC_Zone_1_StartHour   ,DA_ZONES        ,024               ,Server   ,FieldServer_Schedule ,AI        ,01004     ,Present_Value ,Hours
MRC_Zone_1_StartMinute ,DA_ZONES        ,025               ,Server   ,FieldServer_Schedule ,AI        ,01005     ,Present_Value ,Minutes
MRC_Zone_1_StopYear    ,DA_ZONES        ,027               ,Server   ,FieldServer_Schedule ,AI        ,01007     ,Present_Value ,Years
MRC_Zone_1_StopMonth   ,DA_ZONES        ,028               ,Server   ,FieldServer_Schedule ,AI        ,01008     ,Present_Value ,Months
MRC_Zone_1_StopDay     ,DA_ZONES        ,029               ,Server   ,FieldServer_Schedule ,AI        ,01009     ,Present_Value ,Days
MRC_Zone_1_StopHour    ,DA_ZONES        ,030               ,Server   ,FieldServer_Schedule ,AI        ,01010     ,Present_Value ,Hours
MRC_Zone_1_StopMinute  ,DA_ZONES        ,031               ,Server   ,FieldServer_Schedule ,AI        ,01011     ,Present_Value ,Minutes
MRC_Zone_1_Status      ,DA_ZONES        ,033               ,Server   ,FieldServer_Schedule ,AI        ,01013     ,Present_Value ,None

Map_Descriptors
Map_Descriptor_Name    ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name            ,Data_Type ,Object_ID ,Property      ,Units
MRC_Zone_2_StartYear   ,DA_ZONES        ,041               ,Server   ,FieldServer_Schedule ,AI        ,02001     ,Present_Value ,Years
MRC_Zone_2_StartMonth  ,DA_ZONES        ,042               ,Server   ,FieldServer_Schedule ,AI        ,02002     ,Present_Value ,Months
MRC_Zone_2_StartDay    ,DA_ZONES        ,043               ,Server   ,FieldServer_Schedule ,AI        ,02003     ,Present_Value ,Days
MRC_Zone_2_StartHour   ,DA_ZONES        ,044               ,Server   ,FieldServer_Schedule ,AI        ,02004     ,Present_Value ,Hours
MRC_Zone_2_StartMinute ,DA_ZONES        ,045               ,Server   ,FieldServer_Schedule ,AI        ,02005     ,Present_Value ,Minutes
MRC_Zone_2_StopYear    ,DA_ZONES        ,047               ,Server   ,FieldServer_Schedule ,AI        ,02007     ,Present_Value ,Years
MRC_Zone_2_StopMonth   ,DA_ZONES        ,048               ,Server   ,FieldServer_Schedule ,AI        ,02008     ,Present_Value ,Months
MRC_Zone_2_StopDay     ,DA_ZONES        ,049               ,Server   ,FieldServer_Schedule ,AI        ,02009     ,Present_Value ,Days
MRC_Zone_2_StopHour    ,DA_ZONES        ,050               ,Server   ,FieldServer_Schedule ,AI        ,02010     ,Present_Value ,Hours
MRC_Zone_2_StopMinute  ,DA_ZONES        ,051               ,Server   ,FieldServer_Schedule ,AI        ,02011     ,Present_Value ,Minutes
MRC_Zone_2_Status      ,DA_ZONES        ,053               ,Server   ,FieldServer_Schedule ,AI        ,02013     ,Present_Value ,None

Map_Descriptors
Map_Descriptor_Name    ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name            ,Data_Type ,Object_ID ,Property      ,Units
MRC_Zone_3_StartYear   ,DA_ZONES        ,061               ,Server   ,FieldServer_Schedule ,AI        ,03001     ,Present_Value ,Years
MRC_Zone_3_StartMonth  ,DA_ZONES        ,062               ,Server   ,FieldServer_Schedule ,AI        ,03002     ,Present_Value ,Months
MRC_Zone_3_StartDay    ,DA_ZONES        ,063               ,Server   ,FieldServer_Schedule ,AI        ,03003     ,Present_Value ,Days
MRC_Zone_3_StartHour   ,DA_ZONES        ,064               ,Server   ,FieldServer_Schedule ,AI        ,03004     ,Present_Value ,Hours
MRC_Zone_3_StartMinute ,DA_ZONES        ,065               ,Server   ,FieldServer_Schedule ,AI        ,03005     ,Present_Value ,Minutes
MRC_Zone_3_StopYear    ,DA_ZONES        ,067               ,Server   ,FieldServer_Schedule ,AI        ,03007     ,Present_Value ,Years
MRC_Zone_3_StopMonth   ,DA_ZONES        ,068               ,Server   ,FieldServer_Schedule ,AI        ,03008     ,Present_Value ,Months
MRC_Zone_3_StopDay     ,DA_ZONES        ,069               ,Server   ,FieldServer_Schedule ,AI        ,03009     ,Present_Value ,Days
MRC_Zone_3_StopHour    ,DA_ZONES        ,070               ,Server   ,FieldServer_Schedule ,AI        ,03010     ,Present_Value ,Hours
MRC_Zone_3_StopMinute  ,DA_ZONES        ,071               ,Server   ,FieldServer_Schedule ,AI        ,03011     ,Present_Value ,Minutes
MRC_Zone_3_Status      ,DA_ZONES        ,073               ,Server   ,FieldServer_Schedule ,AI        ,03013     ,Present_Value ,None

Map_Descriptors
Map_Descriptor_Name    ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name            ,Data_Type ,Object_ID ,Property      ,Units
MRC_Zone_4_StartYear   ,DA_ZONES        ,081               ,Server   ,FieldServer_Schedule ,AI        ,04001     ,Present_Value ,Years
MRC_Zone_4_StartMonth  ,DA_ZONES        ,082               ,Server   ,FieldServer_Schedule ,AI        ,04002     ,Present_Value ,Months
MRC_Zone_4_StartDay    ,DA_ZONES        ,083               ,Server   ,FieldServer_Schedule ,AI        ,04003     ,Present_Value ,Days
MRC_Zone_4_StartHour   ,DA_ZONES        ,084               ,Server   ,FieldServer_Schedule ,AI        ,04004     ,Present_Value ,Hours
MRC_Zone_4_StartMinute ,DA_ZONES        ,085               ,Server   ,FieldServer_Schedule ,AI        ,04005     ,Present_Value ,Minutes
MRC_Zone_4_StopYear    ,DA_ZONES        ,087               ,Server   ,FieldServer_Schedule ,AI        ,04007     ,Present_Value ,Years
MRC_Zone_4_StopMonth   ,DA_ZONES        ,088               ,Server   ,FieldServer_Schedule ,AI        ,04008     ,Present_Value ,Months
MRC_Zone_4_StopDay     ,DA_ZONES        ,089               ,Server   ,FieldServer_Schedule ,AI        ,04009     ,Present_Value ,Days
MRC_Zone_4_StopHour    ,DA_ZONES        ,090               ,Server   ,FieldServer_Schedule ,AI        ,04010     ,Present_Value ,Hours
MRC_Zone_4_StopMinute  ,DA_ZONES        ,091               ,Server   ,FieldServer_Schedule ,AI        ,04011     ,Present_Value ,Minutes
MRC_Zone_4_Status      ,DA_ZONES        ,093               ,Server   ,FieldServer_Schedule ,AI        ,04013     ,Present_Value ,None
```

4.5. How Data is Stored.

Each time the XML Schedule is read the driver stored the schedule records internally.

The XML page is expected to contain records formatted as follows

```
<ArrayOfSchedule>
   <Schedule>
     <Zone>MRC Zone 1</Zone>
     <Start>2008-10-07T11:30:00</Start>
     <End>2008-10-07T14:30:00</End>
   </Schedule>
   <Schedule>
     <Zone>Zone C</Zone>
     <Start>2008-10-07T11:30:00</Start>
     <End>2008-10-07T14:30:00</End>
   </Schedule>
</ArrayOfSchedule>
```

Each record is defined as

```
   <Schedule>
     <Zone>Zone C</Zone>
     <Start>2008-10-07T11:30:00</Start>
     <End>2008-10-07T14:30:00</End>
   </Schedule>
```

The may be a maximum of 200 of these records.
Each record consists of a zone identified as a string. A Map file named xszones.ini maps the zone strings to a zone number specified as a positive integer. The zone number is important because it determines the base location for the storage of the active schedule for the zone.

A maximum of 50 zones is permitted.

The file xszones.ini is a text file with entries as illustrated in the example below. The first column is the zone number and the second column is the zone string which will be used for a match with the string extracted from the <Zone></Zone> object. The matching is case sensitive. When the driver loads this file it prints a number of lines on the Driver Message Screen. These messages help you verify the driver loaded the file correctly.

```
1,MRC Zone 1,
2,MRC Zone 2,
3,MRC Zone 3,
4,MRC Zone 4,
5,Zone 1 ED,
6,Zone 1 YAC,
7,Zone 12 WC,
8,Zone 13 WC,
9,Zone 14 WC,
10,Zone 15 WC,
```

The driver stored all the schedule records in the Data Array specified with the DA_Byte_Name parameter. 20 Data Array elements are reserved for each record.

Table 1: How Schedule Records are stored.

Base Offset = Record_Number * 20. Eg For record 2 the Start Year is stored at location 41.

Base Offset	Meaning	
0	Zone Number	
1	Start Year	
2	Start Month	
3	Start Day of Month	
4	Start Hour	
5	Start Minute	
6	Start Seconds	
7	Stop Year	
8	Stop Month	
9	Stop Day of Month	
10	Stop Hour	
11	Stop Minute	
12	Stop Seconds	

The driver stored all the active schedule data in the Data Array specified with the Data_Array_Name parameter. 20 Data Array elements are reserved for each record.

To select active schedules, the driver processes each of possible zone numbers. For each zone number the driver looks for the 1st schedule record that has already started. If none have started then the record that starts next is selected irrespective of the end time. It is possible that none get selected. The driver reports this by setting offset 13 in table 2 below. The time used to make the comparison is expected to be set by some remote device wirting the time as the number of seconds to a specified Data Array Location. Read the notes in section 4.6 to learn how to set the time.

Table 2: How Active Schedule Records are stored.

Base Offset = Zone_Number * 20. Eg For zone 2 the Start Year is stored at location 41.

Base Offset	Meaning	
0	Zone Number	
1	Start Year	
2	Start Month	
3	Start Day of Month	
4	Start Hour	
5	Start Minute	
6	Start Seconds	
7	Stop Year	
8	Stop Month	
9	Stop Day of Month	
10	Stop Hour	
11	Stop Minute	
12	Stop Seconds	
13	Status	0=Good (Except when all other fields are zero too.) 98=Don't use this data, There were no active schedules.
14	Record Number	The record number from the XML Page.

The driver exposes various operational statistics in a special Data Array. These should be monitored by the schedule using device. Read section 2.1.3 for more info.

4.6. How to Synch the Real Time used for Schedule Selection.

The driver uses two locations in the Data Array named "xmlsched_stats" to determine the current time for schedule selection purposes.

The driver adds the two values found at offset 1 and 2 together. The result is treated as the number of seconds since Jan 1 1970. An unsigned 32 bit integer is required to hold a number this large. Some protocols cant handle 32 bit integers. In these cases have the remote device write the number of seconds since Jan 1 2008 (for example) into the one offset and preload the other offset with the number of seconds between Jan 1 1970 and Jan 1 2008.

In this example the number of seconds between Jan 1 1970 and 2008 is preloaded into offset 1. The remote device must write the number of seconds since Jan 1 2008 into offset 2. The driver will Add the two together.

```
Preloads
Data_Array_Name ,Preload_Data_Index ,Preload_Data_Value
xmlsched_stats  ,1                  ,1223485200
```

Use google to search the term UTC Time converter to look for a web page that will allow you to calculate the number of seconds for a specific date.time.

The driver will print each schedule and its conversion to seconds if you activate a debug mode. Poke the value 1 or 2 into offset 16 of the Data Array "xmlsched_stats". When the driver sees a non-zero value here it prints each schedule record on the F-Screen (Driver Messages). The record is printed with its conversion to seconds. If the value you poke is 1 then the driver resets the value to zero after printing the messages once. For other values the driver keeps printing, each time it gets a new XML page.

5. Configuring the FieldServer as a FSC - Electronic Siren Controllers Serial Driver Server

This driver has a server side implemeted but it is used for FieldServer's Quality Assurance program and is not docuemnted or supported. If you are interested in using Sever Side features then please contact Chipkin Automation Systems.

Appendix 1. Advanced Topics

This section is blank.

Appendix 2. Troubleshooting tips

2.1.1. Connection Tips & Hints

This section is blank.

2.1.2. Driver Error Messages

Error Message We have shown place holders for the parts of the message which change. %s is a place holder for a text string. %d is a place holder for a number %c is a place holder for an alpha character.	**Explanation and corrective action**
XS:#01 FYI. Use an Array called <%s> to expose diagnostic info.	The driver exposes operation stats in a specially named Data Array. Read more in section 2.1.3
XS:#02 FYI Using sockets on Port=%d (Hex:%#04x)	The default socket port is 80 (decimal). This message is printed if the socket port is configured using the XS_PortNumber parameter. No corrective action is required.
XS:#03 Err. No Schedules in XML file	There were no <Schedule></Schedule> records in the XML page.
XS:#04 Err. No Schedule Terminator in XML file	One or more <Schedule></Schedule> records are malformed. This message is printed if a record begins but the closing tag (</Schedule>) cannot be found.
XS:#05 Err. No Zone or Start or Stop in XML file.	One or more <Schedule></Schedule> records are malformed. Browse to the page using Internet Explorer. Check the page is correctly formatted. If the error occurs rarely, then it is possible that it is the result of a page being corrupted while being served since each page can take many Ethernet packets to transport.
XS:#06 Err. Max Scheds on Page=%d	A maximum of 200 Schedules records per XML Page is permitted.
XS:#07 Err. Bad Stop Time in XML file.	One or more <Schedule></Schedule>

	records are malformed. Browse to the page using Internet Explorer. Check the page is correctly formatted. If the error occurs rarely, then it is possible that it is the result of a page being corrupted while being served since each page can take many Ethernet packets to transport.
XS:#08 Err. Bad Start Time in XML file.	One or more <Schedule></Schedule> records are malformed. Browse to the page using Internet Explorer. Check the page is correctly formatted. If the error occurs rarely, then it is possible that it is the result of a page being corrupted while being served since each page can take many Ethernet packets to transport.
XS:#09 Err. Zone=<%s> in XML file not recognized	The named zone (found in a <Schedule><Zone></Zone></Schedule>) Does not match a zone name in the lookup file name xszones.ini. Read section 4.5
XS:#10 Err. No Schedules Stored.	After processing the XML Page there were no valid Schedule records.
XS:#11 Err. Could not open <xszones.ini> to read Zone Names.	Read section 4.5 This file MUST be present on the FieldServer. After downloading the file restart the FieldServer.
XS:#12 FYI. Load Rec=%02d.Zone=%02d Name=<%s>	This line is printed for each line processed in xszones.ini. The message are printed so you can verify the file was correctly loaded.
XS:#13 Err. Max Zone Definitions=%d Exceeded	A maximum of 40 zones are permitted in the lookup file. After downloading the corrected file restart the FieldServer.
XS:#14 FYI. No zone definitions loaded from xssched.ini	Read section 4.5 After processing the file, the driver found

	no valid zone map records.
XS:#15 FYI. Loaded. %d Zone Definitions	This message reports, for your information, the number of zone map definitions that were loaded.
XS:#16 Err. Cant open file=%s	If the parameter 'XS_GetFromIniFile' is specified and the file specified cannot be opened then this message is printed. You may need to download the file to the FieldServer. Restart the FieldServer after a new download.
XS:#17 Err Timeout waiting for XML fragment	A socket was established but the complete page could not be read. This message may get printed if the requested page isn't present on the server. Contact the IT department of the group responsible for the XML Server for more help.. It may get printed if the server takes a long time to serve the complete page. You could lengthen the timeout by editing the config file. Download the modified file and restart the FieldServer to give effect to the changes.
XS:#18 Err. XML Page > Buffer size. Max=%d (%d %d)	The XML page may not exceed 32,000 characters in length. Contact the IT department of the group responsible for the XML Server for more help..
XS:#19 Err Timeout establishing connection.	A TCP/IP socket connection could not be established. This is often the case if the IP Address of the XML server is wrong or the port is wrong and/or the server/port cannot be reached because of routing or security issues. The simplest diagnostic step is the following. Connect your laptop to the same switch/hub/router as the FieldServer. Give you Laptop and IP that put it on the same subnet as the FielsServer. Open Internet Explorer and try and browse to the XML page. It should display as human readable text in Explorer.

	Contact the IT department of the group responsible for the XML Server for more help..

2.1.3. Exposing Driver Stats

The diver makes some of its operating statistics available in a Data Array where they can be read by an upstream device. The lines from the example below can be cut and pasted into a configuration file.

```
Data_Arrays,
Data_Array_Name,        Data_Format,        Data_Array_length,
xmlsched_stats,         UINT32,             1000,
```

Offset	Description
1	The value found in offset 1 and 2 are added together to determine the current number of seconds since Jan 1, 1970. Read section 4.6 for info on synching the time.
2	The value found in offset 1 and 2 are added together to determine the current number of seconds since Jan 1, 1970. Read section 4.6 for info on synching the time.
3	Increments by 1 each time the driver goes thru the schedules to see which are active. Increments when the function begins.
4	Increments by 1 each time the driver goes thru the schedules to see which are active. Increments when the function ends. An error might make the function exit before this increments.
5	When the driver used a schedule zone name from the xml page but cant find a match in the lookup table xssched.ini this stat increments by 1. Look at the number of increments per page get it will tell you how many are not recognized.
6	Each time an xml page is read the driver increments this stat by 1 as the parsing of the schedule data begins.
7	Each time an xml page is read the driver increments this stat by 1 as the parsing of the schedule data end. If there was an error during the parse the function might exit easily without incrementing this stat.
8	Each xml page may contain a limited number of <schedule> objects. This flag is set to 1 when the limit is reached and cleared when a page is analysed that is ok. We recommend that a remote device using the schedule data monitor this point.
9	Count of the number of <schedule> objects from the most recent XML page.
10	his is a copy of the value found at offset 1. It is copied each time an XML page is processed.

Offset	Description
11	This is the FieldServer time in secs since 1970 set each time an XML page is processed.
12	Not Used
13	Each time the driver receives an HTTP fragment this stat is incremented.
14	Each time the driver receives a complete XML file this stat is incremented.
15	Each time the driver tries to read the XML file but doesnt obtain a complete response then this stat is incremented.
16	Set to 1 to enable debug prints.

In this configuration fragment you can see that some of these operation stats have are being made available to a remote BACnet Front End / Client.

```
//==============================================================================
//
//    Server Side Connections
//
Adapters
Adapter ,Protocol  ,
N1      ,Bacnet_IP ,

//==============================================================================
//
//    Server Side Nodes
//
Nodes
Node_name           ,Node_ID  ,Protocol  ,
FieldServer_Schedule,50       ,Bacnet_IP ,


//==============================================================================
//
//    Server Side Map Descriptors
//

Map_Descriptors
Map_Descriptor_Name                ,Data_Array_Name     ,Data_Array_Offset ,Function ,Node_Name            ,Data_Type ,Object_ID ,Property      ,Units
FS_Status_TimeoutOnXMLGet          ,xmlsched_stats      ,15                ,Server   ,FieldServer_Schedule ,AV        ,00002     ,Present_Value ,None
FS_Status_TooManyScheds            ,xmlsched_stats      ,8                 ,Server   ,FieldServer_Schedule ,AV        ,00008     ,Present_Value ,None
FS_Status_SchedsEvaluated          ,xmlsched_stats      ,4                 ,Server   ,FieldServer_Schedule ,AV        ,00004     ,Present_Value ,None
FS_Status_BadZones                 ,xmlsched_stats      ,5                 ,Server   ,FieldServer_Schedule ,AV        ,00005     ,Present_Value ,None
FS_Status_TimeOfLastGet            ,xmlsched_stats      ,11                ,Server   ,FieldServer_Schedule ,AV        ,00011     ,Present_Value ,None
FS_Status_Bacnet_TimeAtLastGet     ,xmlsched_stats      ,10                ,Server   ,FieldServer_Schedule ,AV        ,00010     ,Present_Value ,None
FS_Status_XML_PageParsed           ,xmlsched_stats      ,7                 ,Server   ,FieldServer_Schedule ,AV        ,00007     ,Present_Value ,None
FS_Status_XML_HTTP_FragmentsRead   ,xmlsched_stats      ,13                ,Server   ,FieldServer_Schedule ,AV        ,00013     ,Present_Value ,None
FS_Status_XML_CompletePagesRead    ,xmlsched_stats      ,14                ,Server   ,FieldServer_Schedule ,AV        ,00014     ,Present_Value ,None
FS_Status_XML_GetFailedCount       ,xmlsched_stats      ,15                ,Server   ,FieldServer_Schedule ,AV        ,00015     ,Present_Value ,None
```

Appendix 3. Revision History

Date	Resp	Format	Driver Ver.	Doc. Rev.	Comment
24 Dec 2008	PMC		1.00a	0	Document Created