Using FieldServers with Fire Alarm Panels

Presented by:

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FieldServer Technologies

Presentation Highlights

Available Fire Alarm Control Panel interfaces
Working in the FACP industry
- •Agency regulations vs Technology
- •Accepted norms in the industry

FACP communication properties
- •Communication topology
- •Communication concept
- •Typical data available

Case Studies
- •Notifier
- •EST3
- •Simplex
- •Siemens Fire Safety

Question and Answer Session

FieldServer FACP Protocols

- Edwards
  - EST3
  - Quickstart
- FCI
  - 7100
  - 7200
- Fike Cheetah
- Gamewell
- National Time and Signal
- Notifier
  - Italia CEI_ABI
  - Italia AM6000
  - 200/300/400
  - 1010/2020
  - INA
  - NCA
  - NFS 640
  - NFS 3030
  - NIB-96
- Secutron
- Siemens Fire Safety
  - MXL
  - XLS
- Silent Knight
- Simplex
  - Grinnell TFX
  - 4100
  - 4100U
  - 4020
- Spectronics
- Vesda

Working in the FACP industry

The Golden Rule: Life safety comes first

Consequences of the Golden Rule:

Agency Listings

- Special certifications are often necessary. Some are compulsory
- Note: Using UL certified products does not equal having a UL certified system
- Fire Marshals Rule

Technology

- Things change in the FACP industry……..very slowly.
- Expect resistance to the idea of writing to a FACP over the network.

General FACP communications properties

Types of FACP interfaces

- FACP panels usually provide serial interfaces (RS-232 or RS-485), and are either ASCII based or hex based
- Hex based protocols are usually written for the purposes of communications to a master panel, and usually have a protocol specification documenting the protocol.
- ASCII based protocols are usually written for Printer or CRT output. They are often not backed up by specifications, and can sometimes be changed by reprogramming the panel, which is not a good thing.

General FACP communications properties

Communication topology

- FACP panels are either directly connected to the FieldServer via a serial interface, or they communicate to some “Master Panel” which then provides the data to the FieldServer.

General FACP communications properties

Typical Data available via the serial interface

The following are the most common Data Types transferred via the FieldServer:

- Alarms
- Troubles
- Supervisories
- System Data (Battery fail, etc)

Other Data Types available vary between Alarm panel vendors.

Alarm Panels typically have multiple circuits for the sensor devices, so expect an addressing format that follows a Panel/Circuit/Address format. Actual names used for these addresses vary.

General FACP communications properties

Polled Data vs Exception reporting

- The FieldServer gets data from the FACP in one of two ways. It either requests the FACP to send the sensor status to the FieldServer, or it receives an unsolicited update from the FACP when a Sensor status changes.

Polled Data

- Advantage: Because the FieldServer continually requests the current status of points, it is not possible for a database mismatch to exist between FACP, and FieldServer.
- Disadvantage: Polling all the status points takes time, so update is relatively slow

Exception Reporting

- Advantage: A change in status is sent through immediately
- Disadvantage: If the FieldServer does not receive the status change for some reason, that status is lost forever.

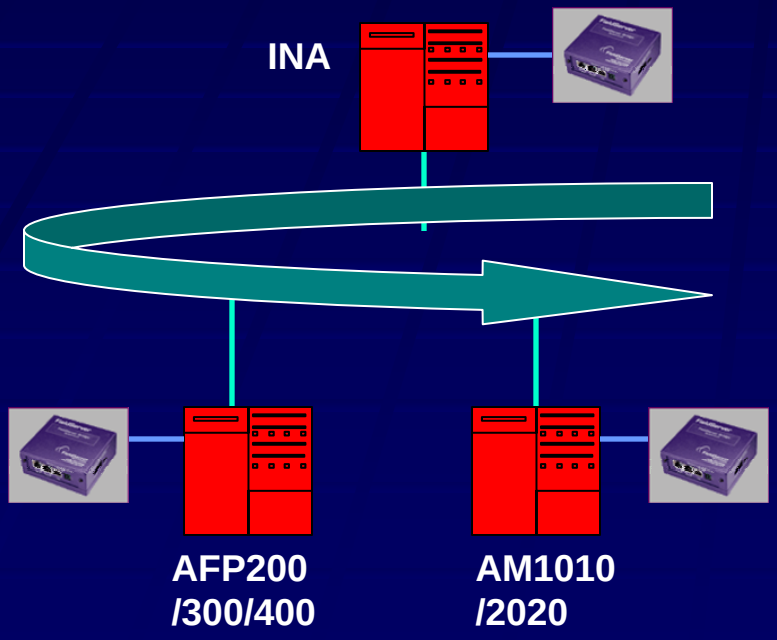
- A good protocol will implement a combination of polling and exception reporting. This way the database is synchronized in the background without compromising status reporting speed.

Case Study - Notifier

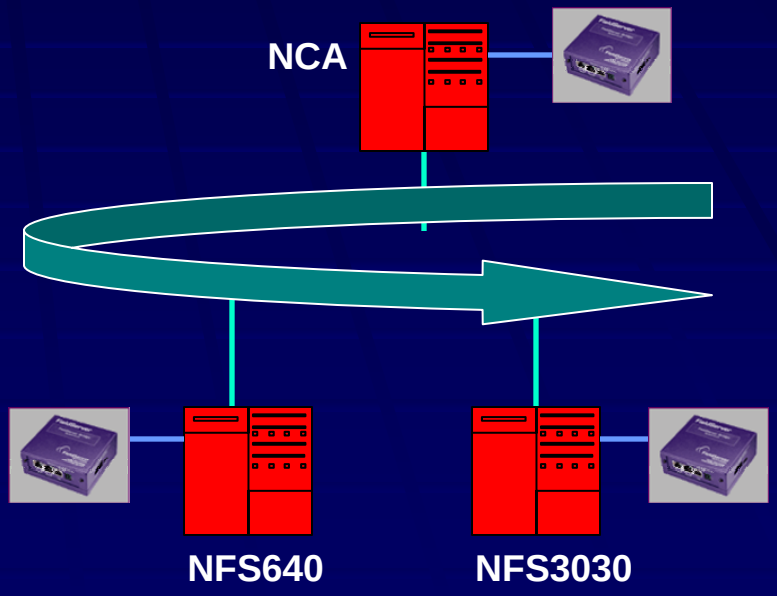
Notifier panels fall into two broad categories

- Legacy (AFP Series)
- Onyx (New Series

Legacy Network



Onyx Network



Case Study - Notifier

Steps to writing a Notifier configuration – NCA example

1) Obtain the needed points list
2) Obtain a diagram of the proposed network
3) Write the Notifier configuration on the client side of config.csv
4) Write the configuration for the “Host” (SCADA) protocol on the Server side of config.csv

Case Study - Notifier

Step1: Obtain the points list

1) Addressing System for NCA contains parameters: Node/Loop/Device
2) Typical points list for a panel (NFS3030 shown here):

Unit	Device Label	Node	Loop	Detector	Point
AP13	Building 1 Floor 1 Pullstation	13	01	02	N13L01D02
AP13	Building 1 Floor 2 Pullstation	13	01	03	N13L01D03

Case Study - Notifier

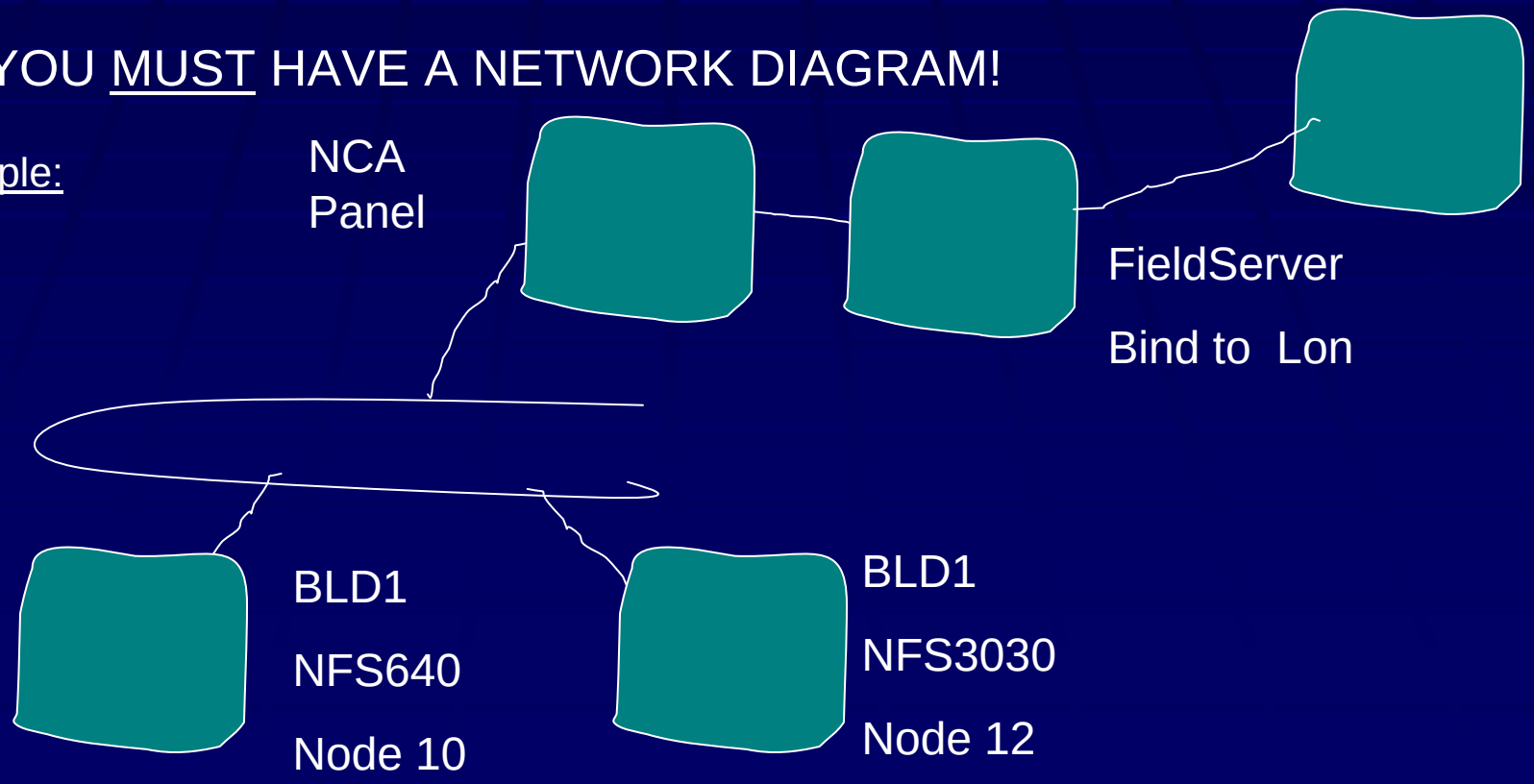
Step 2: Obtain the Network Diagram

1) This is not a skills competition, so a sketch will do, but….

LonWorks Scada system

YOU MUST HAVE A NETWORK DIAGRAM!

Example:



Case Study - Notifier

Step 3: Write the client side configuration

- With NCA, you have a map descriptor per loop being used. Each point in the loop is mapped according to a fixed table. See Manual for map. E.g:

Map_Descriptors								
Map_Descriptor_Name	Scan_Interval	Data_Array_Name	Data_Array_Offset	Function	Node_Name	Loop	Address	Length
CLIENT_01	0s	LOOP_01	0	Passive_Client	Panel_1	1	1	4000
CLIENT_02	0s	LOOP_02	0	Passive_Client	Panel_1	2	1	4000
CLIENT_03	0s	LOOP_03	0	Passive_Client	Panel_1	3	1	4000

Case Study - Notifier

Step 4: Write the Server side configuration.

- Move the Data needed to a protocol of your choice (Lon in this example):

Map_Descriptors							
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Lon_Function	Function	Node_Name	SNVT_Index	SNVT_Type
D1-09	LOOP_01	9	NVUOIMC	WRBC	Lon_Srv_1	0	SNVT_count
D1-10	LOOP_01	10	NVUOIMC	WRBC	Lon_Srv_1	1	SNVT_count
D1-11	LOOP_01	11	NVUOIMC	WRBC	Lon_Srv_1	2	SNVT_count
D1-12	LOOP_01	12	NVUOIMC	WRBC	Lon_Srv_1	3	SNVT_count
D1-13	LOOP_01	13	NVUOIMC	WRBC	Lon_Srv_1	4	SNVT_count
D1-14	LOOP_01	14	NVUOIMC	WRBC	Lon_Srv_1	5	SNVT_count

Case Study – EST3

Steps to writing an EST3 configuration

1) Obtain the needed points list
2) Obtain a diagram of the proposed network
3) Write the EST3 configuration on the client side of config.csv
4) Write the configuration for the “Host” (SCADA) protocol on the Server side of config.csv

Case Study – EST3

Step1: Obtain the points list

1) Addressing System for EST3 contains parameters: Panel/Card/Address
2) Typical points list for a panel :

01020211	FLR_P_WATERFLOW_211
01020214	FLR_P_WATERFLOW_214
01020217	FLR_G_WATERFLOW_217

01|02|0217 =
Panel|Card|Address
i.e.:Panel 1, card 2, address 0217

Case Study – EST3

Step 2: Obtain the Network Diagram

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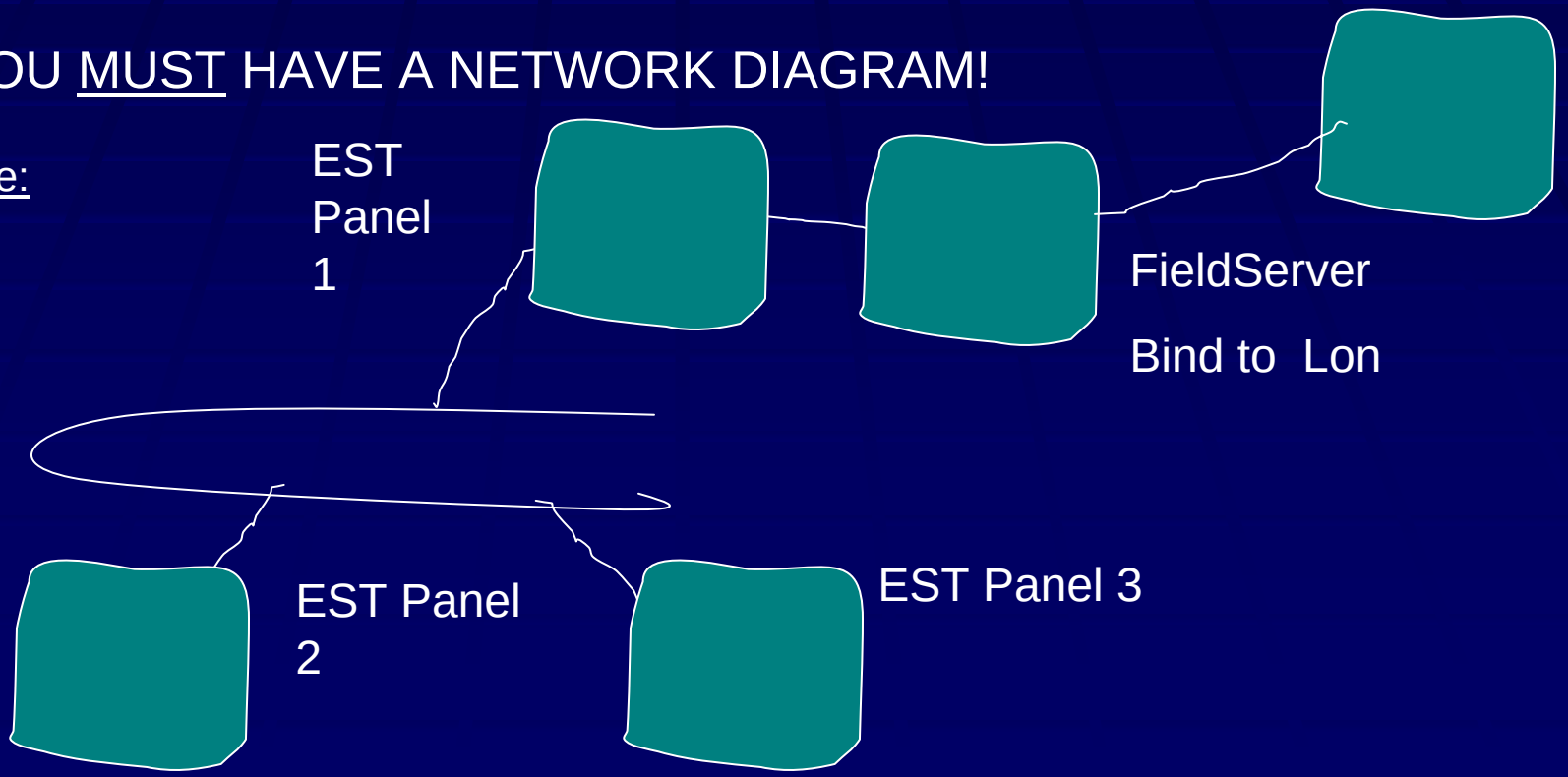
YOU MUST HAVE A NETWORK DIAGRAM!

Example:



Case Study – EST3

Step 3: Write the client side configuration

- With EST3, you need to be mindful of whether you are after Alarm, Trouble, Supervisory, etc as each is mapped to a different place. E.g:

Map_Descriptors											
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Function	node_name	EST_Panel	EST_Card	Address	Length	Scan_interval	EST_Alarm_DA	EST_Trouble_DA
CMD_01	DA_AI_01	0	rdbc	EST_1	0	27	1	34	5.0s	DA_ALM_1	DA_TRB_1
CMD_02	DA_AI_01	34	rdbc	EST_1	0	27	35	4	5.0s	DA_ALM_1	DA_TRB_1

Case Study – EST3

Step 4: Write the Server side configuration.

- Move the Data needed to a protocol of your choice (Lon in this example):

Map_Descriptors							
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Lon_Function	Function	Node_Name	SNVT_Index	SNVT_Type
Section_1_Sup	DA_AI_01	24	NVUOIMC	WRBC	Lon_Srv_1	0	SNVT_count
Section_2_Sup	DA_AI_01	40	NVUOIMC	WRBC	Lon_Srv_1	1	SNVT_count
Section_1_Alm	DA_ALM_1	1	NVUOIMC	WRBC	Lon_Srv_1	2	SNVT_count
Section_2_Alm	DA_ALM_1	2	NVUOIMC	WRBC	Lon_Srv_1	3	SNVT_count
Section_1_Trb	DA_TRB_1	1	NVUOIMC	WRBC	Lon_Srv_1	4	SNVT_count
Section_2_Trb	DA_TRB_1	2	NVUOIMC	WRBC	Lon_Srv_1	5	SNVT_count

Case Study – Siemens MXL

Steps to writing an MXL configuration

1) Obtain the needed points list
2) Obtain a diagram of the proposed network
3) Write the MXL configuration on the client side of config.csv
4) Write the configuration for the “Host” (SCADA) protocol on the Server side of config.csv

Case Study – Siemens MXL

Step1: Obtain the points list

1) Addressing System for MXL contains parameters: Panel/Loop (Network)/Address
2) Typical points list for a panel :

NODE	Loop #, Device #	Tag name	Description	State # 1 desc.	State # 0 desc.
3	LP5-14	TNLFGSDA055	SD AT TNL ENT#2 HI ALM	**Alarm**	Normal
3	LP5-14	TNLFGSDT055	SD AT TNL ENT#2 TRBL	**Alarm**	Normal

Case Study – Siemens MXL

Step 2: Obtain the Network Diagram

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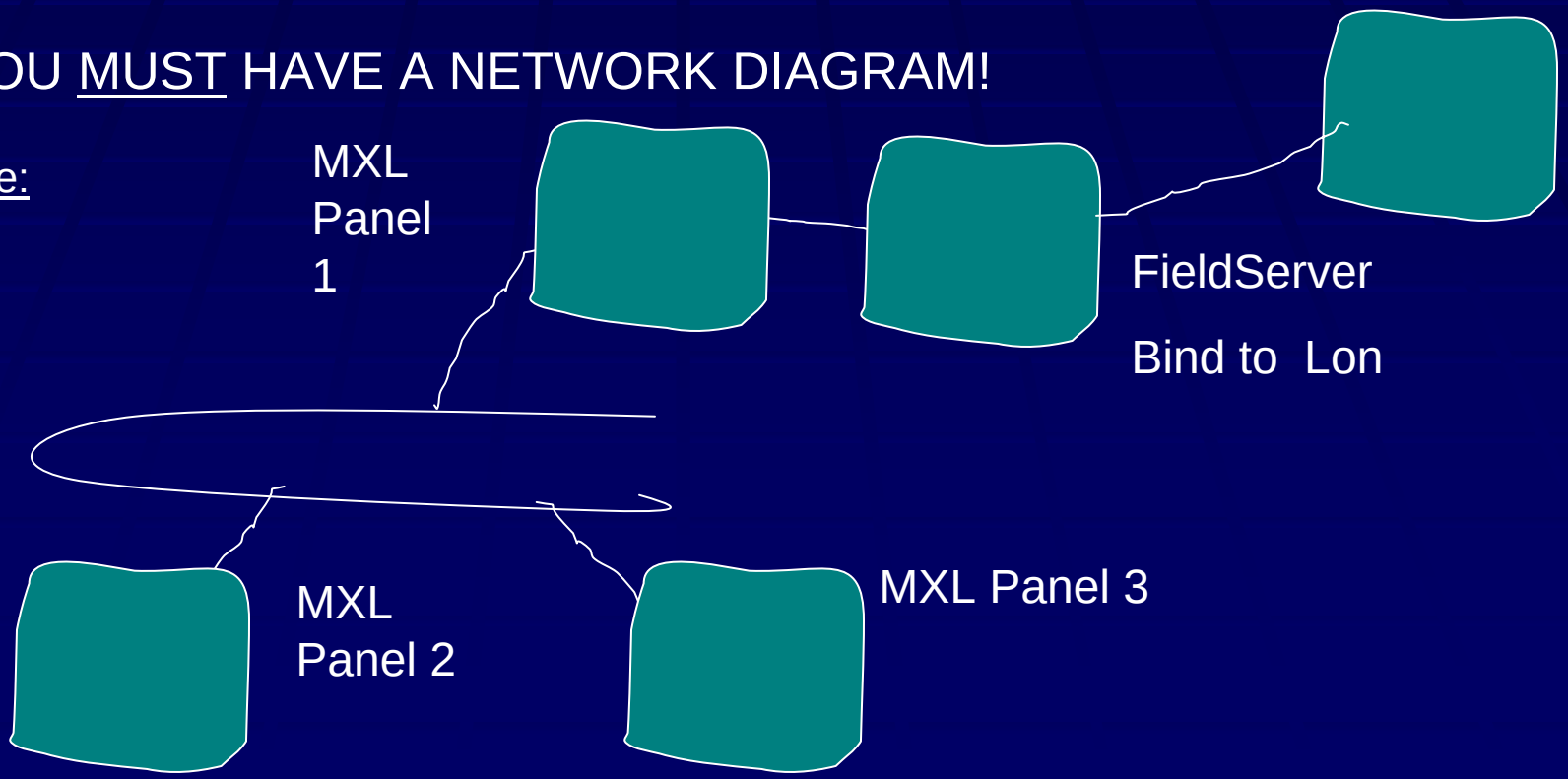
YOU MUST HAVE A NETWORK DIAGRAM!

Example:



Case Study – Siemens MXL

Step 3: Write the client side configuration

- MXL requires a map descriptor per Data Type, so it is important to know if you need Alarms/Troubles/ Supervisories etc. Remember: Saying you need everything leads to a high point count which translates to higher cost.
- MXL needs a poller map descriptor per connection.

Map_Descriptors								
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Function	Node_name	Address	Block_Number	Length	Msg_type
POLLER_3	Counts03	0	RDBC	Panel_3	0	1	112	Poller
PNL_3_Fire1	Fire03_5	0	Passive_Client	Panel_3	1	5	256	Fire
PNL_3_Trouble2	Trouble03_6	0	Passive_Client	Panel_3	3	6	256	Trouble

Case Study – Siemens MXL

Step 4: Write the Server side configuration.

- Move the Data needed to a protocol of your choice (Lon in this example):

Map_Descriptors							
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Lon_Function	Function	Node_Name	SNVT_Index	SNVT_Type
Loop5_Alm10	Fire03_5	10	NVUOIMC	WRBC	Lon_Srv_1	0	SNVT_count
Loop5_Alm11	Fire03_5	11	NVUOIMC	WRBC	Lon_Srv_1	1	SNVT_count
Loop5_Alm12	Fire03_5	12	NVUOIMC	WRBC	Lon_Srv_1	2	SNVT_count
Loop6_Trb10	Trouble03_6	10	NVUOIMC	WRBC	Lon_Srv_1	3	SNVT_count
Loop6_Trb11	Trouble03_6	11	NVUOIMC	WRBC	Lon_Srv_1	4	SNVT_count
Loop6_Trb12	Trouble03_6	12	NVUOIMC	WRBC	Lon_Srv_1	5	SNVT_count

Case Study – Simplex 4100

Steps to writing an MXL configuration

1) Obtain the needed points list
2) Obtain a diagram of the proposed network
3) Write the Simplex configuration on the client side of config.csv
4) Write the configuration for the “Host” (SCADA) protocol on the Server side of config.csv

Case Study – Simplex 4100

Step1: Obtain the points list

1) Addressing System for Simplex contains parameters: Card/Point/Sub-Point
2) Typical points list for a panel :

Address	Point type	Description
1-4-237	FIRE	ZONE 17A WESTBOUND ALARM
1-4-238	FIRE	ZONE 17B WESTBOUND ALARM
1-4-239	FIRE	ZONE 16A CENTER ALARM
1-4-240	FIRE	ZONE 16B CENTER ALARM
1-4-241	FIRE	ZONE 15A EASTBOUND ALARM
1-4-242	FIRE	ZONE 15B EASTBOUND ALARM

1-4-241
= Card 1, Point 4, Sub-point 241

Case Study – Simplex 4100

Step 2: Obtain the Network Diagram

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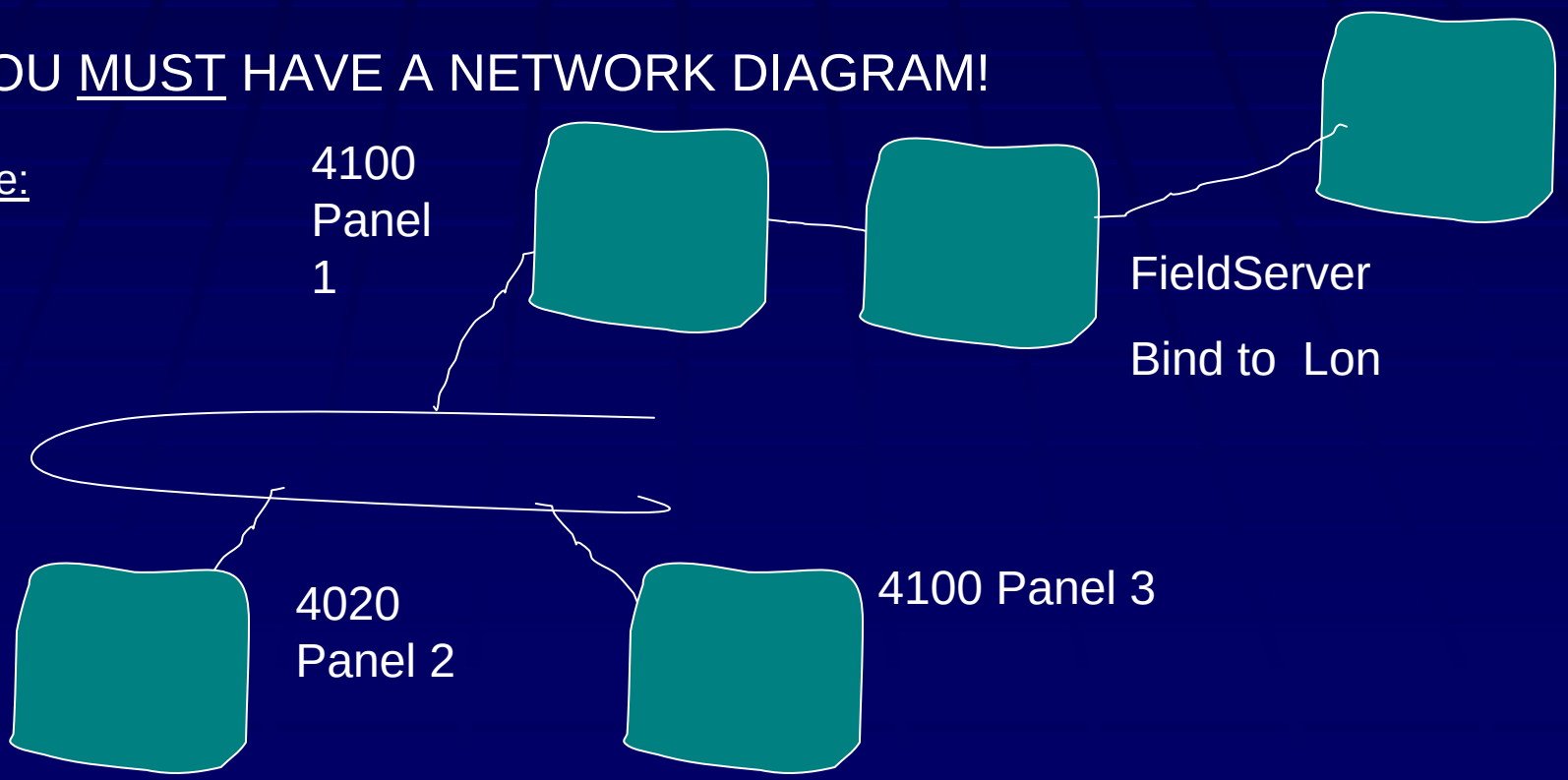
Example:



Case Study – Simplex 4100

Step 3: Write the client side configuration

- Simplex allows for both unsolicited (xpoint) and polled (clist) point aquisition.
- MXL needs a poller map descriptor per connection.

Map_Descriptors										
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Function	Node_Name	sim4100_func	sim4100_card	sim4100_point	sim4100_sub	protocol	length
CMD_AI_01	DA_C_001	0	Passive_Client	Simplex_01	xpoint	1	4	200	sim4100	1280
CMD_AI_02	DA_C_002	0	Passive_Client	Simplex_01	xpoint	129	0	1	sim4100	97

Case Study – Simplex 4100

Step 4: Write the Server side configuration.

- Move the Data needed to a protocol of your choice (Lon in this example):

Map_Descriptors							
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Lon_Function	Function	Node_Name	SNVT_Index	SNVT_Type
Z17a_West	DA_C_001	37	NVUOIMC	WRBC	Lon_Srv_1	0	SNVT_count
Z17b_West	DA_C_001	38	NVUOIMC	WRBC	Lon_Srv_1	1	SNVT_count
Z16a_Center	DA_C_001	39	NVUOIMC	WRBC	Lon_Srv_1	2	SNVT_count
Z16b_Center	DA_C_001	40	NVUOIMC	WRBC	Lon_Srv_1	3	SNVT_count
Z15a_East	DA_C_001	41	NVUOIMC	WRBC	Lon_Srv_1	4	SNVT_count
Z15b_East	DA_C_001	42	NVUOIMC	WRBC	Lon_Srv_1	5	SNVT_count

Resources

1) www.fieldserver.com
   - FieldServer Configuration manual
   - FieldServer Troubleshooting manual
   - FieldServer FACP driver manuals
   - Check Enotes for possible application information
   - Approved Systems Integrator listing for assistance in configuration and commissioning

Questions?

Email Mac at:

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THANK YOU!

…..for taking the time to attend this presentation.