Technical Note

Gathering Data from a Site Survey

This document will cover an Add on Instruction (AOI) for the Logix Designer software package from Rockwell Automation.

This AOI handles gathers the data from a site survey from a Banner Wireless radio system. The AOI formats the information in Results Green, Results Yellow, Results Red, and Results Retries. The Banner wireless system continues to handle IO while a site survey is operational.

The rest of the document describes how to use the AOI and what it actually does. This AOI should be used as a starting point for site survey. Adjust the AOI as necessary for your individual system.

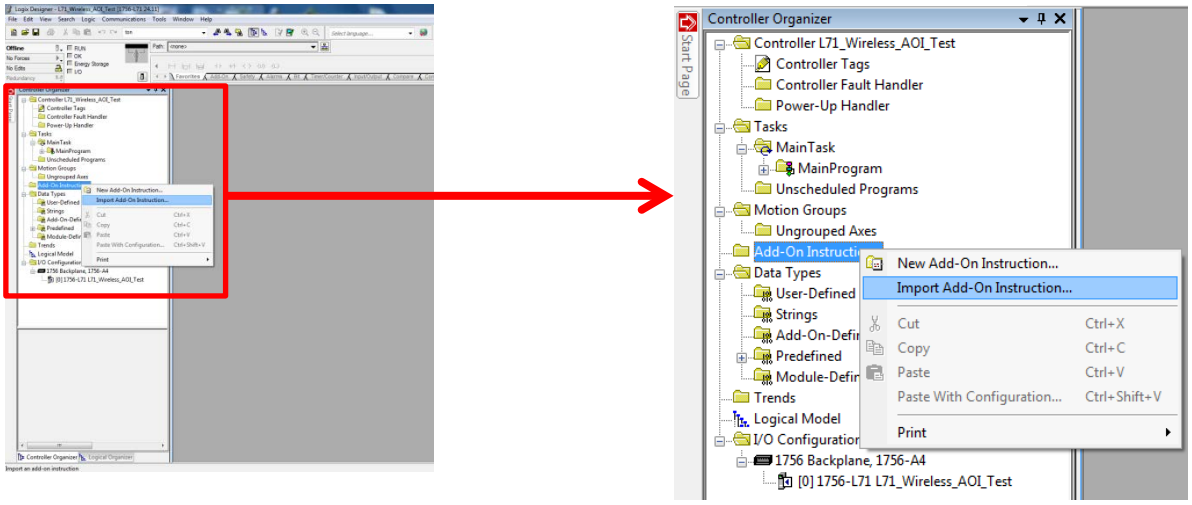
Components

Input AOI: Banner Wireless Site Survey

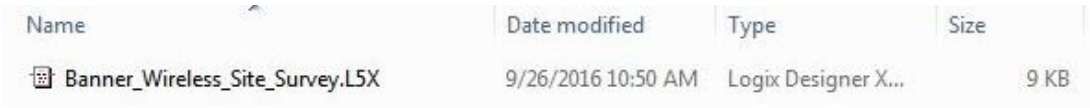
Installation Process

This section describes how to install the Input and Output AOIs into Logix Designer software.

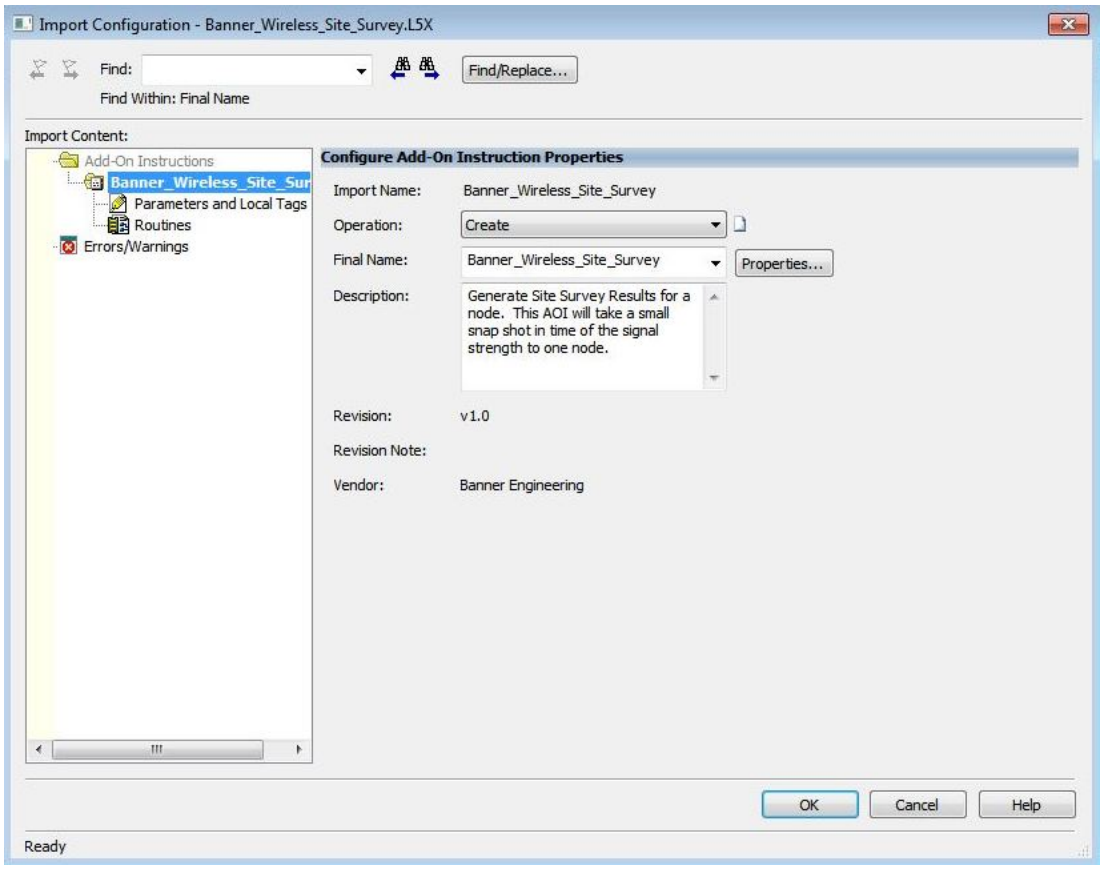
1. Open up a project.
2. Right click on the Add-On Instruction folder in the Controller Organizer window.
3. Select the Import Add-On Instruction option.



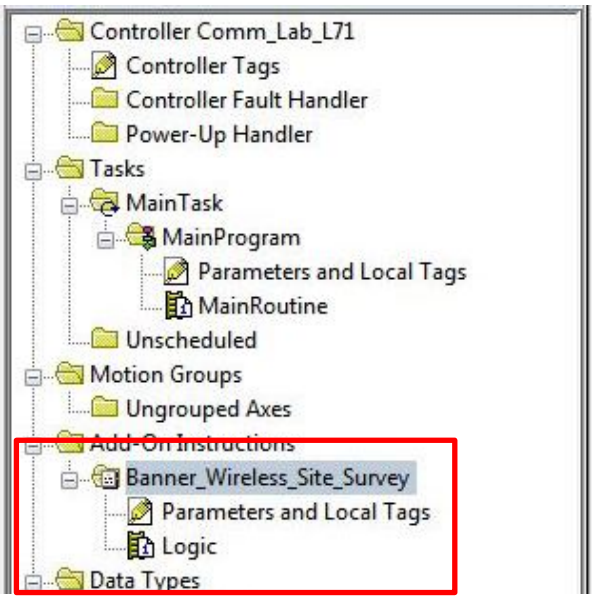
4. A standard windows selection box will appear.
5. Navigate to the correct file location. Two L5X files should be present. One is for the Input and the other is the Output AOI.
6. Select the Banner_Wireless_Site_Survey.L5X file, then click Ok. This is for the Input AOI.



7. The Import Configuration window pops up. The default selection creates the necessary items for the AOI.
8. Press the OK button to complete the import process.



9. The following items should appear in the associated areas.



Site Survey AOI – How to Use

The AOI is configured to do a site survey to a specified node.

1. Create an Ethernet connection to a Banner Wireless device. In this example I have a connection to a DX80 Gateway Pro unit. I labeled the connection DX80P in the PLC. If you look in the controller tags you should see an input and output data array associated to DX80P.

Activate_Site_Survey			BOOL		Read/Write		Decimal
DX80P:I			_000C:DX80P_6E...		Read/Write		
DX80P:O			_000C:DX80P_4F...		Read/Write		
Local:2:C			AB:1756_DO:C:0		Read/Write		
Local:2:I			AB:1756_DO:I:0		Read/Write		
Local:2:O			AB:1756_DO:O:0		Read/Write		
Local:3:C			AB:1756_DI_AC_...		Read/Write		
Local:3:I			AB:1756_DI_AC_...		Read/Write		
N1_Results_Green			DINT		Read/Write		Decimal
N1_Results_Red			DINT		Read/Write		Decimal
N1_Results_Retry			DINT		Read/Write		Decimal
N1_Results_Yellow			DINT		Read/Write		Decimal

2. Next add an AOI to your ladder logic program. Optionally create logic to control when the AOI should be activated. The variable Activate_Site_Survey needs to be turned on to activate the site survey AOI in this example. The AOI turns the variable off after the survey is complete. This structure can be adjusted as necessary by the programmer.

3. The AOI has nine links that need to be connected to controller tags.
   - Link Node to the Node number a Site Survey should be conducted for. In the above example Node 1 will have complete a site survey.
   - Link the Results_Green to the location that stores Node 1's Green signal strength information.
   - Link the Results_Yellow to the location that stores Node 1's Yellow signal strength information.
   - Link the Results_Red to the location that stores Node 1's Red signal strength information.
   - Link the Results_Retry to the location that stores Node 1's number of communication retries.
   - Link the Gateway_Control_Message to the EIP Output Assembly associated with the Gateway's Control Message Register (DX80P:O.Data[6]).
   - Link the Gateway_Input_Reserved to the EIP Input Assembly associated with the Gateway's Reserved Register (DX80P:I.Data[6]).
   - Link the Gateway_Input_Reserved to the EIP Input Assembly associated with the Gateway's Reserved Register (DX80P:I.Data[6]). Red and Retry totals are stored in this location.

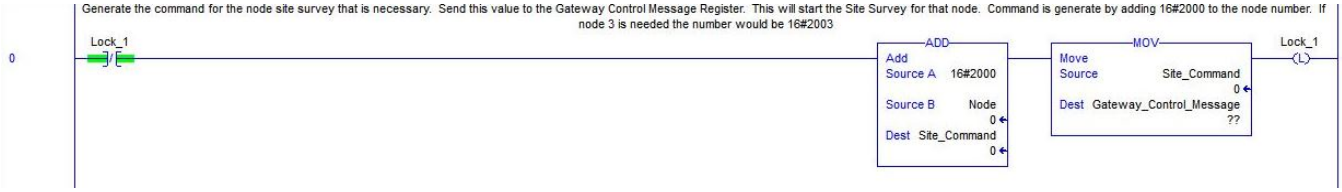
- Link the Gateway_Device_Message to the EIP Input Assembly associated with the Gateway's Device Message Register (DX80P:I.Data[7]). Green and Yellow totals are stored in this location.
- Link Complete with a variable used to control the operation of this AOI. The variable is turned off after the routine is completed.

4. Create one Site Survey AOI for each Node that requires a Site Survey. Only have one of these AOIs active at any time.

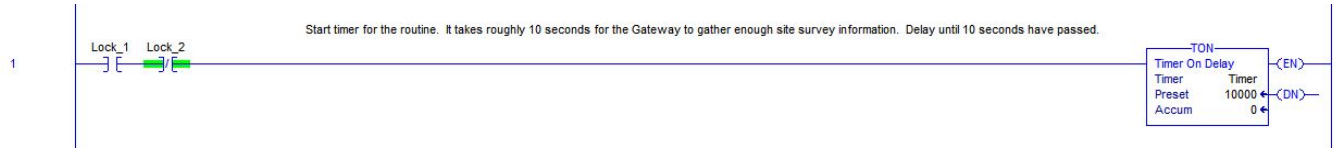
Appendix

This section will go over the AOI one rung at a time.

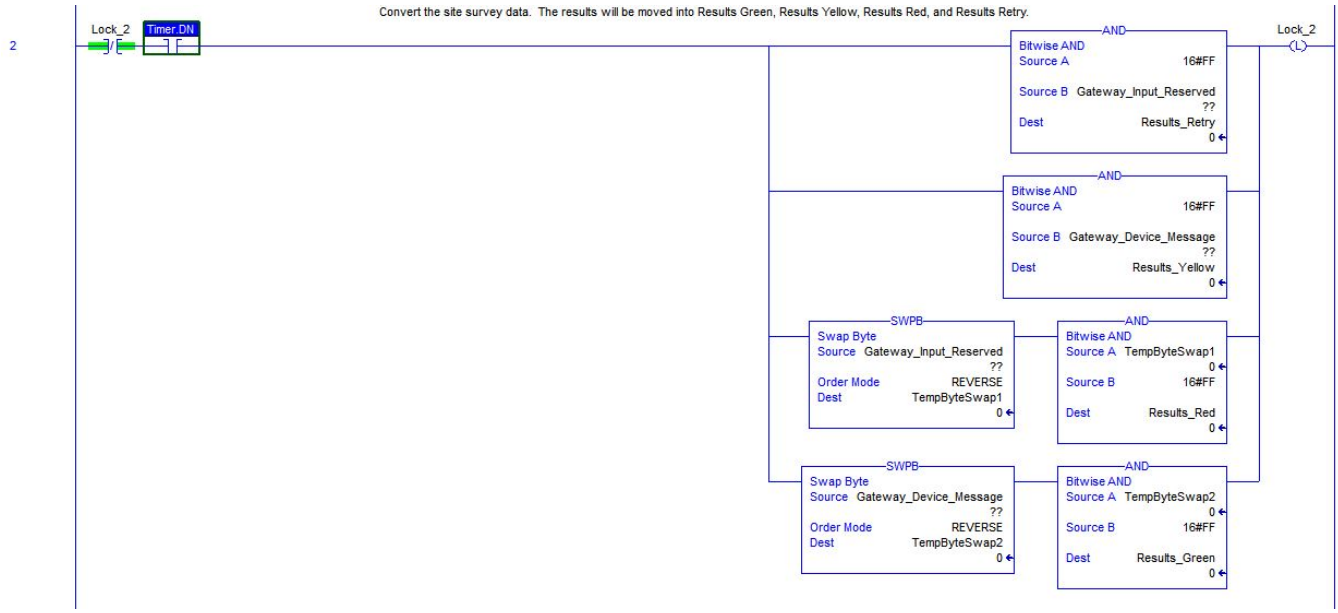
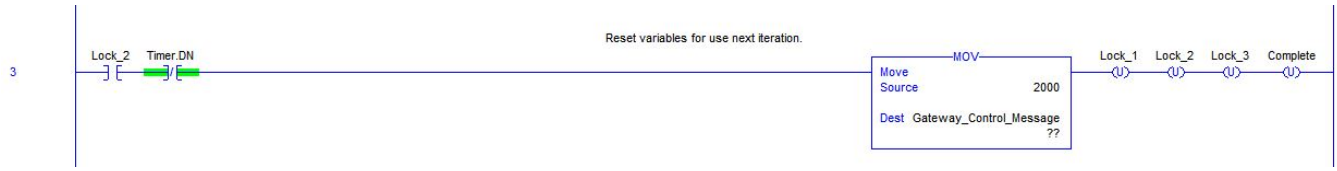
1. Rung 0 calculates the number needed to activate the site survey result for a particular node. This is moved into the Gateway's Control Message register. As soon as this happens the gateway will start doing a site survey to the requested node.



2. The next run starts a timer. This timer is used to delay the rest of the routine 10 seconds. It takes roughly 10 seconds to gather the data for a site survey.



3. This rung waits until 10 seconds have expired. Next all of the data is converted from the Gateway Reserved and Device Message registers. This information is than stored in the Results tags.



4. The last rung resets the variables used for the routine and turns off the completed tag. This is an optional tag to control when the routine is active.