

Private Server for WISE-4000 Series (.NET version)

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1. Introduction

1.1. About This Manual

This document describes the installation and usage of sample Private Server (.NET version) for Advantech WISE-4000 series IoT Wireless I/O Module products.

For WISE-4000 series, system log could be sent to a private log server instead of a public log server (for example: DropBox). A private log server is a web server which accepts a client's log via http or https protocol. These logs include Push Notification Logs(IO data and System Event, both in JSON format) and Upload files(IO data and System Event, both in csv format). In this document, we will describe the steps of building a simple Private Log Server by using Microsoft Visual Studio 2008.

1.2. Organization of This Manual

This user manual is divided into the following sections:

- Introduction
- Installations
- Configuration of Private Server
- Troubleshooting

Introduction

This section gives the user a basic idea of this manual.

Installations

This section provides instructions on how to compile and install Private Server.

Configuration of Private Server

This section gives the new user a walk-through in configuring private server.

Troubleshooting

This section provides instructions on how to troubleshooting for operation mistakes or errors.

2. Installations

Before running sample Private Server, you have to install Microsoft Visual Studio 2008 or above version on your PC. Please follow below steps to compile sample Private Server program.

- 1. Execute Microsoft Visual Studio 2008.
- On the menu bar, choose File → Open → Project/Solution and navigator to the folder where your Private Server program is located.
- 3. On the menu bar, choose Build → Build Solution.
- 4. Execute program by choose Debug→Start Debug.
- 5. You will see below figure.

rivate Server for Hand	ling POST Requests				
Time	Remote End Point	Scheme HTT	P Method Data Format	Client URL	
view incoming data					
where we have a state					

Note: If you have problem when executing program, please refer Chapter 4 for trouble shooting.

3. Configuration of Private Server

If you finish installing software described in Chapter 2, please proceed following steps to configure sample private server.

Several parameters of Private Server sample program could be modified, please open Form1.cs and refer to below table and figure:

Variable	Description
HTTP_Prefix	Listen Port of Private Server HTTP Web
	(default 8000).
HTTPS_Prefix	Listen Port of Private Server HTTPS Web
	(default 8080).
Url_File_UploadLog_Token	Private Server Web URL which receives
	WISE device's data file (csv format) upload.
Url_Json_IoLog_Token	Private Server Web URL which receives
	WISE device's push notification of IO data
	(JSON format).
Url_Json_SysLog_Token	Private Server Web URL which receives
	WISE device's push notification of System
	event (JSON format).

namespace WISE_PrivateServer

```
public partial class Form1 : Form
{
    internal const string HTTP_Prefix = "http://*:8000/"; //Waiting for HTTP request on port 8000
    internal const string HTTPS_Prefix = "https://*:8080/"; //Waiting for HTTPS request on port 8080
    internal const string Url_File_UploadLog_Token = @"upload_log";
    internal const string Url_Json_IoLog_Token = @"io_log";
    internal const string Url_Json_SysLog_Token = @"sys_log";
```

If your configuration on WISE device is correct, you will see below figure which shows logs are received correctly.

	Time	Remote End Point	Scheme	HTTP Method	Data Format	Client URL
	2015/11/29 22:33:	192.168.100.135:57	http	POST	CSV File	http://192.168.100.28:8000/upload_log/WISE-4012
	2015/11/29 22:33:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
	2015/11/29 22:33:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
	2015/11/29 22:33:	192.168.100.135:49	http	POST	CSV File	http://192.168.100.28:8000/upload_log/WISE-4012
	2015/11/29 22:33:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
	2015/11/29 22:33:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
	2015/11/29 22:33:	192.168.100.135:57	http	POST	CSV File	http://192.168.100.28:8000/upload_log/WISE-4012
	2015/11/29 22:32:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
	2015/11/29 22:32:	192.168.100.135:57	http	POST	CSV File	http://192.168.100.28:8000/upload_log/WISE-4012
	2015/11/29 22:32:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28.8000/lo_log
	2015/11/29 22:32:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
	2015/11/29 22:32:	192.168.100.135:54	http	POST	CSV File	http://192.168.100.28:8000/upload_log/WISE-4012
	2015/11/29 22:32:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
	2015/11/29 22:32:	192.168.100.135:64	http	POST	JSON String	http://192.168.100.28:8000/io_log
		1			1.	1
vie	ew incoming data					
g" 14 27	"TIM", "DO_O", "DO_1"," AL_1 SVaI", "AL_1 PEg."," "AL_2 LVaI", "AL_2 LEg.", AL_4 Eg.", "AL_4 SVaI", "A 448865166, 00,32767, 67, -153, 0, 0, 48865168, 00,32767, 67, -153, 0, 0, 67, -153, 0, 0, 0,	AI_0 Val", "AI_0 Eg", "AI AI_1 HVal", "AI_1 HEg", "AI_2 Evt", "AI_3 Val", "/ I_4 PEg", "AI_4 HVal", ", -153, 0, 0,3275 32775, 2288,32763, , -10000000 -153, 0, 0,3275 32775, 2288,32763,	_0 SVal","// "AI_1 LVal" AI_3 Eg","/ AI_4 HEg", 07, 9000 -1374, -1374, -1374,	AI_0 PEg","AI_0 H ","AI_1 LEg","AI_3 I 3 SVal","AI_3 P "AI_4 LVal","AI_4 2,32765, -763, 0,32767, 2,32765, -763, 0,32767,	IVal", "AI_0 HEg", I Evt", "AI_2 Val"," Eg", "AI_3 HVal"," LEg" 0,32767, -153, 0, 0, 0,32767, -153, 0, 0,	"AI_0 LVal", "AI_0 LEg", "AI_0 Evt", "AI_1 Val", "AI_1 "AI_2 Eg", "AI_2 SVal", "AI_2 PEg", "AI_2 HVal", "AI_2 "AI_3 HEg", "AI_3 LVal", "AI_3 LEg", "AI_3 Evt", "AI_4 -153, 0, 0.32780, 3814,32765, -763, 32773, 1678,32765, -763, 0.32767, -15 -153, 0, 0.32780, 3814,32765, -763, 32773, 1678,32765, -763, 0.32767, -15

The Push notification log will be saved in the path where sample program is located.

Following figure shows Push notification files received by Private Server.

🖉 🗢 📕 « WISE-401.	2_00D0C9CC0099 + singal_log + 20151130	▼ \$ 3	Search 20151130		
Organize 🔻 🛛 Include in	library 🔹 Share with 🔹 New folder				(
🚖 Favorites –	Name	Date modified	Туре	Size	
🧮 Desktop	20151130143249.csv	11/29/2015 10:32	CSV File	2 k	B
\rm Downloads	20151130143255.csv	11/29/2015 10:32	CSV File	2 k	В
💹 Recent Places	20151130143300.csv	11/29/2015 10:33	CSV File	1 8	В
	20151130143304.csv	11/29/2015 10:33	CSV File	2 k	В
🗃 Libraries	20151130143310.csv	11/29/2015 10:33	CSV File	21	В
Documents =	20151130143314.csv	11/29/2015 10:33	CSV File	1 1	В
J Music	20151130143319.csv	11/29/2015 10:33	CSV File	2 8	В
E Pictures	20151130143324.csv	11/29/2015 10:33	CSV File	2 1	B
Videos	20151130143329.csv	11/29/2015 10:33	CSV File	1 1	В
	20151130143334.csv	11/29/2015 10:33	CSV File	2 1	В
🖳 Computer	20151130143339.csv	11/29/2015 10:33	CSV File	2 k	В
🚢 APAX-5580 (C:)	20151130143344.csv	11/29/2015 10:33	CSV File	1 k	В
O CD Drive (D:) Wo	20151130143350.csv	11/29/2015 10:33	CSV File	21	В
	20151130143354.csv	11/29/2015 10:33	CSV File	2 1	В
Motwork T	D 101 511 201 / 2400	11 /00 /001 5 10.07	course.	4 6	'n

Please make sure you have performed the corresponding Private Server configuration in WISE device. Please refer to the following figure:

WISE-4012					🛔 Root 🗸
Information					
F Configuration	🗲 Configu	ration			
Lint I/O Status	Information Wirele	ess Network App Time & Date	SNTP Modbus	Control General	Cloud
🗱 Advanced 👻	Firmware Accoun	it			
	Cloud Config	uration			
	Select S	Service Private Server •			
	Private Server Se	atting			
	Server IP	192.168.1.2	Server Port	80	
	Data File Upload URL	/upload_log			
	IO Data Push URL	/io_log	System Event Push URL	/sys_log	
	SSL secure	Disable Enable			
	Authentication				
	Туре	Basic Authorization			T
	User Name	root	Password	00000000	
					✓ Submit

Note: If you want to execute Private Server with HTTPS enabled, please refer to Configure a port with an SSL certificate document which is located in "WISE-PrivateServer\SSL Cert" folder.

4. Troubleshooting

4.1. Private Server Start-up error

You may see below error message box when start-up private server:

🖳 WISE-Private Server				X
Private Server for Handling P	OST Requests			
Time	Remote End Point	Scheme HTTP Method	Data Format	Client URL
Review incoming data	Error: TCP port listen faile to run this program System.Net.HttpList being used by anot at System.Net.Htt at System.Net.Htt at WISE_PrivateSet	ed. Please make sure port i tenerException: The proces her process plistener.AddAll() plistener.AddAll() rver.Form1.StartListen()	s not used and/o	or use Administrator the file because it is

Due to different settings of each computer, there are several possibilities that cause this error. Please check following methods:

 Method1: The listen port of Private Server may be used by other program on your computer. Please close any program that uses port 8000/8080 or choose another port number (e.g. 8080) for your own program.

- Method2: Use administrator privilege to open Microsoft Visual Studio 2008 and execute Private Server sample program. This could be achieved by clicking mouse right button and choose "Run as administrator".
- Method3: The listen port of Private Server may be blocked by Windows Firewall.
 Please choose one of following methods to un-block Windows Firewall.
 - Method 1: Disable Windows Firewall:

In Windows Startup Menu, choose 「Control Panel」→ 「System and Security」 → 「Windows Firewall」. Select "Turn Windows Firewall on or off" in left menu and choose "Turn off Windows Firewall" in Home or work network location settings and Public network location settings.

♥ ♥ Windows Firewall ► Customize Settings ▼ + Search Control Panel	
Customize settings for each type of network You can modify the firewall settings for each type of network location that you use. What are network locations? Home or work (private) network location settings	
 Turn on Windows Firewall Block all incoming connections, including those in the list of allowed programs Notify me when Windows Firewall blocks a new program Turn off Windows Firewall (not recommended) 	
Public network location settings	
 Turn on Windows Firewall Block all incoming connections, including those in the list of allowed programs Notify me when Windows Firewall blocks a new program 	
Turn off Windows Firewall (not recommended)	
OK Cancel	

Method 2: Add Windows Firewall Rule:

 In Windows Startup Menu, choose 「Control Panel」 → 「System and Security」 → 「Windows Firewall」. Select "Advanced settings" in left menu and you will see below figure:



2. Please choose Inbound Rules and click "New Rule" in right menu.

ile <u>Action V</u> iew <u>H</u> elp			
Windows Firewall with Advance	Inbound Rules		Actions
Inbound Rules	Name	Group	Inbound Rules
Connection Security Rules	 BITS Peercaching (Content-In) BITS Peercaching (RPC) BITS Peercaching (RPC-EPMAP) BITS Peercaching (WSD-In) BranchCache Content Retrieval (HTTP-In) BranchCache Hosted Cache Server (HTT BranchCache Peer Discovery (WSD-In) Connect to a Network Projector (TCP-In) Connect to a Network Projector (TCP-In) Connect to a Network Projector (WSD Ev Connect to a Network Projector (WSD In) Connect to a Network Projector (WSD-In) 	BITS Peercaching BITS Peercaching BITS Peercaching BITS Peercaching BranchCache - C BranchCache - H BranchCache - Pe Connect to a Net Connect to a Net	 New Rule Filter by Profile Filter by State Filter by Group View Refresh Export List Help
m	Core Networking - Destination Unreacha Core Networking - Dynamic Host Config Core Networking - Dynamic Host Config	Core Networking Core Networking Core Networking +	

3. In New Inbound Rule Wizard, choose Port and press "Next".

Mew Inbound Rule Wizar	d 🚬
Rule Type Select the type of firewall rule to	o create.
Select the type of firewall rule to Steps: Protocol and Ports Action Profile Name	create. What type of rule would you like to create? Program Rule that controls connections for a program. Pgt Rule that controls connections for a TCP or UDP port. Predefined: BITS Peercaching Rule that controls connections for a Windows experience. Custom Custom rule.

4. Choose TCP and add Specific Local ports: 8000, 8080 for Private Server.

Mew Inbound Rule Wizard	ł	
Protocol and Ports Specify the protocols and ports t	o which this rule applies.	
Steps:		
 Rule Type 	Does this rule apply to TCP or UI	JDP?
Protocol and Ports	TCP	
 Action Profile 	© UDP	
Name	Does this rule apply to all local po	oorts or specific local ports?
	 Specific local ports; 	8000 8080
		Example: 80, 443, 5000-5010
	Learn more about protocol and p	<u>ports</u> < <u>B</u> ack <u>N</u> ext > Cancel

5. Choose Allow the connection.

New Inbound Rule Wizard	
Action Specify the action to be taken w	when a connection matches the conditions specified in the rule.
Steps: Protocol and Ports Action Profile Name	What action should be taken when a connection matches the specified conditions? Alow the connection This includes connections that are protected with IPsec as well as those are not. Alow the connection of it is secure This includes only connections that have been authenticated by using IPsec. Connections sull be secured using the settings in IPsec properties and rules in the Connection Security rule node. Customize. Customize. The more about actions Customize. The more about actions (and the connection secure) (and the connection secure) (and the connection secure)

6. Press next.

Mew Inbound Rule Wizar	d	- Partie	Antes		X			
Profile								
Specify the profiles for which thi	is rule applies.							
Steps:								
Rule Type	When does this rule apply?							
Protocol and Ports								
Action	☑ Domain	energer vers						
Profile	Applies when a computer is connected to its corpo	Applies when a computer is connected to its corporate domain.						
Name	Private							
	Applies when a computer is connected to a private	network location.						
	Public							
	Applies when a computer is connected to a public network location.							
	Learn more about profiles							
		- Beals		Cound				
				Cancel				
			-	-				

7. Name this firewall rule as Private Server and press "Finish".

Mew Inbound Rule Wizard		- Peri	to Andrew	×
Name Specify the name and description of t	his rule.			
Steps:				
Rule Type Protocol and Ports Action	Name			
Profile Name	Private Server			
		< <u>B</u> ack	Finish	Cancel

8. You will see added rule in Inbound Rules. This rule will allow Private Server to receive incoming WISE logs.

P Windows Firewall with Advanced	Security						و الم	×
<u>File Action View H</u> elp								
🗢 🏟 💋 💼 🗟 🖬								
Provide the second seco	Inbound Rules					Actions		
Cuthound Rules	Alame	Group	Profile	Enabled	Action		Inbound Rules	
Connection Security Rules	O Private Server		All	Yes	Allow		ka New Rule	
	BITS Peercaching (Content-In)	BITS Peercaching	All	No	Allow	=	Filter by Profile	
·	BITS Peercaching (RPC)	BITS Peercaching	All	No	Allow			
	BITS Peercaching (RPC-EPMAP)	BITS Peercaching	All	No	Allow		Y Filter by State	
	BITS Peercaching (WSD-In)	BITS Peercaching	All	No	Allow		Filter by Group	•
	BranchCache Content Retrieval (HTTP-In)	BranchCache - Content Retr	All	No	Allow		View	•
	BranchCache Hosted Cache Server (HTT	BranchCache - Hosted Cach	All	No	Allow		BRCI	
	BranchCache Peer Discovery (WSD-In)	BranchCache - Peer Discove	All	No	Allow		G Kefresh	
	Connect to a Network Projector (TCP-In)	Connect to a Network Proje	Private	No	Allow		Export List	
	Connect to a Network Projector (TCP-In)	Connect to a Network Proje	Domain	No	Allow		🛛 Help	

4.2. No log received in Private Server

Step 1: If you want to receive upload csv file, please make sure IO log or System Log inWISE is turned on in Memory Storage of Data Logger configuration. Then turn on CloudUpload in Data Logger configuration.



Step 2: If you want to receive Push Notification of IO Log or System Log, please make sure the corresponding items are turned on in Data Logger configuration.

