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<b>APN Content Level</b>		BASIC		✓		INTERMEDIATE		ADVANCED		Confidentiality		Public		✓		Private	
<b>Software Compatibility*</b>	<b>FW:</b>	L10_0 0gg	<b>Open AT® SW Suite:</b>	N/A	<b>Plug- Ins:</b>	<b>TCP/IP</b>	N/A	<b>C-GPS</b>	N/A	<b>Compiler Used:</b>	N/A	<b>Reference Hardware</b>	No				
			<b>M2mpower</b>	N/A		<b>Internet</b>	N/A	<b>Bluetooth</b>	N/A		<b>Reference Software</b>		No				
							<b>MQTT</b>	N/A	<b>M2MC</b>	N/A		<b>RTE :</b>	N/A				
* refer to software compatibility matrix section for more detail																	
<b>Wireless CPU Compatibility</b>	<b>Plug &amp; Play:</b>			<b>Integra M2106B</b>		<b>Fastrack Supreme</b>		<b>Fastrack Xtend</b>		<b>Fastrack GO</b>							
	<b>Quik (CDMA):</b>			<b>Q2438F</b>		<b>Q2438R</b>		<b>Q26 Elite</b>									
	<b>Quik (GSM):</b>			<b>Q2400A</b>		<b>Q2406A</b>		<b>Q2406B</b>		<b>Q2426B</b>		<b>Q52 Omni</b>					
				<b>GR64</b>		<b>GS64</b>		<b>Q2686H</b>		<b>Q2687H</b>		<b>Q26 Extreme</b>					
				<b>Q24 Classic</b>		<b>Q24 Plus</b>		<b>Q24 Extended</b>		<b>Q24 Auto</b>		<b>Q64</b>					
	<b>Wireless Microprocessor® :</b>			<b>WMP50</b>		<b>WMP100</b>		<b>WMP120</b>		<b>WMP150</b>							
<b>WISMO Family :</b>			<b>WISMO218</b>		<b>WISMO228</b>	✓											



## 1 Version

Application Notes may be updated over their lifetime. To ensure you design with the correct version, please check the application notes page in [www.wavecom.com](http://www.wavecom.com) for latest versions.

## 2 Introduction

This Application Note (APN) is provided to Sierra Wireless distributors and clients to aid more rapid development of embedded applications using the Sierra Wireless portfolio of cellular solutions. To request a new application note, contact your regional Sierra Wireless Product Marketing Manager.

## 3 Glossary

Term	Definition
FTP	File Transfer Protocol

## 4 Application Note Description

This document describes in detail all steps required to implement FTP client using basic TCP socket functionality available in the WISMO module.

A WISMO module primarily provides the ability to create only TCP and UDP socket connections. For the FTP client implementation, you must use the TCP socket connection (both the TCP server and TCP client) in the WISMO along with a standard set of FTP commands, as presented in the procedure below.

## 5 Establishing a WISMO FTP Client

As per standard FTP client implementation, there are two channels associated with any FTP connection, a Session channel and a Data channel. A Session channel is required to exchange standard FTP commands between the FTP server and client. A Data channel is used for to communicate data (like uploading or downloading a file).

With this in mind, two TCP requests to the FTP server must be created. One TCP client is created for the Session channel and the second for the TCP server, as the Data channel (which would be an inbound channel from the FTP server).

Follow the procedure below to establish the clients. See the following section for applicable examples.

1. Achieve a PDP context.
2. Create a TCP server listening on a specific port. This server will be used as the Data channel (for In-Bound DATA connection from the FTP server).

3. Perform a TCP client request through port 21 to any FTP server. This will be used as the Session channel.
4. After successfully establishing a connection, issue the required Log-in credentials (using standard FTP commands) to the connected FTP server. The server would respond back with Log-in success indication.
5. As per FTP standards, if any data related operation has to be performed, it requires being performed in a new Data channel [which is inbound from the FTP server]. Hence to achieve/create this data connection the FTP client has to provide the details of the IP address and the socket at which it would accept the in-bound data connection from the FTP server. To perform this, FTP protocol suggests usage of command "PORT". [This PORT command has 6 parameters. The first 4 parameters establish the IP address and the last 2 parameters establish the port for communication.
6. If the FTP server returns a success message for the issued PORT command, the connection is ready for data communication.
7. Upon issuing any data related FTP command, the FTP server initiates an in-bound data channel to the TCP server that is in the listening mode in WISMO. The FTP server uses the information provided by the PORT command to initiate this data connection.
8. After the data transfer ends, the data channel is closed by the FTP server.
9. For further data related activities, re-enable the data channel by issuing another PORT command, again through the session channel.

## 6 Examples

The table below presents examples applicable to the procedure above.

Action	Response	Description
AT+WIPCFG = 1	OK	Enable the TCP/IP Stack.
AT+WIPBR = 1, 6	OK	Open the GPRS Bearer.
AT+WIPBR = 2, 6, 11, "APN name"	OK	Set the GPRS setup parameters. The APN parameter in this case.
AT+WIPBR = 2, 6, 1, "Username"	OK	Set the Username.
AT+WIPBR = 2, 6, 0, "Password"	OK	Set the Password.
AT+WIPBR = 4, 6, 0	OK	Start the PDP Context activation.
AT+WIPBR = 3, 6, 15	+WIPBR" 6, 15, "166.129.120.246" OK	Check the PDP context (IP Address) that is achieved.
AT+WIPBR = 3, 2, 2861, 2, 3	OK	Create TCP sever in listening mode. Waiting for in-bound connection on port 2861.
AT+WIPBR = 2, 1, "<FTP URL>", 21	+WIPREADY: 2,1 +WIPDATA: 2,1,<data_len> OK	Create a TCP client request to the FTP server. <FTP URL>: URL of FTP server. <data_len>: Size of data sent by the FTP server on connection. Usually this would be the welcome message from the server.

Action	Response	Description
AT+WIPDATA =2, 1, 2	<p>CONNECT 220 NcFTPd Server (licensed copy) ready.</p> <p><b>USER</b> &lt;usr&gt; 331 user &lt;usr&gt; okay. Send password.</p> <p><b>PASS</b> &lt;pw&gt; 230 Restricted user logged in.</p> <p><b>PORT</b> 166,129,120,246,11,45 200 PORT command successfull.</p> <p><b>LIST</b> 200 listing done.</p> <p>+++</p> <p>+WIPREADY: 2,2</p> <p>+WIPDATA: 2,2,&lt;data_len&gt;</p> <p>OK</p>	<p>To shift the module into Data mode. To issue standard FTP commands and communicate with the FTP server. This is the Session channel.</p> <p>220: Welcome message from server.</p> <p>USER: FTP command to provide the username to FTP server. &lt;usr&gt;: is the username.</p> <p>PASS: FTP command to provide the password to FTP server. &lt;pw&gt;: is the password.</p> <p>230: Log-in success message from server.</p> <p>PORT: FTP command to provide IP and port details to FTP server. &lt; refer RFC 959 for FTP commands and PORT commands&gt;</p> <p>LIST: FTP command to list the directory contents in the FTP server. On issuing this command FTP server would initiate a data connection and transfer the data to WISMO through the data channel.</p> <p>+++ : To shift back to AT mode or command mode.</p> <p>+WIPREADY: 2,2 : indicates that the in-bound data request from the FTP server is accepted by the listening TCP server at port 2861.</p>
AT+WIPDATA = 2, 2, 1	<p>CONNECT</p> <p>&lt;data transferred by the FTP server&gt; .... ....</p> <p>+WIPPEERCLOSE: 2,2</p>	<p>This command is issued to shift to data mode and read the data transferred by FTP server. This is the Data channel.</p> <p>+WIPPEERCLOSE: 2,2: indication that data channel is closed by the FTP server after the data transfer.</p>
AT+WIPCLOSE = 2, 2	OK	To gracefully close the above mentioned data channel.
AT+WIPDATA =2, 1, 2	CONNECT	To re-enter into Session channel. Further standard FTP commands can be issued to the FTP server.
AT+WIPCLOSE = 2, 1	OK	To gracefully close the Session channel with the FTP server. This command closes all the connection with the FTP server.

*Note: The PORT command has to be issued every time, before a data related operation is to be performed in the FTP connection.*

## 7 Reference Documents

	Filename	Comment
[1]	WA_DEV_W228_UGD_002	TCP/IP AT Commands manual for WISMO 228.

## 8 Software Compatibility Matrix

Current software configurations compatible with this application note include:

Open AT® FW	Open AT® SDK	Open AT® Plug-Ins
L10_00gg	N/A	N/A

## 9 Support

For direct clients: contact your Sierra Wireless FAE

For distributor clients: contact your distributor FAE

For distributors: contact your Sierra Wireless FAE

## 10 Document History

Version	Date	History
001	December 10, 2009	Creation

## 11 Legal Notice

### Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

### Safety and Hazards

Do not operate the Sierra Wireless modem in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the Sierra Wireless modem MUST BE POWERED OFF. The Sierra Wireless modem can transmit signals that could interfere with this equipment. Do not operate the Sierra Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless modem MUST BE POWERED OFF. When operating, the Sierra Wireless modem can transmit signals that could interfere with various onboard systems.

*Note* Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless modems may be used at this time.

The driver or operator of any vehicle should not operate the Sierra Wireless modem while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

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