

WDMX Wireless Adapter operation description

The WDMX Wireless adapter is designed to pass the Dial-up or TCP/IP-ATM Machine data via the TCP/IP network with the SSL 3.1/TLS 1.2 encryption.

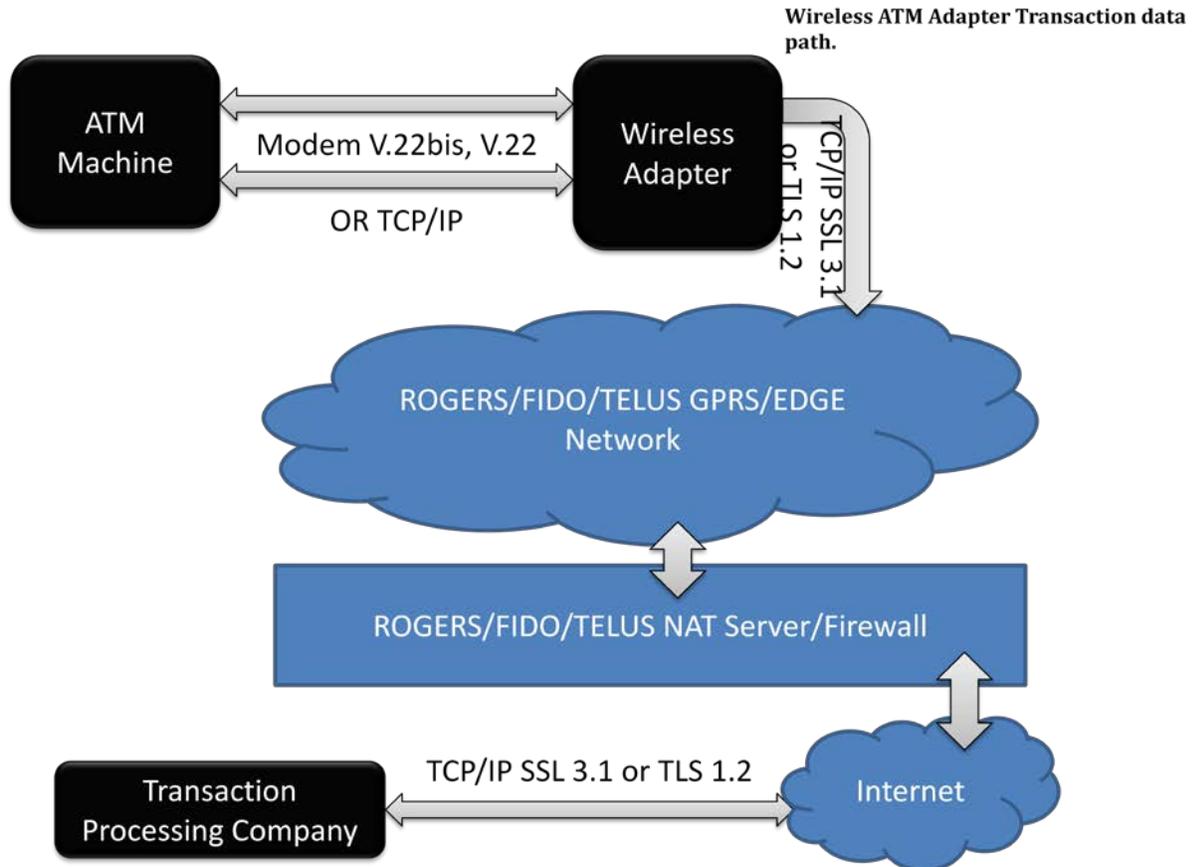


Figure 1. The data passes of Transaction via the WDMX Wireless Adapter Wireless adapter.

Features of the WDMX Wireless Adapter ATM wireless adapter:

- 1) Direct connection to a transaction processing company. No intermediate connection to any server, switch, routers or proxy servers.
- 2) Using the quad-band GPRS/EDGE cellular wireless module approved for the Electronic Point-Of-Sale in Canadian and U.S. markets.
- 3) High secured SSL 3.1 and TLS 1.2 connection.
- 4) Supports ATMs with the telephone line communication standards: V.22bis, V.22/Bell212, V.21/Bell103, V.23 – 1200/75bps, Bell202 – 1200bps, leased line mode and fast connect.
- 5) Dial phone number auto detection. By dialed phone number the ATM wireless adapter selects the transaction processing company to call.
- 6) The Support Server to monitor and control the ATM wireless adapter.
- 7) Automatic, highly secured firmware updates via the Support Server. Firmware is encrypted using the SSL 3.1 and the additional AES 256 cipher algorithm.

- 8) Automatic user account control via the Support Server. At any time during the entire 24 hours the ATM wireless adapter connects to the Support Server and checks the permission for the future operation. If an adapter unit is stolen or a subscription has expired the unit will be deactivated.
- 9) Full identification of a wireless adapter via the Support Server. At any time during the entire 24 hours a wireless adapter sends the IMEI (International Mobile Equipment Identity), the IMSI (International Mobile Subscriber Identity) and the serial number. By those ID's the Support Server can unambiguously identify the wireless adapter unit. In case if the unit is illegal, it will be deactivated.
- 10) Wireless adapter unit tracking information via the Support Server. When the wireless unit powered up first time, it sends the IP address assigned to it by the wireless network provider. Based on the IP information, the wireless unit can be found and accessed into a network. If the wireless network provider reassigned the IP address the wireless unit sends the changed IP address to the Support Server.
- 11) Wireless adapter unit status monitoring via the Support Server. At any time the user can login to the Support Server and get the status of a wireless unit. The status messages are: any errors, the GSM network status, the power status and so on.
- 12) Download the journals via the Support Server.

Detailed description of the operation of the WDMX Wireless Adapter wireless adapter.

- 1) Initialization.
 - A) At first engage the wireless adapter initiates the GPRS connection with the GSM provider.
 - B) When the connection is established, the wireless adapter registers itself at the WDMX Wireless Adapter Main Server.
 - C) During user registration the main server checks the unit operation permission. Also, the server stores the IP address of the wireless adapter.
 - D) Now unit is ready to operate.
- 2) Transaction Processing in VISA II.
 - A) The Wireless adapter detects the ATM machine modem is gone off hook.
 - B) The Wireless adapter detects the phone number dialed by the ATM machine.
 - C) By this number the Wireless adapter establishes the connection to the Transaction processing company server via TCP/IP network (Internet). The connection is fully secure because of using the SSL protocol.
 - D) If the connection is successfully established the Wireless adapter sends the ENQ message to the ATM machine via modem. It is possible that the Transaction processing company server sends the ENQ message also. In this case the ENQ message is passed through the Wireless adapter to the ATM machine. For more information about the VISA II POS Authorization protocol, please see the Appendix, Figure B.
 - E) Please note that if the Transaction processing company server sends the ENQ message in the SSL mode, it will increase the traffic.
 - F) The ATM machine receives the ENQ message and replays with the Transaction Request Message. The Transaction Request Message consists of the STX <REQUEST> ETX and LRC fields. This message transfers directly to the Transaction processing company server via TCP/IP network. Note that no changes of the message can be done because

of the MAC field. Any deletion or adding of any byte except for the LRC field will lead to the MAC Error .See the MAC protocol Addendum in the Appendix, Figure B1, and Item 5.

- G) The Transaction processing company receives the Transaction Request Message and replays with the Transaction Response Message.
 - H) The Wireless adapter receives this message and transfers it to the ATM machine.
 - I) Afterwards, both the ATM machine responds with the Acknowledge ACK message and the Wireless adapter closes the connection with the Transaction processing company.
- 3) Transaction Processing in the Triton TCP/IP Protocol.

The Wireless adapter does not support the Triton TCP/IP Protocol for the Dial-up machines. The issue is in a conversion of the VISA II standard used in the Dial-up machines to the Triton TCP/IP Protocol standard (See the Appendix, Figure B2). The couple fields, such as the STX and the ETX should be removed. Also, the LENGTH field must be present in the Triton TCP/IP Protocol. To make such a conversion the MAC field recalculation is needed. The MAC field calculation demands the storage of the MAC Keys inside the Wireless adapter what can lead to the reduction of the security of the whole system.

For TCP/IP ATM machines there is no conversion required. So, the Wireless adapter can work only with TCP/IP ATM machines via Triton TCP/IP Protocol.

4) Errors and Logging Information.

- a) The Wireless adapter stores the Error information for the troubleshooting purpose only in the internal EEPROM. Information such as the Transaction Data, the Transaction Status or the Transaction Time is not stored in the Wireless adapter at all. If the customer experiences the problem with the operation of the Wireless adapter, the error log information can be used.

This is the example of the Error log:

- 10/6/2009 4:03:22 PM >Error 15 At:\$b21
- 10/6/2009 11:59:15 AM >Error 15 At:\$b21
- 10/6/2009 11:51:23 AM >Error 15 At:\$a9f

The time field shows the time when the error occurred. The Error 15 indicates the “Connection Error”. Field At: shows the internal address of the subroutine in which the error has occurred.

5) Triton Connect support.

- A) The WDMX Wireless Adapter Virtual modem software is designed to provide the access to the Triton ATM machines by the Triton Connect software. The main feature of the WDMX Wireless Adapter Virtual modem software is a conversion of the Dial-Up connection to the TCP/IP connection. This allows the computers that are not equipped with a modem to establish the connection with an ATM machine. Also, using of the TCP/IP network makes it possible to employ highly secured algorithms such as the Triple-DES and the AES-256 for the data transition. Due to the full simulation of the Dial-Up connection the Virtual Modem software supports not only outgoing connection but also incoming. The WDMX Wireless Adapter Virtual modem software permits the installation of up to eight modems (Modem Pull). The Modem Pull is managed automatically by the Main Server software. Furthermore, the WDMX Wireless Adapter Virtual modem software solves the “NAT traversal” and firewall issues by using the Traversal Using Relay NAT (TURN) SSL server. These possibilities make the WDMX Wireless Adapter Virtual modem software unique solution for the conversion of the Dial-Up connection into the highly secured and productive network.