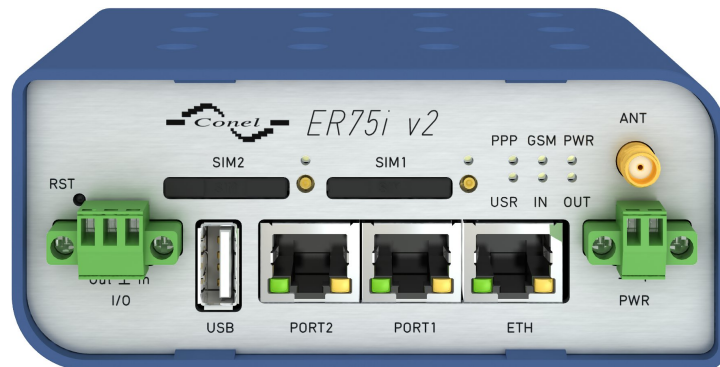


User Module

Packet Splitter

APPLICATION NOTE



ADVANTECH

Used symbols



Danger – Information regarding user safety or potential damage to the router.



Attention – Problems that may arise in specific situations.



Information or notice – Useful tips or information of special interest.



Example – example of function, command or script.



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1. User Module Description



User module *Packet Splitter* is not part of the standard router firmware. Uploading of this user module is described in the Configuration manual (see [1, 2]).



The user module is v2 and v3 router platforms compatible.

Packet Splitter module allows duplication of data flow to more targets (up to 7 different connections). It is suitable for applications where duplication of data flow is needed – e. g. data collecting for statistic reasons, or sending data from bar code reader to more targets, etc. The functional principle of this module is represented on picture 1.

After uploading the *Packet Splitter* module it is possible to define up to 5 TCP/UDP connections and if there are expansion ports RS232 or RS485/422 in router, 2 more serial connections can be defined (depends on the number of expansion ports). The defined number of connections doesn't have to be the final duplicated data flows number – e. g. when connection to TCP server defined, more clients can contact the server and ask the data. After definition of connections, it is possible to set up one connection as data source and more connections as data targets.

Configuration of *Packet Splitter* module is accessible through router's web interface in section *Customization*. Clicking on *User Modules*, uploaded user modules are written out. To configure the module, click on *Packet Splitter*.

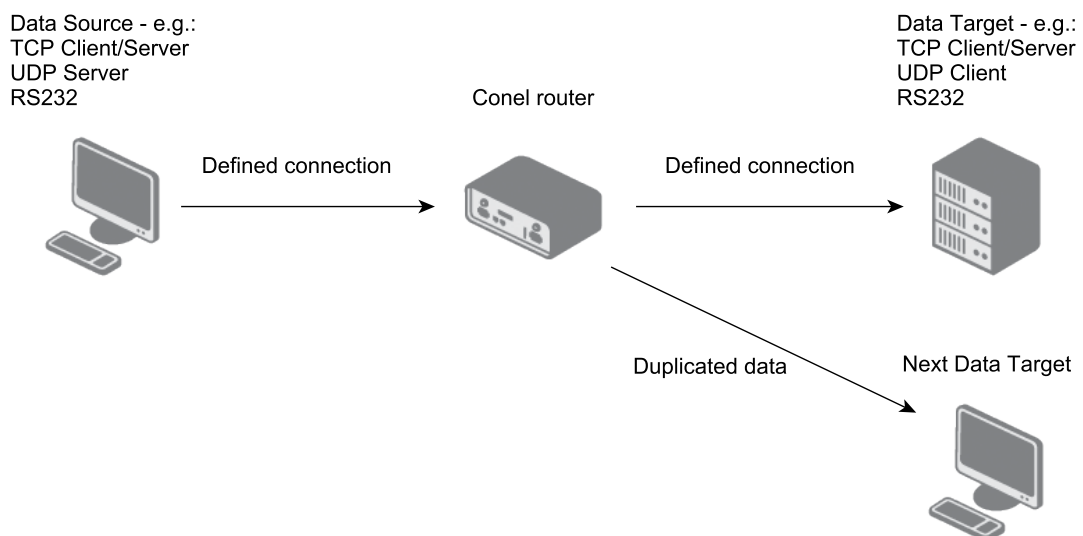


Figure 1: Function of the *Packet Splitter* module

2. Configuration

On the pic. 5 there's the menu of the *Packet Splitter* depicted. The *Configuration* section is split in two parts. In the *Global* part module *Packet Splitter* can be activated and module's connections can be defined. In the *Targets* part one connection can be set up as data source and more connections as data targets. In the section *Status* the system log is written out. The *Return* item in the *Customization* section allows return to home web interface of the router.



Figure 2: *Packet Splitter* module's menu

2.1 Global – Configuration of *Packet Splitter*'s Connections

Packet Splitter Configuration

Enable Packet Splitter

Port 1

Baudrate:

Databits:

Parity:

Stop Bits:

Split Timeout: msec

Remote Connections					
Name	Description	Protocol	Mode	IP Address *	Port
Remote Connection 1	<input type="text" value="server 1"/>	<input type="text" value="TCP"/>	<input type="text" value="Server"/>	<input type="text"/>	<input type="text" value="1000"/>
Remote Connection 2	<input type="text" value="client 1"/>	<input type="text" value="TCP"/>	<input type="text" value="Client"/>	<input type="text" value="192.168.2.217"/>	<input type="text" value="2000"/>
Remote Connection 3	<input type="text" value="udp"/>	<input type="text" value="UDP"/>	<input type="text" value="Client"/>	<input type="text" value="192.168.2.217"/>	<input type="text" value="3000"/>
Remote Connection 4	<input type="text"/>	<input type="text" value="TCP"/>	<input type="text" value="Client"/>	<input type="text"/>	<input type="text" value="1000"/>
Remote Connection 5	<input type="text"/>	<input type="text" value="TCP"/>	<input type="text" value="Client"/>	<input type="text"/>	<input type="text" value="1000"/>

* can be blank in case of using TCP/UDP server

Figure 3: Connections settings of *Packet Splitter* (menu *Configuration – Global*)

Definition of module's connections can be made in this part – see picture 3.

For the activation of the module, there has to be *Enable Packet Splitter* checked in the upper part of the screen. This and any other change in configuration takes effect after clicking the *Apply* button down the screen.



The *Port 1* (*Port 2*, as the case may be) part is displayed only if circuit board (or boards) of serial expansion port is connected to router's main circuit board. Items in the *Port 1* part have this meanings:

Item	Description
Baudrate	Applied communication speed.
Data Bits	Number of data bits.
Parity	Control parity bit: <ul style="list-style-type: none"> • none – will be sent without parity • even – will be sent with even parity • odd – will be sent with odd parity
Stop Bits	Number of stop bits.
Split Timeout	Time to rupture messages. If the receiver identifies the gap between two characters longer than this parameter in milliseconds, then all of the received data will be compiled and sent in a message.

Table 1: Configuration of the serial port connection (*Port 1* or *Port 2*) – description of items.

In the part *Remote Connections* there's possible to define up to 5 TCP or UDP connections. Next table describes the items for every row:

Item	Description
Description	Description of the connection – optimal name for better orientation in the further settings.
Protocol	It is possible to choose TCP or UDP.
Mode	It is the mode of connected remote device – either Server or Client.
IP Address	It is the IP address of connected remote device. In case of using TCP/UDP server, it can be blank.
Port	Port where the communication runs or will run (has to be unoccupied port).

Table 2: Configuration of the TCP/UDP connections – description of items.

2.2 Targets – Configuration of *Packet Splitter's* Targets

After configuration of connections is done, it is possible to set up their interconnections – or more precisely – to choose one data source and more data targets, where data from the source will be sent (duplicated). Configuration is depicted on the pic. 4.

The screenshot shows a window titled "Packet Splitter Configuration". At the top, there is a "Data Source" dropdown menu set to "Port 1". Below this is a table with two columns: "Enabled" (checkboxes) and "Description" (text input fields). To the right of the "Description" column is a "Target" column with dropdown menus. The first three rows have their "Enabled" checkboxes checked. The first row has "touserver" in the description and "server 1" in the target. The second row has "toclient" in the description and "client 1" in the target. The third row has "toudp" in the description and "udp" in the target. The remaining three rows have their "Enabled" checkboxes unchecked and "server 1" in the target. At the bottom left of the window is an "Apply" button.

Figure 4: Configuration of *Packet Splitter's* targets (menu *Configuration – Targets*)

The *Data Source* item in the upper part of the screen serves for selecting one of connections defined before as the source of duplicated data. There are names of defined connections written out in the list of possible selections. Below can be up to 7 targets set up. 7 places corresponds to 5 TCP/UDP connections and maximum of 2 serial connections (if using expansion ports). Again, to apply changes, click on the *Apply* button below.


Next table describes items for every target row:


Item	Description
Enabled	Activation of sending data from Data Source to this target.
Description	Optional description or name for better orientation.
Target	Selection of data target connection. There are names of defined connections written out in the list of possible selections.

Table 3: Configuration of *Packet Splitter's* targets – description of items.



Note: Some combinations of data source and targets configuration doesn't make sense and won't work. It is important to keep in mind the principles of used protocols (TCP, UDP) – e. g. when UDP used, only UDP server can be configured as data source, not UDP client, etc.

 **Example of configuration** – Duplication of data from serial port to TCP server and TCP client: First, in *Global* section set up serial communication parameters and define 2 connections – TCP server (IP address can be blank, set up the port the server is listening on) and TCP client (set up IP address of TCP client and a port). Second – in *Targets* section set up Port 1 (serial port) as Data Source. Enable two targets and set them to TCP server's and TCP client's connections. Remote TCP server then listens on the port set up at TCP client and remote TCP client has to know IP address of the router, where *Packet Splitter* runs and port of the remote TCP server. Same data from serial port are then received by TCP server and TCP client.

 *Packet Splitter* module behaves "as it is set up" – it means it can send one data twice on one target or it can send data back to source when set up in *Targets* section.

3. System Log

In case of any problems with connection it is possible to view the system log by pressing the *System Log* menu item. There are displayed detailed reports from individual applications running in the router. Activity of *Packet Splitter* module is indicated in rows starting with "pSplitter". *System Log* also displays informations about the successful or unsuccessful connection establishment. Press *Save* button to save the system log to your computer.

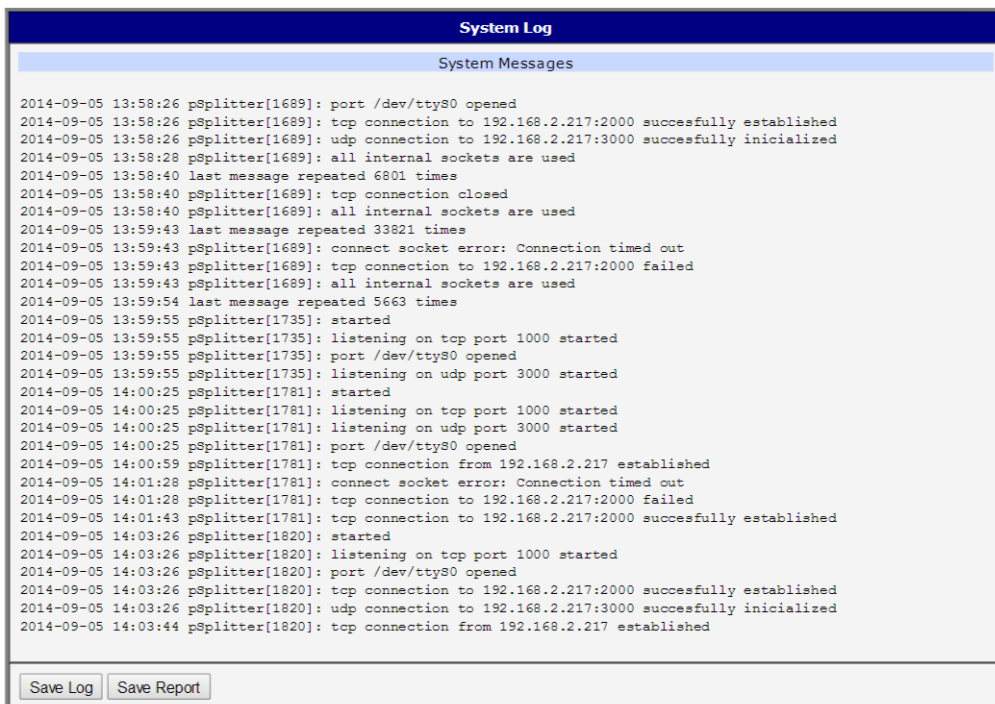


Figure 5: System log

4. Recommended Literature

- [1] Advantech B+B SmartWorx: **v2 Routers Configuration Manual** (MAN-0021-EN)
- [2] Advantech B+B SmartWorx: **SmartFlex Configuration Manual** (MAN-0023-EN)
- [3] Advantech B+B SmartWorx: **SmartMotion Configuration Manual** (MAN-0024-EN)
- [4] Advantech B+B SmartWorx: **SmartStart Configuration Manual** (MAN-0022-EN)
- [5] Advantech B+B SmartWorx: **ICR-3200 Configuration Manual** (MAN-0042-EN)



Product related documents can be obtained on *Engineering Portal* at <https://ep.advantech-bb.cz/> address.