M3P

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This document applies to V3.0

Table of Contents

General Information

Summary

The MikroTik Packet Packer Protocol (M3P) optimizes the data rate usage of links using protocols that have a high overhead per packet transmitted. The basic purpose of this protocol is to better enable wireless networks to transport VoIP traffic and other traffic that uses small packet sizes of around 100 bytes.

M3P features:

- enabled by a per interface setting
- other routers with MikroTik Discovery Protocol enabled will broadcast M3P settings
- significantly increases bandwidth availability over some wireless links by approximately four times
- offer configuration settings to customize this feature

Specifications

Packages required: ***system***
License required: ***level1***
Home menu level: ***/ip packing***
Standards and Technologies: ***M3P***
Hardware usage: ***Not significant***

Description

The wireless protocol IEEE 802.11 and, to a lesser extent, Ethernet protocol have a high overhead per packet as for each packet it is necessary to access the media, check for errors, resend in case of errors occured, and send network maintenance messages (network maintenance is applicable only for wireless). The MikroTik Packet Packer Protocol improves network performance by aggregating many small packets into a big packet, thereby minimizing the network per packet overhead cost. The M3P is very effective when the

average packet size is 50-300 bytes the common size of VoIP packets.

Features:

- may work on any Ethernet-like media
- is disabled by default for all interfaces
- when older version on the RouterOS are upgraded from a version without M3P to a version with discovery, current wireless interfaces will not be automatically enabled for M3P
- small packets going to the same MAC level destination (regardless of IP destination) are collected according to the set configuration and aggregated into a large packet according to the set size
- the packet is sent as soon as the maximum aggregated-packet packet size is reached or a maximum time of 15ms (+/-5ms)

Setup

Home menu level: ***/ip packing***

Description

M3P is working only between MikroTik routers, which are discovered with MikroTik Neighbor Discovery Protocol (MNDP). When M3P is enabled router needs to know which of its neighbouring hosts have enabled M3P. MNDP is used to negotiate unpacking settings of neighbours, therefore it has to be enabled on interfaces you wish to enable M3P. Consult MNDP manual on how to do it.

Property Description

aggregated-size (*integer*; default: **1500**) - the maximum aggregated packet's size

interface (*name*) - interface to enable M3P on

packing (*none* | *simple* | *compress-all* | *compress-headers*; default: **simple**) - specifies the packing mode

- **none** - no packing is applied to packets
- **simple** - aggregate many small packets into one large packet, minimizing network overhead per packet
- **compress-headers** - further increase network performance by compressing IP packet header (consumes more CPU resources)
- **compress-all** - increase network performance even more by using header and data compression (extensive CPU usage)

unpacking (*none* | *simple* | *compress-all* | *compress-headers*; default: **simple**) - specifies the unpacking mode

- **none** - accept only usual packets
- **simple** - accept usual packets and aggregated packets without compression
- **compress-headers** - accept all packets except those with payload compression
- **compress-all** - accept all packets

Notes

Level of packet compression increases like this: **none -> simple -> compress-headers -> compress-all**.

When router has to send a packet it choses minimum level of packet compression from what its own **packing** type is set and what other router's **unpacking** type is set. Same is with **aggregated-size** setting - minimum value of both ends is actual maximum size of aggregated packet used.

aggregated-size can be bigger than interface MTU if network device allows it to be (i.e., it supports sending and receiving frames bigger than 1514 bytes)

Example

To enable maximal compression on the **ether1** interface:

```
[admin@MikroTik] ip packing> add interface=ether1 packing=compress-all \
\... unpacking=compress-all
[admin@MikroTik] ip packing> print
Flags: X - disabled
  #   INTERFACE PACKING          UNPACKING        AGGREGATED-SIZE
  0   ether1    compress-all     compress-all     1500

[admin@MikroTik] ip packing>
```