

Log

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Summary

RouterOS is capable of logging various system events and status information. Logs can be saved in routers memory (RAM), disk, file, sent by email or even sent to remote syslog server (RFC 3164).

Log messages

Sub-menu level:

/log

All messages stored in routers local memory can be printed from /log menu. Each entry contains time and date when event occurred, topics that this message belongs to and message itself.

```
[admin@MikroTik] /log> print
jan/02/1970 02:00:09 system,info router rebooted
sep/15 09:54:33 system,info,account user admin logged in from 10.1.101.212 via winbox
sep/15 12:33:18 system,info item added by admin
sep/15 12:34:26 system,info mangle rule added by admin
sep/15 12:34:29 system,info mangle rule moved by admin
sep/15 12:35:34 system,info mangle rule changed by admin
sep/15 12:42:14 system,info,account user admin logged in from 10.1.101.212 via telnet
sep/15 12:42:55 system,info,account user admin logged out from 10.1.101.212 via telnet
01:01:58 firewall,info input: in:ether1 out:(none), src-mac 00:21:29:6d:82:07, proto UDP,
10.1.101.1:520->10.1.101.255:520, len 452
```

If logs are printed at the same date when log entry was added, then only time will be shown. In example above you can see that second message was added on sep/15 current year (year is not added) and the last message was added today so only the time is displayed.

Print command accepts several parameters that allows to detect new log entries, print only necessary messages and so on.

For example following command will print all log messages where one of the topics is info and will detect new log entries until Ctrl+C is pressed.

```
[admin@MikroTik] /log > print follow where topics~".info"
12:52:24 script,info hello from script
-- Ctrl-C to quit.
```

If print is in follow mode you can hit 'space' on keyboard to insert separator:

```
[admin@MikroTik] /log > print follow where topics~".info"
12:52:24 script,info hello from script

= = = = =

-- Ctrl-C to quit.
```

Logging configuration

Sub-menu level: `/system logging`

Property	Description
action (<i>name</i> ; Default: memory)	specifies one of the system default actions or user specified action listed in actions menu
prefix (<i>string</i> ; Default:)	prefix added at the beginning of log messages
topics (<i>account, bfd, caps, ddns, dns, error, gsm, info, iscsi, l2tp, manager, ntp, packet, pppoe, radvd, rip, script, smb, sstp, system, timer, vrrp, web-proxy, async, bgp, certificate, debug, dot1x, dude, event, hotspot, interface, isdn, ldp, mme, ospf, pim, pptp, raw, route, srtcp, snmp, state, telephony, upnp, warning, wireless, backup, calc, critical, dhcp, e-mail, firewall, igmp-proxy, ipsec, kvm, lte, mpls, ovpn, ppp, radius, read, rsvp, simulator, ssh, store, tftp, ups, watchdog, write</i> ; Default: info)	log all messages that falls into specified topic or list of topics. "!" character can be used before topic to exclude messages falling under this topic. For example, we want to log NTP debug info without too much details: <code>/system logging add topics=ntp,debug,!packet</code>

Actions

Sub-menu level: `/system logging action`

Property	Description
bsd-syslog (<i>yes/no</i> ; Default:)	whether to use bsd-syslog as defined in RFC 3164
disk-file-count (<i>integer [1..65535]</i> ; Default: 2)	specifies number of files used to store log messages, applicable only if action=disk
disk-file-name (<i>string</i> ; Default: log)	name of the file used to store log messages, applicable only if action=disk
disk-lines-per-file (<i>integer [1..65535]</i> ; Default: 100)	specifies maximum size of file in lines, applicable only if action=disk
disk-stop-on-full (<i>yes/no</i> ; Default: no)	whether to stop to save log messages to disk after the specified disk-lines-per-file and disk-file-count number is reached, applicable only if action=disk
email-start-tls (<i>yes / no</i> ; Default: no)	Whether to use tls when sending email, applicable only if action=email
email-to (<i>string</i> ; Default:)	email address where logs are sent, applicable only if action=email
memory-lines (<i>integer [1..65535]</i> ; Default: 1000)	number of records in local memory buffer, applicable only if action=memory
memory-stop-on-full (<i>yes/no</i> ; Default: no)	whether to stop to save log messages in local buffer after the specified memory-lines number is reached
name (<i>string</i> ; Default:)	name of an action
remember (<i>yes/no</i> ; Default:)	whether to keep log messages, which have not yet been displayed in console, applicable if action=echo
remote (<i>IP/IPv6 Address[:Port]</i> ; Default: 0.0.0.0:514)	remote logging server's IP/IPv6 address and UDP port, applicable if action=remote

src-address (<i>IP address</i> ; Default: 0.0.0.0)	source address used when sending packets to remote server
syslog-facility (<i>auth, authpriv, cron, daemon, ftp, kern, local0, local1, local2, local3, local4, local5, local6, local7, lpr, mail, news, ntp, syslog, user, uucp</i> ; Default: daemon)	
syslog-severity (<i>alert, auto, critical, debug, emergency, error, info, notice, warning</i> ; Default: auto)	Severity level indicator defined in RFC 3164: <ul style="list-style-type: none"> • Emergency: system is unusable • Alert: action must be taken immediately • Critical: critical conditions • Error: error conditions • Warning: warning conditions • Notice: normal but significant condition • Informational: informational messages • Debug: debug-level messages
target (<i>disk, echo, email, memory, remote</i> ; Default: memory)	storage facility or target of log messages <ul style="list-style-type: none"> • disk - logs are saved to the hard drive • echo - logs are displayed on the console screen • email - logs are sent by email • memory - logs are stored in local memory buffer • remote - logs are sent to remote host

Topics

Each log entry have topic which describes the origin of log message. There can be more than one topic assigned to log message. For example, OSPF debug logs have four different topics: route, ospf, debug and raw.

```
11:11:43 route,ospf,debug SEND: Hello Packet 10.255.255.1 -> 224.0.0.5 on lo0
11:11:43 route,ospf,debug,raw PACKET:
11:11:43 route,ospf,debug,raw 02 01 00 2C 0A FF FF 03 00 00 00 00 E7 9B 00 00
11:11:43 route,ospf,debug,raw 00 00 00 00 00 00 00 00 FF FF FF FF 00 0A 02 01
11:11:43 route,ospf,debug,raw 00 00 00 28 0A FF FF 01 00 00 00 00 00
```

List of Facility independent topics

Topic	Description
critical	Log entries marked as critical, these log entries are printed to console each time you log in.
debug	Debug log entries
error	Error messages
info	Informative log entry
packet	Log entry that shows contents from received/sent packet
raw	Log entry that shows raw contents of received/sent packet
warning	Warning message.

Topics used by various RouterOS facilities

Topic	Description
account	Log messages generated by accounting facility.
async	Log messages generated by asynchronous devices

backup	Log messages generated by backup creation facility.
bfd	Log messages generated by BFD protocol
bgp	Log messages generated by BGP protocol
calc	Routing calculation log messages.
caps	CAPsMAN wireless device management
certificate	Security certificate
dns	Name server lookup related information
ddns	Log messages generated by Dynamic DNS tool
dude	Messages related to the Dude server package The Dude tool
dhcp	DHCP client, server and relay log messages
e-mail	Messages generated by e-mail tool.
event	Log message generated at routing event. For example, new route have been installed in routing table.
firewall	Firewall log messages generated when action=log is set in firewall rule
gsm	Log messages generated by GSM devices
hotspot	Hotspot related log entries
igmp-proxy	IGMP Proxy related log entries
ipsec	IPSec log entries
iscsi	
isdn	
interface	
kvm	Messages related to the KVM virtual machine functionality
l2tp	Log entries generated by L2TP client and server
lte	Messages related to the LTE/4G modem configuration
ldp	LDP protocol related messages
manager	User Manager log messages.
mme	MME routing protocol messages
mpls	MPLS messages
ntp	sNTP client generated log entries
ospf	OSPF routing protocol messages
ovpn	OpenVPN tunnel messages
pim	Multicast PIM-SM related messages
ppp	ppp facility messages
pppoe	PPPoE server/client related messages
pptp	PPTP server/client related messages
radius	Log entries generated by RADIUS Client
radvd	IPv6 radv daemon log messages.

read	SMS tool messages
rip	RIP routing protocol messages
route	Routing facility log entries
rsvp	Resource Reservation Protocol generated messages.
script	Log entries generated from scripts
sertcp	Log messages related to facility responsible for "/port remote-access"
simulator	
state	DHCP Client and routing state messages.
store	Log entries generated by Store facility
smb	Messages related to the SMB file sharing system
snmp	Messages related to Simple network management protocol (SNMP) configuration
system	Generic system messages
telephony	<i>Obsolete! Previously used by the IP telephony package</i>
tftp	TFTP server generated messages
timer	Log messages that are related to timers used in RouterOS. For example bgp keepalive logs 12:41:40 route,bgp,debug,timer KeepaliveTimer expired 12:41:40 route,bgp,debug,timer RemoteAddress=2001:470:1f09:131::1
ups	Messages generated by UPS monitoring tool
vrrp	Messages generated VRRP
watchdog	Watchdog generated log entries
web-proxy	Log messages generated by web proxy
wireless	Wireless log entries.
write	SMS tool messages.

Examples

Logging to file

To log everything to file, add new log action:

```
/system logging action add name=file target=disk disk-file-name=log
```

and then make everything log using this new action:

```
/system logging add action=file
```

You can log only errors there by issuing command:

```
/system logging add topics=error action=file
```

This will log into files **log.0.txt** and **log.1.txt**.

You can specify maximum size of file in lines by specifying *disk-lines-per-file*. **<file>.0.txt** is active file where new logs are going to be appended and once its size will reach maximum it will become **<file>.1.txt**, and new empty **<file>.0.txt** will be created.

You can log into USB flashes or into *MicroSD/CF* (on Routerboards) by specifying its directory name before file name. For example, if you have accessible usb flash as **usb1** directory under */files*, you should issue following command:

```
/system logging action add name=usb target=disk disk-file-name=usb1/log
```



Logging entries from files will be stored back in the memory after reboot.