



JetOS95 User Manual

MSR

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JetOS95 Multiple Super Ring

Korenix is proud to announce that it has launched its patented Rapid Super Ring (RSR) network redundancy technology in its JetBox 9400 / 9500 series industrial embedded PoE / Routing Computers for ensuring reliability, scalability and high performance of industrial network infrastructures.

The RSR, which is integrated in an optional CF card, provides less than 5millisecond recovery time and ZERO ms restoration time, allowing users to perform reliable data transmission and computing without link loss, topology change or data failure.

With the new RSR feature, IPC providers can easily setup the industrial network with automatic Ring Master selection, efficiently control the ring status with minimum bandwidth consumption as well as detect and fast react to the failures through received notifications and alarms. The RSR is backward compatible with Super ring technology and therefore can be used in a large network along with other redundant rings providing a complete reliable networking solution.

Korenix JetBox 9400 / 9500 series are embedded Linux Ready VPN systems designed with a rich interface, including LAN / PoE, WAN, USB, DIO, Serial and console ports to deliver maximum flexibility to IPC providers. The devices support complete Layer 3 routing capabilities for efficiently managing extended network groups in industrial environments. Featuring VPN and the latest DMVPN functionalities, they can be perfectly used by IPC providers for establishing dynamic, long-distance and secure overlay networks.

By consolidating industrial Linux Computer, Layer 3 Router, Managed Ethernet Switch, Powering Device and Digital I/O controller functionalities into an all-in-one solution with IP31 rugged fanless design, vibration/shock resistance and wide operating temperature, the JetBox series embedded networking computers substitute a number of single-function devices in a front-end control box, as a result simplifying system architecture, reducing installation / maintenance costs and becoming the perfect networking device for harsh industrial applications.

Applied models

The MSR is an optional software feature in CF card for following models:

JetBox9532

JetBox9530

JetBox9432-w

JetBox9430-w

Kindly visit Korenix website or contact Korenix sales for latest supporting model list.

MSR compatible models

The MSR is compatible with other Korenix models listed as follows:

JN5628G, JN5010G, JN5008G-P, JN4510, JN4010

JN4706, JN4706f, JN3706, JN3706f

JN4506-RJ, JN4506-M12

(Firmware v2.0 or above)

Kindly visit Korenix website or contact Korenix sales for latest MSR compatible model list.

Setting from console

1. *Multiple Super Ring module Enable/Disable*

/etc/init.d/rsr2 start - Enable Multiple Super Ring module

/etc/init.d/rsr2 stop - Disable Multiple Super Ring module

Enable/disable start-on-boot function

ln -s /etc/init.d/rsr2 /etc/rc3.d/S99rsr2 - Enable Multiple Super Ring start-on-boot function

rm /etc/rc3.d/S99rsr2 - Disable Multiple Super Ring start-on-boot function

2. *Create/Delete a ring*

rsr2ctl create RINGID - Create a ring with a ring ID (RINGID: 0-31)

rsr2ctl delete RINGID - Delete a ring with a ring ID (RINGID: 0-31)

3. *Start/Stop a ring*

rsr2ctl ring RINGID start - Start a ring

rsr2ctl ring RINGID stop - Stop a ring

4. *Change ring name*

rsr2ctl ring RINGID name NAME - Change the name of the ring, the default ring name is "Ring RINGID"

5. *Change ring protocol version*

rsr2ctl ring RINGID version rsr - Change ring version to Rapid Super Ring

rsr2ctl ring RINGID version sr - Change ring version to Super Ring (V1)

rsr2ctl ring RINGID version default - Change ring version to default ring version, the default ring version is Rapid Super Ring

6. *Change ring priority*

rsr2ctl ring RINGID priority PRIORITY - Change ring priority (PRIORITY: 0-255), default priority is 128

rsr2ctl ring RINGID priority default - Change ring priority to default priority (128)

7. *Change ring port and ring port cost*

rsr2ctl ring RINGID port PORTID1 PORTID2 - Change ring port to PORTID1 PORTID2 (PORTID: 1-4), the default PORTID1 PORTID2 are 1 and 2

rsr2ctl ring RINGID cost PORTCOST1 PORTCOST2 - Change ring port cost to PORTCOST1 PORTCOST2 (PORTCOST: 0-255), the default PORTCOST is 128

rsr2ctl ring RINGID cost default default - Change ring port cost default port cost (128)

8. *Enable/Disable Rapid Dual-Homing feature*

rsr2ctl ring RINGID rdh enable - Enable Rapid Dual-Homing feature

rsr2ctl ring RINGID rdh disable - Disable Rapid Dual-Homing feature

9. *Show a ring or all rings information*

rsr2ctl show RINGID - Show ring information

```

# rsr2ctl show 1
[Ring1] Ring1
Current Status : Enabled
  Role         : RM
  Ring Status  : Abnormal
  Ring Manager : 0012.77ff.8045
  Blocking Port :
  Giga Copper  : N/A
Configuration :
  Version      : Rapid Super Ring
  Priority      : 128
  Ring Port    : Port1, Port2
  Path Cost    : 128, 128
  Rapid Dual Homing : Disabled
  Up Link      : Auto Detect (N/A)
Statistics :
  Watchdog sent      0, received      0, missed      409
  Link Up sent       0, received       0
  Link Down sent     0, received       0
  Role Transition count 2
  Ring State Transition count 2

#

```

rsr2ctl show - Show all created rings information

10. Show rsr2ctl help

rsr2ctl help - Show rsr2ctl command help

```

# rsr2ctl help
Usage:
  rsr2ctl create RINGID
  rsr2ctl delete RINGID
  rsr2ctl ring RINGID start|stop
  rsr2ctl ring RINGID name NAME
  rsr2ctl ring RINGID version rsr|sr|default
  rsr2ctl ring RINGID priority PRIORITY
  rsr2ctl ring RINGID port PORTID1 PORTID2
  rsr2ctl ring RINGID cost PORTCOST1 PORTCOST2
  rsr2ctl ring RINGID rdh enable|disable
  rsr2ctl show [RINGID]
  rsr2ctl config write|clear|show
  rsr2ctl help

Parameter:
  RINGID:<0-31>
  PRIORITY:<0-255>|default, default priority is 128
  PORTID:<1-4>
  PORTCOST:<0-255>|default, default cost is 128
  sr:Super Ring v1
  rsr:Rapid Super Ring (default)
  rdh:Rapid Dual Homing

#

```

11. Ring configuration maintain

rsr2ctl config write - Write ring running configuration to device flash as boot-up

configuration. Boot-up configuration file is /etc/rsr2.conf

rsr2ctl config clear - Clear ring boot-up configuration and save to device flash

rsr2ctl config show - Show the boot-up configuration in device flash

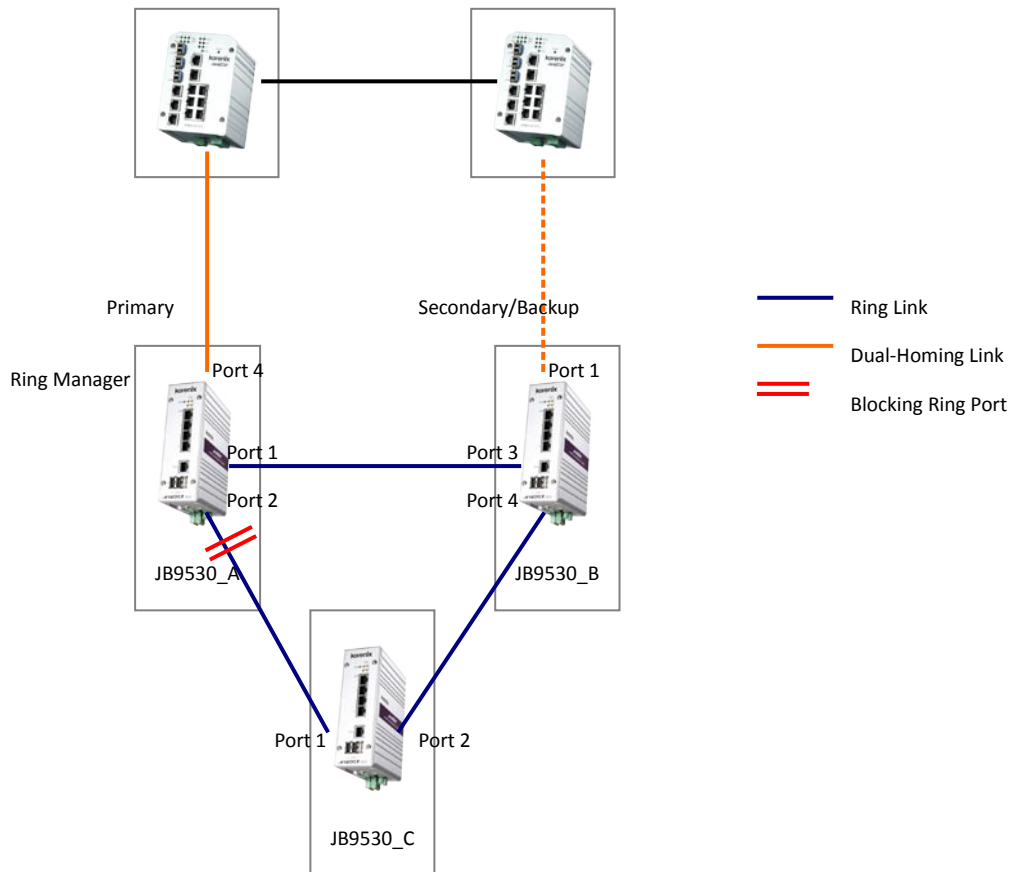
```
# rsr2ctl config show
#!/bin/sh
# Description:
#   rsr2 configuration file for system startup

rsr2ctl create 1
rsr2ctl ring 1 start
#
```


12. Example:

Use 3 JetBox9530 to create a ring and dual-homing to a JetNet network

Ring and Dual-Homing Topology:



JN9530_A commands:

```
# /etc/init.d/rsr2 start
# rsr2ctl create 1
# rsr2ctl ring 1 priority 255
# rsr2ctl ring 1 rdh enable
# rsr2ctl ring 1 start
```

JN9530_B commands:

```
# /etc/init.d/rsr2 start
# rsr2ctl create 1
# rsr2ctl ring 1 port 3 4
```

```
# rsr2ctl ring 1 rdh enable
```

```
# rsr2ctl ring 1 start
```

JN9530_C commands:

```
# /etc/init.d/rsr2 start
```

```
# rsr2ctl create 1
```

```
# rsr2ctl ring 1 start
```

JN9530_A ring information:

```
# rsr2ctl show
[Ring1] Ring1
Current Status : Enabled
Role           : RM
Ring Status    : Normal
Ring Manager   : 0012.77ff.8035
Blocking Port  : Port2
Giga Copper    : N/A
Configuration :
Version        : Rapid Super Ring
Priority        : 255
Ring Port      : Port1, Port2
Path Cost      : 128, 128
Rapid Dual Homing : Enabled
Up Link        : Auto Detect (Port4)
Candidate Port4: *Primary 128P 101Mbps 00:12:77:ff:80:35 port4
                  Secondary 128P 100Mbps 00:12:77:ff:80:45 port1
Statistics :
Watchdog sent   187, received 178, missed 0
Link Up sent    0, received 1
Link Down sent  0, received 0
Role Transition count 2
Ring State Transition count 3
```

JN9530_B ring information:

```

# rsr2ctl show
[Ring1] Ring1
Current Status : Enabled
Role           : nonRM
Ring Status    : Normal
Ring Manager   : 0012.77ff.8035
Blocking Port  : Port2
Giga Copper    : N/A
Configuration :
Version        : Rapid Super Ring
Priority       : 128
Ring Port      : Port3, Port4
Path Cost      : 128, 128
Rapid Dual Homing : Enabled
Up Link        : Auto Detect (Port1)
Candidate Port1: Primary 128P 101Mbps 00:12:77:ff:80:35 port4
                *Secondary 128P 100Mbps 00:12:77:ff:80:45 port1

Statistics :
Watchdog sent      0, received      362, missed      0
Link Up sent       1, received       0
Link Down sent     0, received       0
Role Transition count 3
Ring State Transition count 3

```

JN9530_C ring information:

```

# rsr2ctl show
[Ring1] Ring1
Current Status : Enabled
Role           : nonRM
Ring Status    : Normal
Ring Manager   : 0012.77ff.8035
Blocking Port  : Port1
Giga Copper    : N/A
Configuration :
Version        : Rapid Super Ring
Priority       : 128
Ring Port      : Port1, Port2
Path Cost      : 128, 128
Rapid Dual Homing : Disabled
Up Link        : Auto Detect (N/A)
Statistics :
Watchdog sent      0, received      11, missed      0
Link Up sent       1, received       0
Link Down sent     0, received       0
Role Transition count 3
Ring State Transition count 3

```

Setting from Webmin

1. Enable/Disable Webmin Multiple Super Ring module:



Fig1. Enable Multiple Super Ring module



Fig2. Disable Multiple Super Ring module

Enable/disable Multiple Super Ring start-on-boot function:

The screenshot displays the Korenix management interface. On the left is a navigation tree with categories like 'System', 'Servers', 'Others', 'Networking', 'Hardware', and 'Korenix'. The 'rsr2' module is selected and highlighted in green. The main area shows a list of modules with their status (Yes/No) and checkboxes. Below the list are several control buttons: 'Start', 'Stop', 'Restart', 'Start On Boot', 'Disable On Boot', 'Start Now and On Boot', and 'Disable Now and On Boot'. The 'Start On Boot' and 'Disable On Boot' buttons are highlighted with red boxes. At the bottom, there are buttons for 'Change to runlevel', 'Reboot System', and 'Shutdown System' with descriptive text for each.

Module	Status
iptables	No
korenix.pl	No
l2tpd	No
network	Yes
openvpn	No
ospf	No
pptpd	No
rip	No
rsr2	No
S20urandom	No
S49ntp	No
S50proftpd	No
S50sshd	No
S70webs	No
S81named	No
S91smb	No
S99bootrap	No
udev	No
udhcpd	No
Up_Ulconfig.pl	No
Web_UI	No
zebra	No
njectl	No

2. Create/Delete a ring

Create (Add) a ring:

The screenshot shows the 'Configuration' page with the 'New Ring' form. The 'Ring ID' field contains the value '2'. The 'Add' button is highlighted with a red box. Below the form is a table of existing rings.

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Disable

Buttons: Read Config, Save Config, Clear Config, Stop, Apply

Delete (Remove) a ring:

The screenshot shows the 'Configuration' page with the 'New Ring' form. The 'Remove' checkbox for the first ring (Ring1) is checked. The 'Apply' button is highlighted with a red box.

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input checked="" type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Disable

Buttons: Read Config, Save Config, Clear Config, Stop, Apply

3. Start/Stop a ring

Start (Enable) a ring:

The screenshot shows the 'Configuration' page for a ring. The 'Ring Status' dropdown is set to 'Enable'. The 'Apply' button is highlighted with a red box.

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Enable

Stop (Disable) a ring:

The screenshot shows the 'Configuration' page for a ring. The 'Ring Status' dropdown is set to 'Disable'. The 'Apply' button is highlighted with a red box.

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Disable

4. Change ring name

Module Index

Configuration

Configuration Information

New Ring

Ring ID

Name

Add

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Enable

Apply

Read Config Read Config

Save Config Save Config

Clear Config Clear Config

Stop Your Ring connection is currently active. Click this button to stop

Search:

- View Module's Logs
- System Information
- Refresh Modules
- Logout

5. Change ring protocol version, Rapid Super Ring or Super Ring

The screenshot shows the 'Configuration' page for a ring. On the left is a navigation menu with categories like 'Login: admin', 'Webmin', 'System', 'Servers', 'Others', 'Networking', 'Hardware', 'Korenix', 'DHCP', 'DIO', 'DMVPN', 'DVMRP', 'Firmware Upgrade', 'GPRS', 'Module Upgrade', 'OSPF', 'PoE', 'RIP', 'Ring', 'Switch Port', 'Vlan', and 'Un-used Modules'. The main content area has tabs for 'Configuration' and 'Information'. Below the tabs is a 'New Ring' section with input fields for 'Ring ID' and 'Name', and an 'Add' button. A table lists existing rings:

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Disable

Red boxes highlight the 'Version' dropdown menu (showing 'Rapid Super Ring' selected), the 'Device Priority' field (containing '128'), and the 'Apply' button. Below the table are buttons for 'Read Config', 'Save Config', 'Clear Config', and 'Stop', along with their corresponding actions. A note states: 'Your Ring connection is currently active. Click this button to stop'.

6. Change ring priority

The screenshot shows the 'Configuration' page for a ring. The layout is identical to the previous screenshot. In this instance, the 'Version' dropdown menu is set to 'Rapid Super Ring'. The 'Device Priority' field is highlighted with a red box and contains the value '1'. The 'Apply' button is also highlighted with a red box. The 'Ring Status' column in the table now shows 'Enable' instead of 'Disable'. The 'Stop' button is no longer present, and the note below it is absent.

7. Change ring port and ring port cost

Login: admin

- Webmin
- System
- Servers
- Others
- Networking
- Hardware
- Korenix
 - DHCP
 - DIO
 - DMVPN
 - DVMRP
 - Firmware Upgrade
 - GPRS
 - Module Upgrade
 - OSPF
 - PoE
 - RIP
 - Ring
 - Switch Port
 - Vlan
- Un-used Modules

Search:

- View Module's Logs
- System Information
- Refresh Modules
- Logout

Module Index **Configuration**

Configuration Information

New Ring

Ring ID

Name

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Disable

Read Config

Save Config

Clear Config

Your Ring connection is currently active. Click this button to stop

8. Enable/Disable Rapid Dual-Homing feature

The screenshot shows the 'Configuration' page for a Ring. The 'Rapid Dual Homing' dropdown menu is open, showing 'Disable', 'Enable', and 'Disable' options. The 'Apply' button is also highlighted.

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	Ring1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Disable

Buttons: Read Config, Save Config, Clear Config, Stop

Text: Your Ring connection is currently active. Click this button to stop

9. Show ring information

The screenshot shows the 'Information' page for a Ring. The 'Information' tab is selected. The 'Reload' button is highlighted.

ID	Version	Role	Status	RM MAC	Blocking Port	Role Transition Count	Ring State Transition Count
1	Rapid Super Ring	RM	Abnormal	0012.77ff.8035		2	2

Buttons: Reload

10. Ring configuration backup/restore

Save Config: Save current ring configuration in file. (/etc/rsr2.conf)

Read Config: Load previous saved config file.

Clear Config: Wipe out ring settings saved in config file.

Remove	Ring ID	Name	Version	Device Priority	Ring Port1	Path Cost1	Ring Port2	Path Cost2	Rapid Dual Homing	Ring Status
<input type="checkbox"/>	1	1	Rapid Super Ring	128	Port 1	128	Port 2	128	Disable	Disable

<input type="button" value="Read Config"/>	Read Config
<input type="button" value="Save Config"/>	Save Config
<input type="button" value="Clear Config"/>	Clear Config
<input type="button" value="Stop"/>	Your Ring connection is currently active. Click this button to stop

Customer Service

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