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HiOS: HTML - Rail Data Diode (RDD) Configuration John M - 2024-09-02 - HiOS

This guide is designed to step you through the configuration of the RDD Hirschmann product. The RDD consists of 2 routers in the same enclosure, with traffic only being allowed from the IN router to the OUT, so UDP is the only protocol that is permitted.

HiView/HiDiscovery will be needed to follow this guide along with 2 computers.

Configuring the IN Router

1. Give the IN side of the RDD an IP address with HiDiscovery.

Devices	Discovery								
Signal	Configura	Password	MAC Address	IPv6 Address (Link local)	IP Address V	Netmask	Gateway	Type	Product
	\checkmark		64:60:38:47:82:00		192.168.1.244	255,255,255.0	192,168,1,1	mgmt	RDD20-1400A-SUUY999HHE3S
	✓		EC#5:55:68:58:E8		192.168.1.98	255.255.255.0	0.0.0.0	mgmt	EAGLE20-0400999TT999SCC29HSE3F
	 Image: A set of the set of the		EC:E5:55:D8:F8:C0		192.168.1.81	255.255.255.0	0.0.0.0	mgmt	OS20-002800T5T5T5-T88Y999GMSE3S
	✓		EC:E5:55:C8:59:30		192.168.1.22	255.255.255.0	0.0.0.0	mgmt	RED25-04002T1TT-TDD29HDE2S-81-SA
	<		EC:E5:55:84:9F:DE		192.168.1.21	255.255.255.0	192.168.1.1	mgmt	RSP20+11003Z6TT+SCCY9HSE25
	V		ECE5:55:36/70.88		10.10.10.3	255.255.255.0	10.10.10.1	mgmt	RS20-1600M2M2SDAEHH
						HiView - Conf	igure		×
						MAC address		64:60:38:47:B	2.00
						Name		RDD-646038-	178200
						IPv6 Address (Link		1.00	
						IP address		192.168.1.144	
						Netmask		255.255.255.0	
						Gateway		0.0.0.0	
							OK	Cancel	

2. Login to the GUI of the switch.

Apps	travel	work	l home	a. Amazon Sign-In	G Google	💡 Google Maps	Milton, WI 10-Day	🕒 Wisconsin Lottery	6 HiVision lice
Data	Diode								
							HiOS-3	S-08.1.00	
							User	admin	
							Password		
									Login

3. Go to Routing/global and turn on routing then click the write button.

Navigation 4		
ک ا 🏖 🔇 🕞 🚥 ا 📻 🛈	Routing Global	
Filter 👻 🗙	Operation	
C Time	💿 On 🔘 Off	
	Routing profile	
Device Security	Next routing profile	ipv4RoutingDefault 💌
Network Security		
Switching	Current routing profile	ipv4RoutingDefault 👻
(→) Routing	ICMP filter	
Global	Send echo reply	S.
L Interfaces	Send redirects	Ś
	Rate limit interval [ms]	1000
Router Discovery	Rate limit burst size	100
RIP	Configuration	
	File transfer source interface	- v
Routing Table	Source routing	
Tracking	Information	
L3 Relay	Default TTL	64
Loopback Interface		
L3-Redundancy		V 2

4. Go to routing/interfaces/configuration and assign the IP addresses to the interfaces used and click write. Refresh to make sure the settings are correct. If an IP address was assigned to the port currently used to communicate to the switch the computer IP will have to be changed to the same subnet of the IP that was assigned. This will also be the new IP address to login to the switch and the gateway IP of the computer. Note: Use the wizard to configure virtual interfaces/VLANs.

avigation													upe
	R	Routing Interfaces Configuration											
bar 👻	- ۲	Port	Name	Port on	Port status	IP address	Netmask	Routing	Prany ARP	Netdirected broadcasts	MTU value	ICMP unreachables	ICMP redirect
nne 📝	^ D			8	up	192.168.10.1	255,255,255.0	· @			1,500	8	R
Device Security		1/2		R	down	0.0.0.0	0.0.0.0				1,500	R	R
		1/3		R	down	0.0.0.0	0.0.0.0				1,500	R	R
Network Security		1/4		R	down	0.0.0.0	0.0.0.0				1,500	8	ß
X Switching		1/5		8	down	0.0.0.0	0.0.0.0				1,500	8	R
Routing		1/6		R	down	0.0.0.0	0.0.0.0				1,500	8	×.
Cisbal		1/7		8	down	0.0.0.0	0.0.0.0				1,500	8	R
		1/8		8	up	10,10,10,1	255.255.255.0	8			1,500	8	S
ARP Router Discovery RIP OSPF Routing Table													
L Tracking													
L3 Relay													
Loopback Interface													

5. Go to Routing/ARP/current and write down the MAC for the IP address that will connect the 2 Routers in the RDD, this will be needed when configuring the out Router .

Navigation 4						
📚 🤱 🛃 🗊 281 🕕 🚺	AF	RP Current				
Filter 🗙		Port	IP address	MAC address	Last updated	Туре
		1/1	192.168.10.1	64:60:38:47:b2:05	3d 6h 35m 17s	local
Time		1/1	192.168.10.10	e4:b9:7a:0c:4a:f5	3d 6h 29m 58s	dynamic
Device Security		1/8	10.10.10.1	64:60:38:47:b2:0c	3d 6h 35m 17s	local
(→ ⁺ _↓ ←) Routing						
Global						
Global L Interfaces Configuration						
Global Interfaces						
Global L Interfaces Configuration						

6. Go to Router/ARP/Static and add an entry click active and write. This step will have to be done after the MAC of the OUT interface connecting to routers is known.

Navigation •					
S & A P 20 1	ARP Static				
Filter 👻 🗙	IP address MAC	address Port	Active		
Basic Settings					
🕝 Time					
Device Security					
Retwork Security					
Switching					
Routing		Crea	te		
Global		IP add	ress	10.10.10.2	
		MAC a	oddress	64.60.38.47.b2.j4c	
				OK Cancel	
Global		_			
Current					
Static					
Router Discovery					
RIP					
OSPF					
Routing Table					
Tracking				✓ 3	₩ ₩
L3 Relay					

7. Make sure the new route shows up in the current tab which may need to be refreshed.

Navigation •						
📚 🤱 👰 🕞 294 拱 🛈	AF	RP Current				
Filter 👻		Port	IP address	MAC address	Last updated	Туре
		1/1	192.168.10.1	64:60:38:47:b2:05	3d 6h 52m 58s	local
Basic Settings		1/1	192.168.10.10	e4:b9:7a:0c:4a:f5	3d 6h 49m 26s	dynamic
🥱 Time		1/8	10.10.10.1	64:60:38:47:b2:0c	3d 6h 52m 59s	local
Device Security		1/8	10.10.10.2	64:60:38:47:b2:4c	3d 6h 52m 59s	static
Switching Routing Global						
L Interfaces						
Global						

8. Add a static route 0.0.0.0/0 with the next hop IP of the OUT connecting interface click ok,

make sure it is active and click the write button.

B L (2) F 298	i	Ro	uting Table									h) н
ilter	×X		onfiguration	1									
Basic Settings	í	Pro	aference	1									
Dime			Port	Network address	Netmask	Next hop IP address	Туре	Protocol	Preference	Metric	Last update [s]	Track name	Active
Device Security			1/8	10.10.10.0	255.255.255.0	10.10.10.1	local	local	0		3,688		
Network Security				192.168.10.0	255.255.255.0	192.168.10.1	local	local	0		4,026		Ø
L Interfaces					Netmask Next hop I Preference Track nam	e	0.0.0.0 10.10.10.2 1	Ŧ					
Current Static							ок с	ancel					
Router Discovery													
RIP													
└─ OSPF													

Configuring the OUT Router

1. Give the OUT side of the RDD an IP address with HiDiscovery.

Signal	Configura	Password	MAC Address	IPv6 Address (Link local)	IP Address	*	Netmask	Gateway	Туре	Product
	✓	V	64:60:38:47:82:40		192.168.1.144		0.0.0.0	0.0.0.0	mgmt	RDD20-1400A-SUUY999HHE
							HiView - Conf	īgure		×
							Name		64:60:38:47:8 RDD-6460384	
							IPv6 Address (Link			
							IP address		192.168.1.144	
							Netmask		255.255.255.0	
							Gateway		0.0.0.0	
								ок	Cancel	

2. Login to the GUI of the switch.

	📙 work 📃 home	a. Amazon Sign-In	G Google	💡 Google Maps	Milton, WI 10-Day	Wisconsin Lottery	6 HiVision licer
Data Diode							
					HiOS-3	S-08 1 00	
						S-08.1.00	
					User	admin	
						admin	

3. Go to Routing/global and turn on routing then click the write button.

Navigation 4		
	Routing Global	
Filter 👻 🗙	Operation	
C Time	💿 On 🔘 Off	
	Routing profile	
Device Security	Next routing profile	ipv4RoutingDefault 👻
Network Security		
Switching	Current routing profile	ipv4RoutingDefault 👻
(→) →→ Routing	ICMP filter	
Global	Send echo reply	R
L Interfaces	Send redirects	R.
	Rate limit interval [ms]	1000
Router Discovery	Rate limit burst size	100
RIP	Configuration	
	File transfer source interface	- v
Routing Table	Source routing	
Tracking	Information	
L3 Relay	Default TTL	64
Loopback Interface		
Multicast Routing		
L _{L3-Redundancy}		

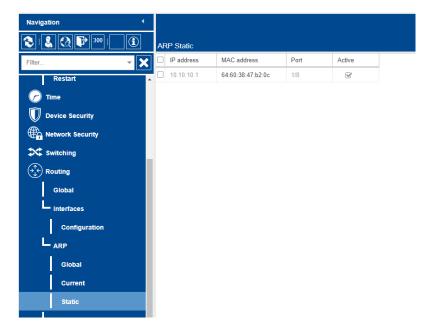
4. Go to routing/interfaces/configuration and assign the IP addresses to the interfaces used and click write. Refresh to make sure the settings are correct.

Navigation	•													
😒 💄 🔕 📭 298	-0	Ro	outing Interfac	es Configurat	ion									
Filter	~ X		Port	Name	Port on	Port status	IP address	Netmask	Routing	Proxy ARP	Netdirected broadcasts	MTU value	ICMP unreachables	ICMP redirects
Restart	*		1/1		V	up	192.168.20.1	255.255.255.0	V	0		1,500	V	8
🕝 Time			1/2		8	down	0.0.0.0	0.0.0.0	0	0	0	1,500	8	8
Device Security			1/3		V	down	0.0.0.0	0.0.0.0	0	0		1,500	V	1
Network Security			1/4		1. Alternative states and the states	down	0.0.0.0	0.0.0.0		0		1,500	1. Alternative and the second	1
			1/5		¥	down	0.0.0.0	0.0.0.0				1,500	¥	¥
Switching			1/6		V	down	0.0.0.0	0.0.0.0				1,500	V	V
			1/7		8	down	0.0.0.0	0.0.0.0	0	0	0	1,500	8	8
Global			1/8		Ø	up	10.10.10.2	255.255.255.0	e e	0	0	1,500	Ø	
Interfaces														
Configuration														

5. Go to Routing/ARP/current and write down the MAC for the IP address that will connect the 2 Routers in the RDD, this will be needed when configuring the IN Router.

Navigation 4	Τ					
S 🛃 🕢 🕞 298 🕕	A	RP Current				
Filter 👻 🗙		Port	IP address	MAC address	Last updated	Туре
	•	1/1	192.168.20.1	64:60:38:47:b2:45	1d 6h 55m 18s	local
🕝 Time		1/1	192.168.20.10	e4:b9:7a:0c:4a:f5	1d 6h 50m 00s	dynamic
		1/8	10.10.10.2	64:60:38:47:b2:4c	1d 6h 55m 18s	local
Device Security						
Retwork Security						
Switching						
(+) +↓ Routing						
Global						
L Interfaces						
Configuration						
Configuration						

6. Go to Router/ARP/Static and add an entry click active and write.

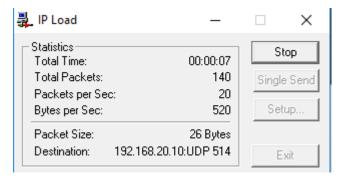


7. Make sure the new route shows up in the current tab which may need to be refreshed.

Navigation	•					
299 🔜 🔇 🕞 299 📻 🤅	D AI	RP Curren	t			
Filter 🔻	× -	Port	IP address	MAC address	Last updated	Туре
Restart		1/1	192.168.20.1	64:60:38:47:b2:45	1d 6h 59m 19s	local
		1/1	192.168.20.10	e4:b9:7a:0c:4a:f5	1d 6h 50m 00s	dynamic
C Time		1/8	10.10.10.1	64:60:38:47:b2:0c	1d 6h 59m 19s	static
Device Security		1/8	10.10.10.2	64:60:38:47:b2:4c	1d 6h 59m 19s	local
Routing Global						
Configuration						
Global						
Current						

Testing the configuration

1. Use a packet generator software to send UDP packets across the Router.



2. Use a computer connected to the OUT router running wireshark to capture the packets to make sure the traffic is being routed properly.

Apply a dis	splay filter <ctrl- <="" th=""><th>></th><th></th><th></th><th></th></ctrl->	>			
ю.	Time	Source	Destination	Protocol	Length Info
1084	392.374996	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1085	392.375008	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1086	392.375018	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1087	392.375028	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1088	392.375039	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1089	392.375048	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1090	392.375058	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1091	392.375070	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1092	392.375079	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1093	392.375099	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1094	392.375109	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1095	392.375118	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1096	392.375139	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1097	392.375149	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1098	392.375159	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1099	392.375169	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1100	392.375178	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
1101	392.375187	192.168.10.10	192.168.20.10	Syslog	68 abcdefghijklmnopqrstuvwxyz
Etherne Interne User Da	t II, Src: Del t Protocol Ver tagram Protoco	1_38:bc:cc (34:e6:d7			