Separate Two LAN Networks with Few Public IPs on RV042, RV042G and RV082 VPN Routers

Objective

Hosts which are in one VLAN (VLAN1 - 192.168.0.x from ports 1-7) should not communicate with the device in another VLAN (VLAN8- 192.168.0.26 to port 8) of the RV082 at the same time hosts from VLAN1 should have more priority over Internet traffic than clients from VLAN8. Here VLANs are used for security reasons and also to divide LAN on RV042, RV042G and RV082 VPN Routers. Various sections which are in this procedure are listed below:

- Basic LAN and WAN Settings
- How to add one-to-one NAT (Private to Public address)
- Setup priority for ports on VLAN's
- Managing bandwidth for particular VLAN
- How to choose port status for VLAN's
- How to check connectivity between the VLAN's

Applicable Devices

- RV042
- RV042G
- RV082
- Any consumer Linksys Router

Software Version

• v4.2.1.02

Topology

The VPN router uses one public IP for WAN1 interface, a few public IPs to use One-to-One NAT and explains how to map them to hosts inside a LAN.



One to One NAT:

Public address 1 ->192.168.0.1(RV082) Public address 2 -> 192.168.0.26 (consumer router) Public address 3 -> 192.168.0.100 Public address 4 -> 192.168.0.101 Public address 5-> 192.168.0.102

In consumer linksys router:

Ports 1 to 7 - VLAN 1 Port 8 - VLAN 8

Separate Two LAN Networks with Few Public IPs on RV082

Basic LAN and WAN Settings

This article is written with respect to the above topology.

Step 1. Use the web configuration utility to choose **Setup > Network**. The *Setup* page opens:

	10/100 8-port VPN Rout	er RV082
Setup	System Setup DHCP System Port Firewall ProtectLink VPN Log Wizard	Support Logout
	Network Password Time DMZ Host Forwarding UPhP One-to-One NAT More>>	
Network	Host Name: (Required by some ISPs) Domain Name: Inksys.com (Required by some ISPs)	The Setup screen contains al of the router's basic setup functions. The device can be used in most network settings without chaneing any of the default
LAN Setting	(MAC Address: 00-27-0d-2d-4e-b4) Device IP Address Subnet Mask 192 188 0 1 Multiple Subnet Add / Edt	values. Some users may need to enter additional information in order to connect to the internet through an ISP (Internet Service Provider) or broadband (USS, cable modem) carrier. Host Name & Domain Name: Enter a host and domain name for the Router. Some
Dual-WAN / DMZ Setting	C Dual WAN C DMZ	Providers) may require these names as identification, and these settings can be obtained
WAII Connection Type	WAN1 Static P Specify WAN IP Address: Subnet Mask: Default Gateway Address: DNS Server (Required) 1: 2: MTU: © Auto MTU: © Auto	from your ISP. In most cases, leaving these fields blank will work. LAN Setting: This is the Router's LAN IP Address and Subnet Mask. The default value is 192.188.11 for IP address and 255.255.255.0 for the Subnet Mask. MORE:

Step 2. In the LAN Settings field, enter the Device IP Address as **192.168.0.1** and the subnet mask as **255.255.255.0**. By default, the IP address will be 192.168.1.1.

							10/100	8-port V	PN Route	м	RV082
Setup	System Summary Network Passer	up DHCP	System Management DMZ Host	Port Management Ferwarding	Firewall UPpP	ProtectLink	VPN	Log More	Wizard	Support	Logout
Network										t s	ITEMAP
		Dor	ost Name: nain Name: inks	ys.com	(Require	d by some IS	iPs) iPs)			The Setup so all of the rout setup functio can be used network settl changing any	preen contains ter's basic ins. The device in most ings without y of the default
LAN Setting	F	Device	(MAC Add IP Address 0 1 1 Mul ubnet Add / Ed	tress: 00-27-0d-2	d-1e-b4) Subni 255.255	at Mask 255.0 💌				values. Some need to enter information in connect to th through an 15 Service Prov broadband (0 modem) carri Host Name &	e users may r additional n order to le internet SP (internet ider) or DSL, cable ier. Domain Name:
Dual-WAN / DMZ Setting			Oual	WAN C	MZ					Enter a host in name for the ISPs (Internet Providers) m these names identification, settings can from your ISI	and domain Router. Some t Service ay require as , and these be obtained P. In most
WAN Connection Type	S D D	Specify WAN II Sut efault Gatewa NS Server (Ri	P Address: onet Mask: y Address: equired) 1: 2: MTU: (*)	WAR1	1 101	bytes				LAN Setting This is the Ri Address and The default 192,168,1.1 and 255,255 Subnet Mask	g Breae fields rk. Subert LAN P Subnet Mask. abe is for P address 255.0 for the

Step 3. In WAN Connection Type, for WAN1 drop-down list choose Static IP.

	10/100 8-port VPN Rou	ter RV082
Setup	System Setup DHCP System Port Firewall ProtectLink VPN Log Wizard	Support Logout
	Network Password Time DMZ Host Forwarding UPnP One-to-One NAT More >>	
Network	Host Name: (Required by some ISPs)	The Setup screen contains
LAN Setting	Domain Name: Inksys.com (Required by some ISPs)	all of the router's basic setup functions. The device can be used in most network settings without changing any of the defaut
Childrenny	(MAC Address: 00-27-0d-2d-4e-b4) Device IP Address Subnet Mask 192 . 168 . 0 . 1 255.255.255.0 ▼ Multiple Subnet Setting Multiple Subnet Add / Edt	values. Some users may need to enter additional information in order to connect to the internet through an ISP (Internet Service Provider) or broadband (DSL, cable modem) carrier.
Dual-WAN / DMZ Setting	C Dual WAN C DMZ	Host Name & Domain Name: Enter a host and domain name for the Router. Some ISPs (Internet Service Providers) may require these names as identification, and these
WAN Connection Type	WAN1 Static IP	settings can be obtained from your ISP, in most cases, leaving these fields blank will work. LAN Setting
	Specify WAN IP Address: Subnet Mask:	This is the Router's LAN IP Address and Subnet Mask. The default value is 192.188.1.1 for IP address and 255.255.255.0 for the Subnet Mask.
	DNS Server (Required) 1: 2:	Morean
	MTU: O Auto O Manual 1500 bytes	

Step 4. In Specify WAN IP Address field, enter Public Address 1.

Step 5. Enter the related subnet mask for Public Address 1 in the subnet mask field.

Step 6. In the Default Gateway Address fields, enter the default gateway of public address 1.

Step 7. In DNS Server (Required) enter the first DNS IP address.

Step 8. In the 2 field, enter the second DNS IP address.

Step 9. Click **Save Settings** to save the changes.



Step 10. To see the changes made, click **System Summary** in the main tab and see the changes that is made in Network Setting Status.

Add one-to-one NAT from Private to Public IPs

LINKSYS A Division of Cisco Systems, Inc.		Firmware Version: 2.0.0.19-tm
	10/100 8-port VPN Route	er RV082
Setup	System Setup DHCP System Port Firewall ProtectLink VPN Log Wizard	Support Logout
	Network Password Time DMZ Host Forwarding UPnP One-to-One NAT More>>	
One-to-One NAT	One-to-One NAT : Enable 🔽	SITEMAP
	Add Range Private Range Begin Public Range Begin Range Length	One-to-One NAT creates a relationship which maps valid external addresses to internal addresses hidden by NAT Machines with an
	Update this Range	internal address may be accessed at the corresponding external
		vas p socres. More
	Delete selected range Add New	
	Save Settings Cancel Changes	CISCO SVSTEVS

Step 11. In the web configuration utility, choose **Setup > One-to-One NAT**. The *One-to-One NAT* page opens.

Step 12. In the One-to-One NAT field, check Enable.

Step 13. In the Private Address Begin field, enter 192.168.0.100.

Step 14. In Public Begin Range, enter Public Address 1.

- Step 15. Enter the range length as 1.
- Step 16. Click Update this Range.
- Step 17. In the Private Address Begin, enter **192.168.0.101**.
- Step 18. In Public Begin Range, enter Public Address 2.
- Step 19. Enter the range length as 1.
- Step 20. Click Update this Range.
- Step 21. In the Private Address Begin, enter **192.168.0.102**.
- Step 22. In Public Begin Range, enter Public Address 3.
- Step 23. Enter the range length as 1.
- Step 24. Click Update this Range.
- Step 25. In the Private Address Begin, enter 192.168.0.26.
- Step 26. In Public Begin Range, enter Public Address 4.
- Step 27. Enter the range length as 1.
- Step 28. Click Update this Range.
- Step 29. Click Save Settings to save the changes.

Set Priority for Ports on VLANs

							10/100 8	port VPN Rou	ter RV082
Port Management	System Summary	Setup	DHCP	System Management	Port Management	Firewall Protect	Link VPN	Log Wizard	Support Logout
	Port Setup	Port Status							
Basic Per Port Config.									SITEMAP
	Port ID	Interface	Disable	Priority	Speed	Duplex	Auto Neg.	VLAN	
	1	LAN		High 💌	@ 10M @ 100M	C Half C Ful	Enable	VLAN1 V	Port ID:
	2	LAN		High 💌	@ 10M @ 100M	G Half G Full	Enable	VLAN1 -	They are port 1~8, DMZ/Internet and Internet.
	3	LAN		High 💌	@ 10M @ 100M	C Half C Full	Enable	VLAN1 -	and the second s
	4	LAN		High 💌	C 10M @ 100M	C Half C Ful	Enable	VLAN1 -	They are LAN, WAN2 or
	5	LAN		High 💌	C 10M @ 100M	C Half C Full	Enable	VLAN1 -	DMZ, WAN1.
	6	LAN	Г	High 💌	@ 10M @ 100M	C Half C Full	Enable	VLAN1 -	Disable:
	_ 7	LAN		High 💌	C 10M @ 100M	C Half C Full	Enable	VLAN1 -	Check the box, the port w be disabled. It is a per-por
	8	LAN		High 💌	@ 10M @ 100M	C Half C Ful	Enable	VLAN1 V	setting.
	DMZ/Internet	DMZ		and the second second	@ 10M @ 100M	C Half C Ful	Enable		More
	Internet	WAN			@ 10M @ 100M	G Half G Ful	Enable		

Step 30. In the web configuration utility, choose **Port Management > Port Setup**. The *Basic Per Port Config.* page opens:

							10/100 8	-port VPN Router	RV082
Port Management	System Summary	Setup	DHCP	System Management	Port Management	Firewall Protect	tLink VPN	Log Wizard	Support Logout
	Port Setup	Port Status							
Basic Per Port Config.									SITEMAP
	Port ID	Interface	Disable	Priority	Speed	Duplex	Auto Neg.	VLAN	
	1	LAN		High 💌	@ 10M @ 100M	C Half C Ful	Enable	VLAN1 -	Port ID:
	2	LAN		High 💌	@ 10M @ 100M	G Half G Ful	Enable	VLAN1 -	They are port 1~8, DMZ/internet and internet
	3	LAN		High 💌	@ 10M @ 100M	Half @ Ful	Enable	VLAN1 V	
	4	LAN		High 💌	@ 10M @ 100M	C Half C Ful	Enable	VLAN1 V	Interface: They are LAN, WAN2 or
	5	LAN		High 💌	C 10M @ 100M	C Half C Ful	Enable	VLAN1 V	DMZ, WAN1.
	6	LAN		High 💌	@ 10M @ 100M	G Half G Ful	Enable	VLAN1 -	Disable:
	_ 7	LAN		High 💌	@ 10M @ 100M	C Half C Ful	Enable	VLAN1 V	Check the box, the port wi be disabled. It is a per-port
	8	LAN		High 💌	@ 10M @ 100M	G Half G Ful	Enable	VLAN1	setting.
	DMZ/Internet	DMZ		and the second second	@ 10M @ 100M	G Half G Ful	Enable		More
	Internet	WAN			@ 10M @ 100N	Half @ Ful	Enable		

• Port ID (1-7) — From the drop-down list choose the Priority as High.

-								10/100 8	port VPN Rou	iter RV082
Port Management	System Summary	Setup	DHCP	System Management	Port Management	Firewall	ProtectL	ink VPN	Log Wizar	d Support Logout
	Port Setup	Port Status								
Basic Per Port Config.										SITEMAP
	Port ID	Interface	Disable	Priority	Speed	Dupl	ex	Auto Neg.	VLAN	
	1	LAN		High 💌	@ 10M @ 100M	C Half	@ Full	Enable	VLAN1	Port ID:
	2	LAN		High 💌	@ 10M @ 100M	C Half	@ Full	Enable	VLAN1 -	They are port 1~8, DMZ/interpet and internet.
	3	LAN		High 💌	@ 10M @ 100M	C Half	@ Full	Enable	VLAN1 -	and and a
	4	LAN		High 💌	C 10M @ 100M	C Half	@ Full	Enable	VLAN1 -	They are LAN, WAN2 or
	5	LAN		High 💌	C 10M @ 100M	C Half	@ Full	Enable	VLAN1 -	DMZ, WAN1.
	6	LAN	Г	High 💌	@ 10M @ 100M	C Half	@ Full	Enable	VLAN1 -	Disable:
	_ 7	LAN		High 💌	@ 10M @ 100M	C Half	@ Full	Enable	VLAN1 -	Check the box, the port wi be disabled. It is a per-port
	8	LAN		Normal -	@ 10M @ 100M	C Half	@ Full	Enable	VLAN8	setting.
	DMZ/Internet	DMZ		_	@ 10M @ 100M	C Half	@ Full	Enable		More
	Internet	WAN			@ 10M @ 100M	C Half	@ Full	Enable	1	

• Port ID 8 — Choose the Priority as Normal and in the VLAN field, choose VLAN8.

Step 31. Click **Save Settings** to save the changes.

Bandwidth Management for VLAN8

Upstream Setup



Step 32. In the web configuration utility, choose **System Management > Bandwidth Management**. The **Bandwidth Management** page opens:



Step 33. In the Bandwidth Management field, click Rate Control.



Step 34. In the Interface field, check **WAN1** in the interface field.

Step 35. In the Service drop-down list, choose All Traffic[TCP&UDP/1~65535].

Step 36. In the IP field, enter 26 in the first field and 26 in the next field.

Step 37. In the Direction drop-down list, choose Upstream.

Step 38. Enter the Max. Rate to be 200 kbit/sec.

Step 39. In the Enable field, check Enable.

Step 40. Click Update this application.

Downstream Setup



Step 41. In the Interface field, check **WAN1** in the interface field.

Step 42. In the Service drop-down list, choose All Traffic[TCP&UDP/1~65535].

Step 43. In the IP field, enter 26 in the first box and 26 on the next box.

Step 44. In the Direction drop-down list, choose Downstream.

Step 45. Enter the Max. Rate to be 4096 Kbit/sec.

Step 46. In the Enable field, check **Enable**.

Step 47. Click Update this application.

Step 48. Click **Save Settings** to save the changes.

How to Check Port status of 2 VLANs and Ports

Port Status of VLAN 1-7

Step 49. From the drop-down list choose any Port ID from 1-7. Here, Port ID 2 is chosen.

						Firmuare Version: 2.0.0 15-tm
				10/100	8-port VPN Route	r RV082
Port Management	System Setup DHCP N Summary Port Status	System Port Aanagement Management	Firewall Pro	tectLink VPN	Log Wizard	Support Logout
Port2 Status	Port ID : 2					Users can choose the Port
Summary	Type Interface Link Status Port Activity Priority Speed Status Duplex Status Auto negotiation VLAN	10Base-T / 100Base-TX LAN Up Port Enabled High 100 Mbps Full Enabled VLAN1				D from put down menu to see the status of the selected port. In summary table, it will show the setting for the port selected by users, such as Type, Interface, Link Status (up or down), Port Activity(on or off), Printry (High or Normal), Speed Status (10Mbps or 100Mbps), Duplex Status (half or full), Ado negotiation (on or off), and VLAN (VLAN group).
Statistics	Port Receive Packet Count Port Receive Packet Byte Count Port Transmit Packet Count Port Transmit Packet Byte Count Port Packet Error Count				88593 18060400 181193 93381880 0	More

Note : Under summary and statistics verify the following.

- Verify that the Priority is **High**.
- Verify that the VLAN is VLAN1.

• In the statistics field, verify that the received packet and byte count, transmitted packet and byte count and error count.

Status of VLAN 8

						10/100	8-port V	PN Router	R	V082
Port lanagement	System Summary Setup DHCP	System Management	Port Management	Firewall	ProtectLink	VPN	Log	Wizard	Support	Logout
	Port Setup Port Status									
	Port ID : 8								SI SI	TEMAP
Port8 Status								_		
Summary	Time	10Page T / 10	Pare TV						Jsers can che D from pull do	wn menu to
	type	1.000	VERIFY IN						selected port.	or ule
	Interface	LAN						_	n summary ta	ble, it will
	Link Status	Up							show the sett	ing for the
	Port Activity	Port Enabled							ort selected I such as Type	by users, interface
	Priority	Normal							.ink Status (u	p or down),
	Speed Status	100 Mbps							Priority (High o	n or ott), ir Normal),
	Duplex Status	Full							Speed Status (00Mbos), Du	10Mbps or olex Status
	Auto negotiation	Enabled							half or full), A	uto
	VLAN	VLANB							VLAN (VLAN	group).
Statistics	Port Receive Packet Count						31366		More	
	Port Receive Packet Byte Count					2	1536213	5		
	Port Transmit Packet Count						27106	8		
	Port Transmit Packet Byte Count					1	3354875	2		
	Port Packet Error Count						(0		

Step 50. From the drop-down list choose Port ID: 8.

Note: Especially port 8 is chosen to see whether it has been setup right.

Under summary and statistics verify the following. These verifications are done to see whether the port has been setup properly:

- Verify that the Priority is Normal.
- Verify that the VLAN is VLAN8.

• In the statistics field, verify the received packet and byte count, transmitted packet and byte count and error count.

How to Check Connectivity between VLANs

Step 51. In the web configuration utility, choose **System Management > Diagnostic**. The *Diagnostic* page opens:

Diagnostic	
O DNS Name Lookup	Ping
Ping host or IP address :	192.168.0.26 Go
Status :	Test Failed
Packets :	4/4 transmitted,0/4 received,100 % loss
Round Trip Time :	Minimun = 0.0 ms Maximun = 0.0 ms Average = 0.0 ms

Step 52. Click Ping.

Diagnostic	
O DNS Name Lookup	e Ping
Ping host or IP address :	[192.168.0.26] Go
Status :	Test Failed
Packets :	4/4 transmitted,0/4 received,100 % loss
Round Trip Time :	Minimun = 0.0 ms Maximun = 0.0 ms Average = 0.0 ms

Step 53. In Ping host or IP address field, enter 192.168.0.26 and click Go.

Note: The status says Test Failed and the packet loss will be 100%. It means that any hosts which are connected to ports in VLAN1 (port1-7) cannot ping IP 192.168.0.26 which is in VLAN 8 on port 8 of RV082.

Diagnostic	
O DNS Name Lookup	Ping
Ping host or IP address :	The turb art turb
Status :	Test Succeeded
Packets :	4/4 transmitted,4/4 received,0 % loss
Round Trip Time :	Minimun = 0.9 ms Maximun = 1.2 ms Average = 1.0 ms

Step 54. Again in Ping host or IP address field, enter ISP address and click Go.

Note: The status says Test Succeeded and the packet loss will be 0%. It means that 192.168.0.1(RV082) can reach the ISP.



The above image shows that the clients on RV082 can reach www.google.com. Hosts connected to LAN of consumer router which get IP from DHCP of that router can ping and access Internet.

Diagnostic	
O DNS Name Lookup	Ping
Ping host or IP address :	The state and state
Status :	Test Failed
Packets :	4/4 transmitted,0/4 received,100 % loss
Round Trip Time :	Minimun = 0.0 ms Maximun = 0.0 ms Average = 0.0 ms

Hosts from LAN of consumer router cannot ping private IPs of RV082 which are inside of VLAN1.