How To | Achieve Router-On-A-Stick Routing Between VLANs On Allied Telesis Routers

Introduction

Router on a stick, also called *one-armed routing*, describes the use of a single multihomed interface of a router to route between multiple subnets. It is commonly used when multiple IP subnets are being used on a single LAN segment.

The router simply has a multihomed interface, with an IP address in each of the subnets being used on the segment. It can thereby participate in all of the subnets, and route between them.
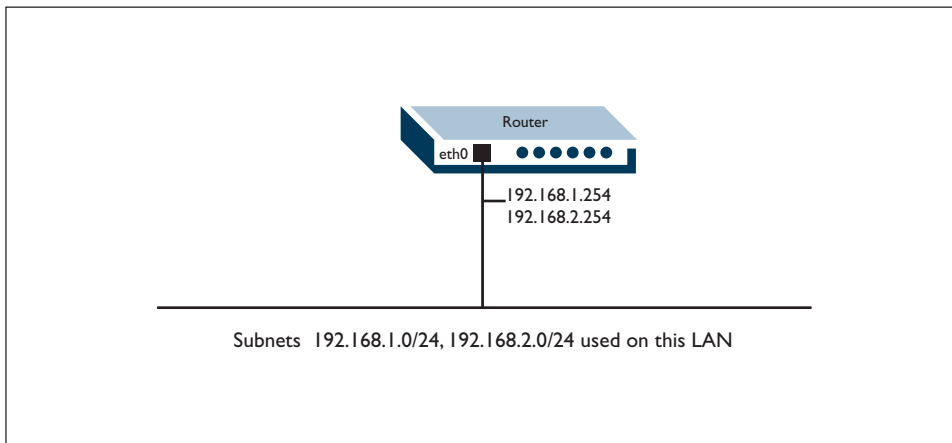
However, if a single interface on a router is to route not just between subnets on a single segment, but between multiple different VLANs, then the router needs to use VLAN tagging.
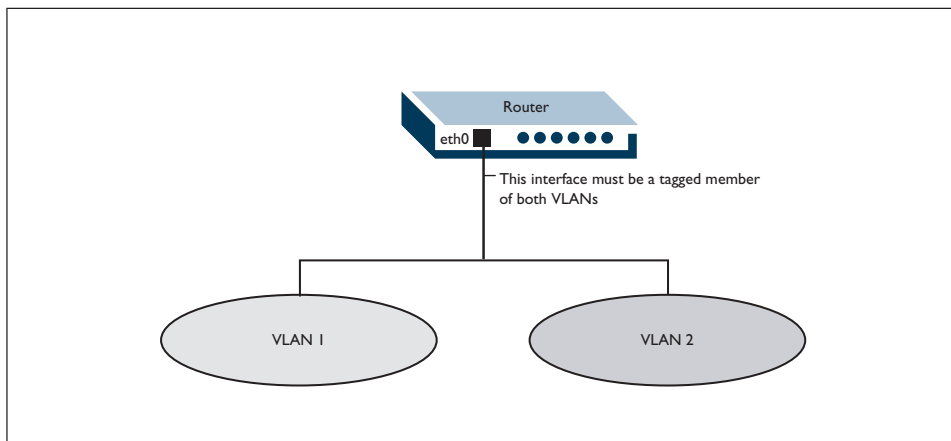
The Allied Telesis AR400 and AR700 series routers are able to perform VLAN tagging on IP packets being sent/received on their Ethernet interfaces.

Which products does it apply to?

This document applies to the following Allied Telesis routers and managed layer 3 switches, running software version 2.6.x or later:

- AR400 series routers

- AR700 series routers

Configuring the router to route between VLANs on a single interface

Consider a typical situation in which there are multiple VLANs configured on a Layer 2 switch, and a single tagged uplink port on the switch connected to the eth0 interface of the router.
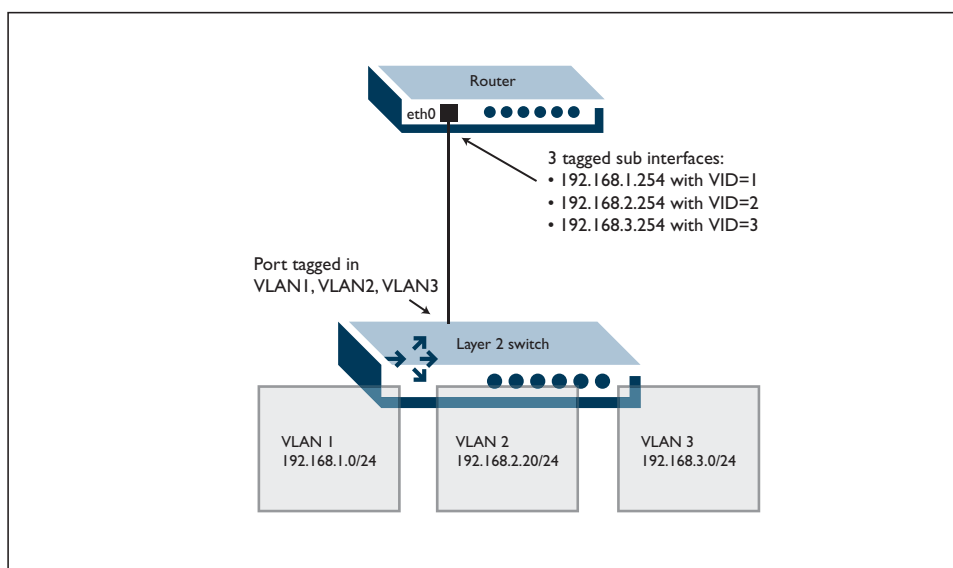
The configuration required on the router would be:

```
enable ip
add ip int=eth0-1 ip=192.168.1.254 vlantag=1
add ip int=eth0-2 ip=192.168.2.254 vlantag=2
add ip int=eth0-3 ip=192.168.3.254 vlantag=3
```

With this configuration, the router will associate incoming packets tagged with VID=*x* to the eth0-*x* subinterface. They will then be routed, based on destination IP address, to another subinterface, and tagged with the VID configured on that subinterface before being sent out the physical interface.

Routing between interfaces is still available

Note that even when the router is routing between subinterfaces on a single physical interface, it is still capable of routing between that multihomed interface and other physical interfaces.

In particular, on a router with switch ports, it would be quite possible to have other VLANs configured on the switch ports, and to route between those VLANs and the VLANs attached to the eth0 port.

For example, consider the situation depicted in the diagram below, where a second switch is attached to the router via an untagged uplink, that can therefore carry only VLAN4 packets.
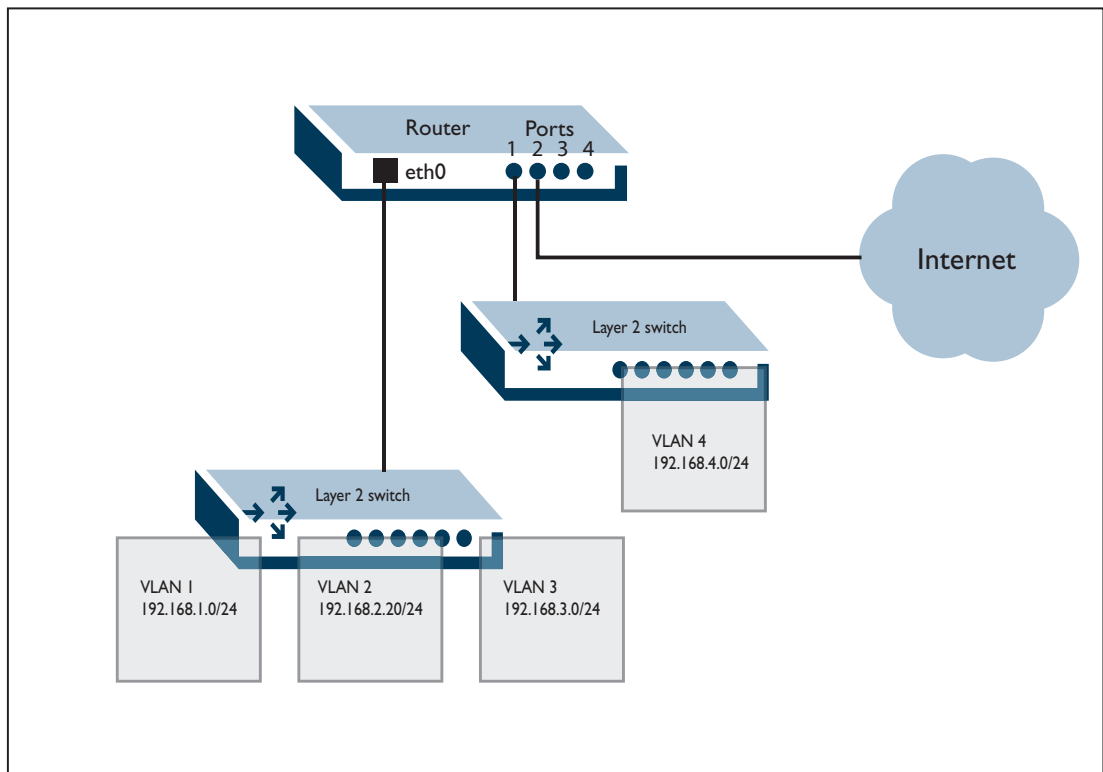
For this situation, the router would be configured as follows:

```
enable ip

add ip int=eth0-1 ip=192.168.1.254 vlantag=1
add ip int=eth0-2 ip=192.168.2.254 vlantag=2
add ip int=eth0-3 ip=192.168.3.254 vlantag=3

create vlan=vlan4 vid=4
add vlan4 port=1
add ip int=vlan4 ip=192.168.4.254
```

```
create vlan=5 vid=5

add vlan=5 port=2

add ip int=vlan5 ip=192.168.5.254

add ip route=0.0.0.0 int=vlan5 next=192.168.5.253
```

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