

The Brothers WISP



Route it like it's HOT

Greg Sowell Consulting

Building a Better BGP Lab

# Who Am I

- ▶ Greg Sowell – A+, Network+, CCNA, CCNP, CCIE Written, MTCNA, MTCRE, MTCINE, Mikrotik Certified Trainer
- ▶ VP of Technology FIBERTOWN Datacenters
- ▶ Consultant – [GregSowell.com](http://GregSowell.com)
- ▶ Author at [Lynda.com/gregsowell](http://Lynda.com/gregsowell)

# The Brothers WISP

[TheBrothersWISP.com](http://TheBrothersWISP.com)

[Patreon.com/thebrotherswisp](https://Patreon.com/thebrotherswisp)

- ▶ Thanks to Steve Gilberd for the web interface! Find him on the Patron only slack!
- ▶ Greg Sowell - Texas
- ▶ Andrew Cox - Australia
- ▶ Andrew Thrift – New Zealand
- ▶ Tomas Kirnak – Slovakia
- ▶ Tom Smyth – Ireland
- ▶ Mike Hammett - Chicago
- ▶ JJ Boyd – North Carolina
- ▶ Alex Hart – Oregon
- ▶ Justin Miller – Virginia
- ▶ Justin Wilson – Indiana

# Assumptions

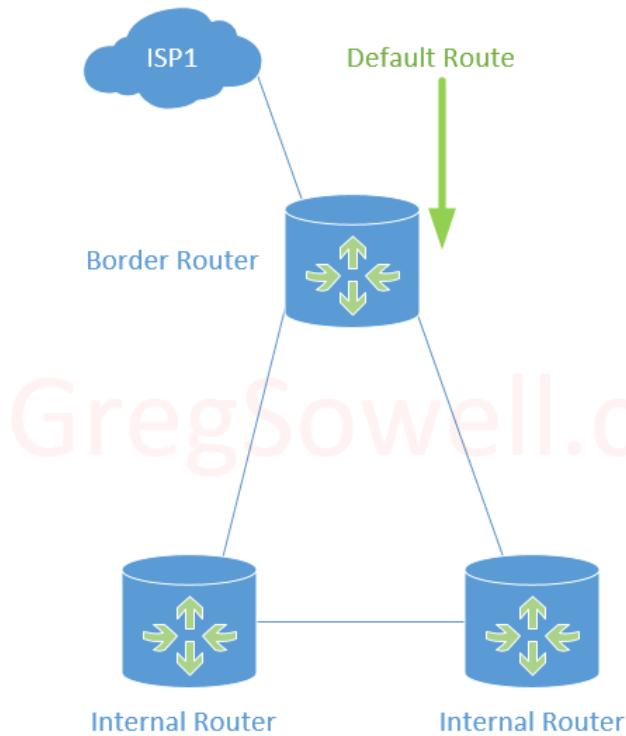
- ▶ You are familiar with the Mikrotik interface
- ▶ You are familiar with dynamic routing
- ▶ You have some understanding of what BGP is and how it operates

# BGP Common Uses/Advantages

- ▶ Connecting to upstream providers(ISP or exchange)
- ▶ Control my IP address advertisements
- ▶ Traffic control inbound/outbound
- ▶ DoS mitigation Triggered Black Holing(TBH)
- ▶ Selective manipulation through communities

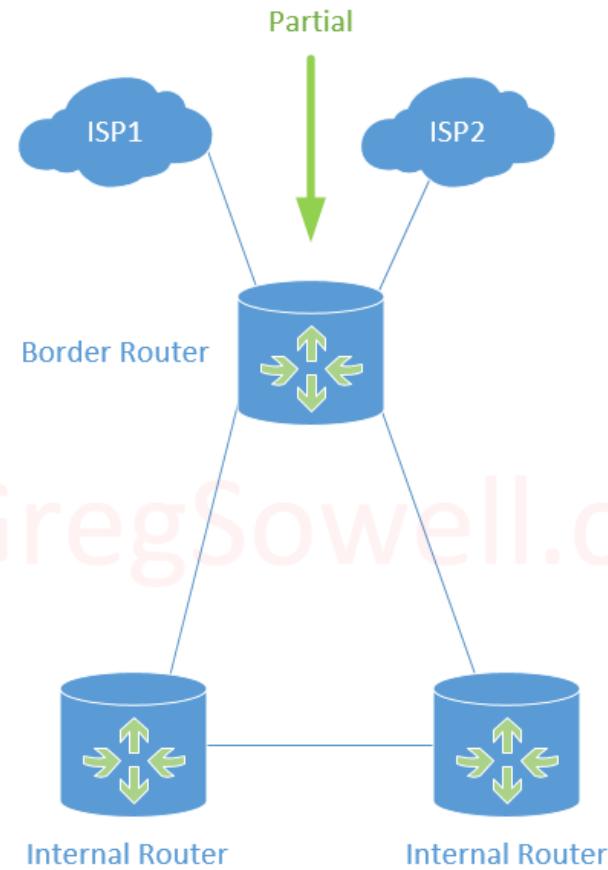
# BGP Route Feeds - Default

- ▶ Just a default route from a provider
  - ▶ Single legged
  - ▶ Low power router



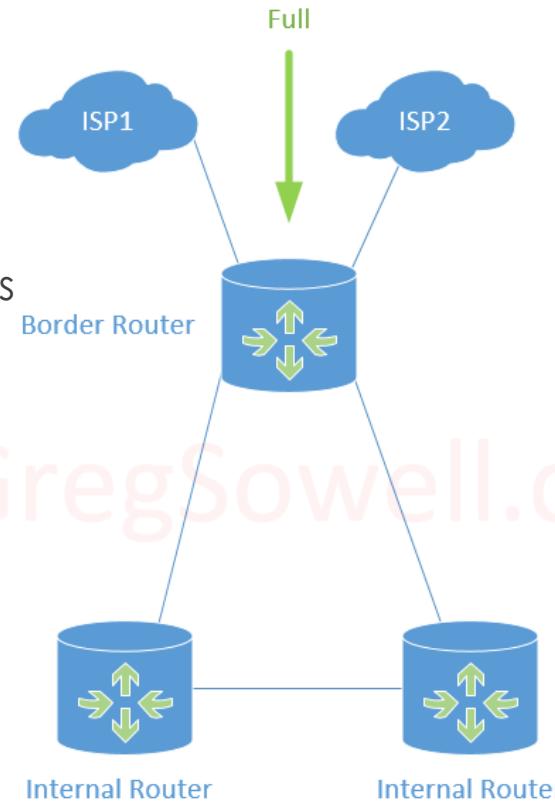
# BGP Route Feeds - Partial

- ▶ Regional routes only
  - ▶ Up to /24 for region
  - ▶ Aggregated international routes
  - ▶ Multiple ISPs
  - ▶ Limited router resources
  - ▶ Little international traffic
  - ▶ \*I recommend also pulling default\*



# BGP Route Feeds - Full

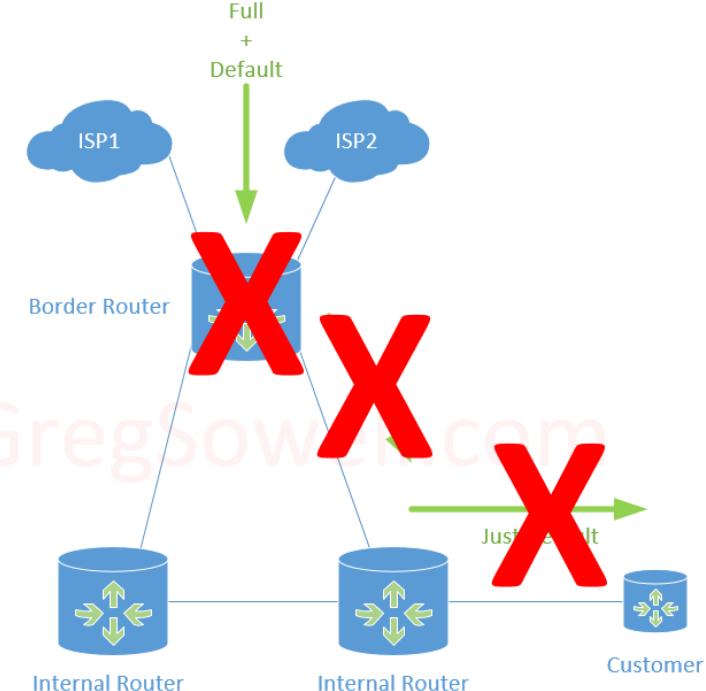
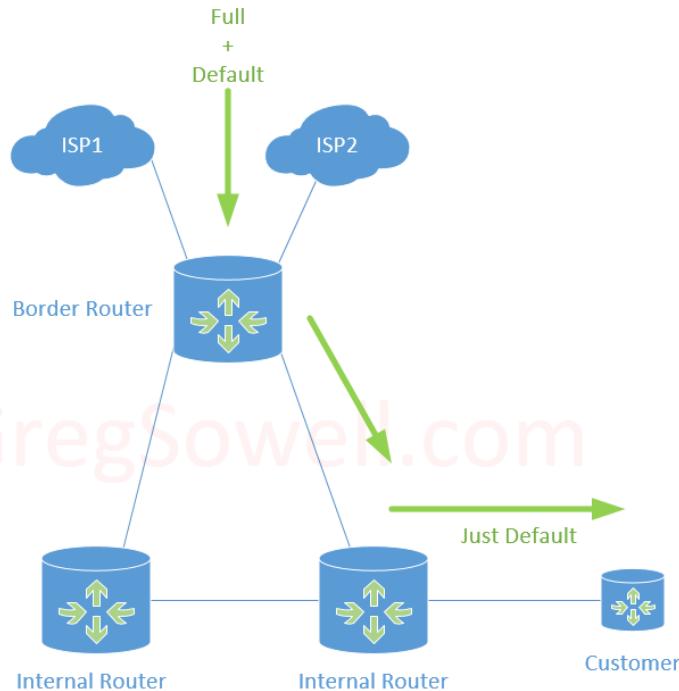
- ▶ All routes known to provider
  - ▶ Best for path selection with multiple providers
  - ▶ Requires additional router resources
  - ▶ \*I recommend also pulling default\*



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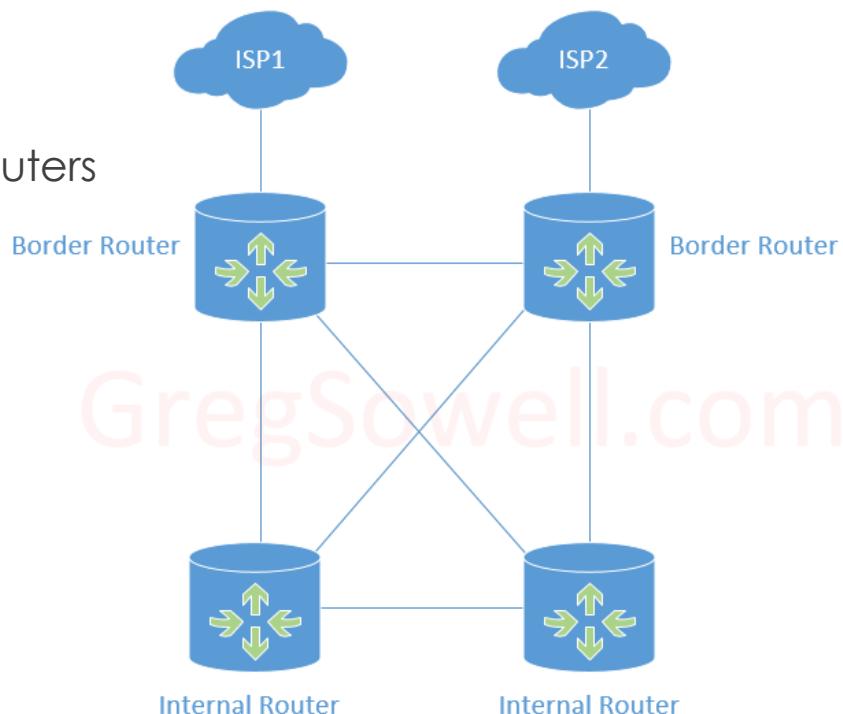
# Why Always Pull Default Too

- ▶ Customers pulling a default from you need you to intelligently remove it on failure



# Border Design

- ▶ Multiple feeds should have multiple routers
  - ▶ Failure redundancy
  - ▶ Maintenance redundancy
  - ▶ Spreads load across multiple routers
  - ▶ Best path still works



# Design Done, Now What?

- ▶ I'm designed my network
- ▶ Developed configurations
- ▶ How do I test?
  - ▶ Will my configurations work?
  - ▶ Will my routers be able to support the table size?

# Get Creds For a Full BGP Feed!

- ▶ Browse to [http://gregsowell.com/?page\\_id=5771](http://gregsowell.com/?page_id=5771)

## 1. Connection Information

After filling in the information below, a username will be assigned to you using the password you specify below. This is what you will use to authenticate the L2TP tunnels.

## BGP Lab Provisioning

Email address

Password

Full name

I'm not a robot

reCAPTCHA

Privacy - Terms

Submit

# Credentials Email

- ▶ After I submit my info in the form I get the below simple email

Dear Greg Sowell,

Your BGP Lab account has been provisioned. Please use the following details to establish your BGP sessions. The password is the one you entered into the provisioning form.

**Username AS Number**

65002R1 65002

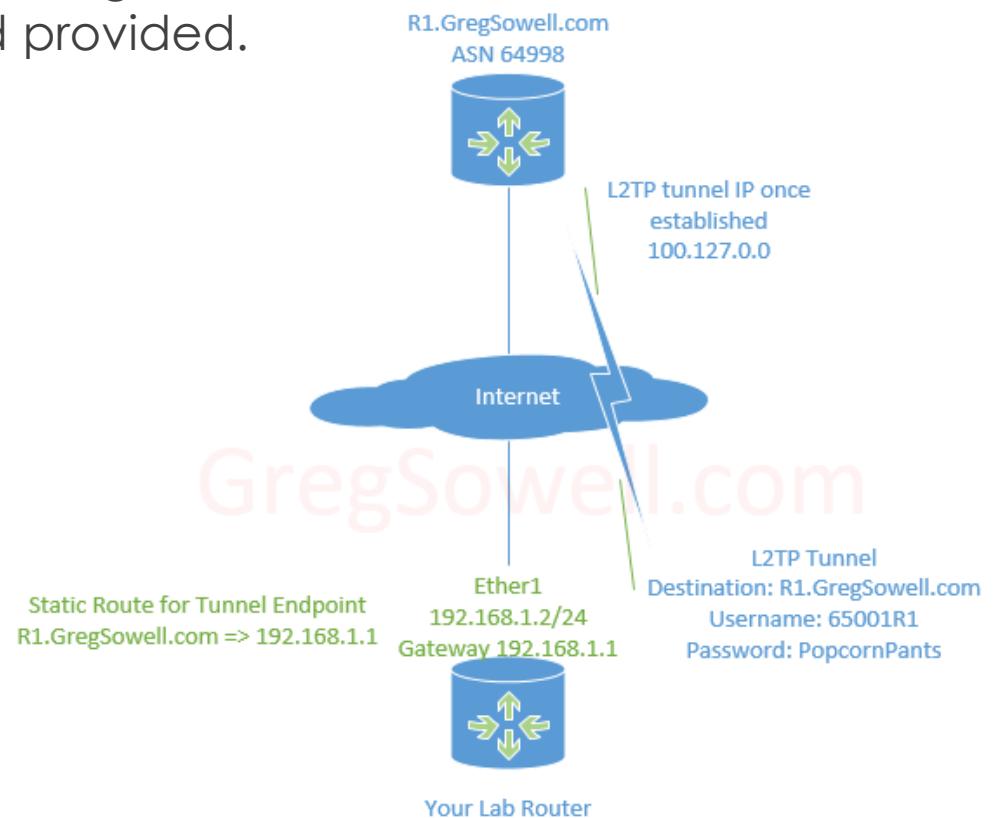
65002R2 65002

Your account is valid until Sunday, 06-May-18 01:21:09 UTC, at which point your sessions will be terminated. You may extend your registration by filling out the provisioning form at any time prior to the account expiring.

Kind regards,  
Greg Sowell

# Create a Tunnel

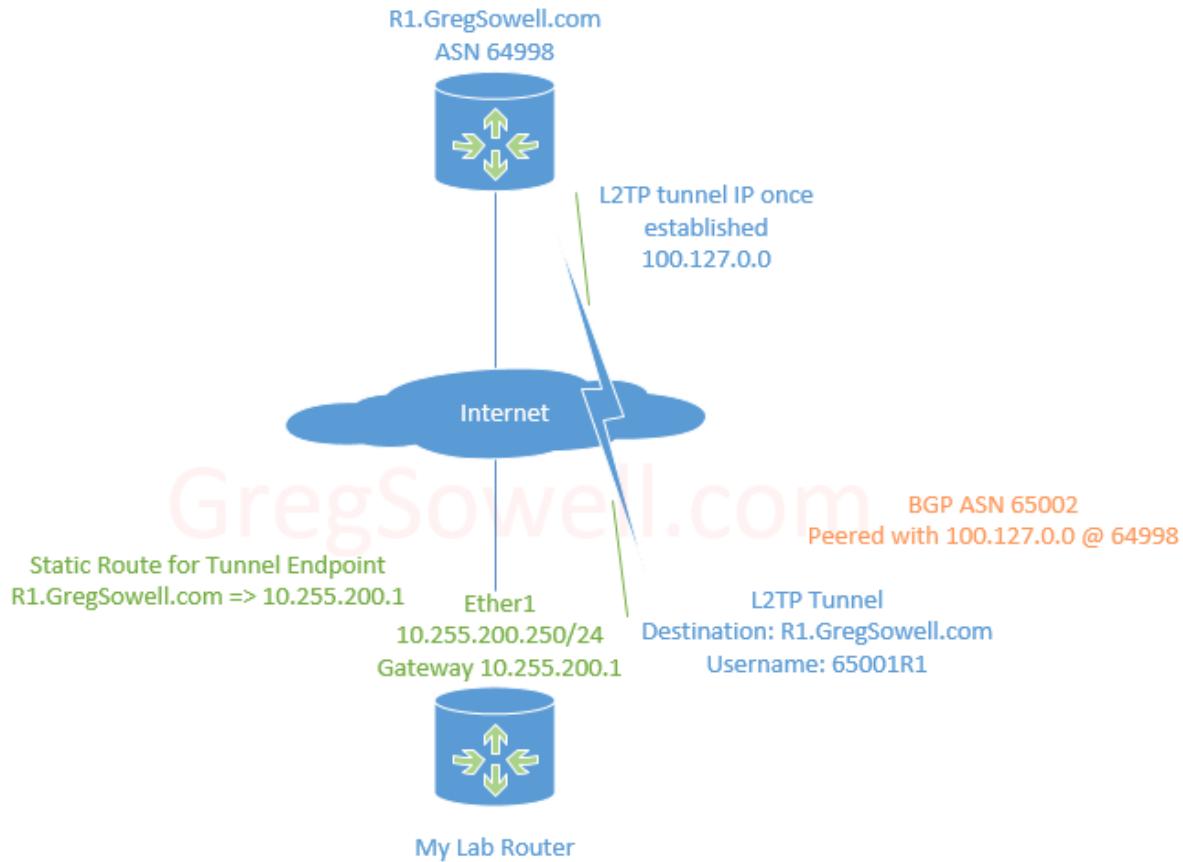
- ▶ Create L2TP tunnel to R1.GregSowell.com with the username and password provided.



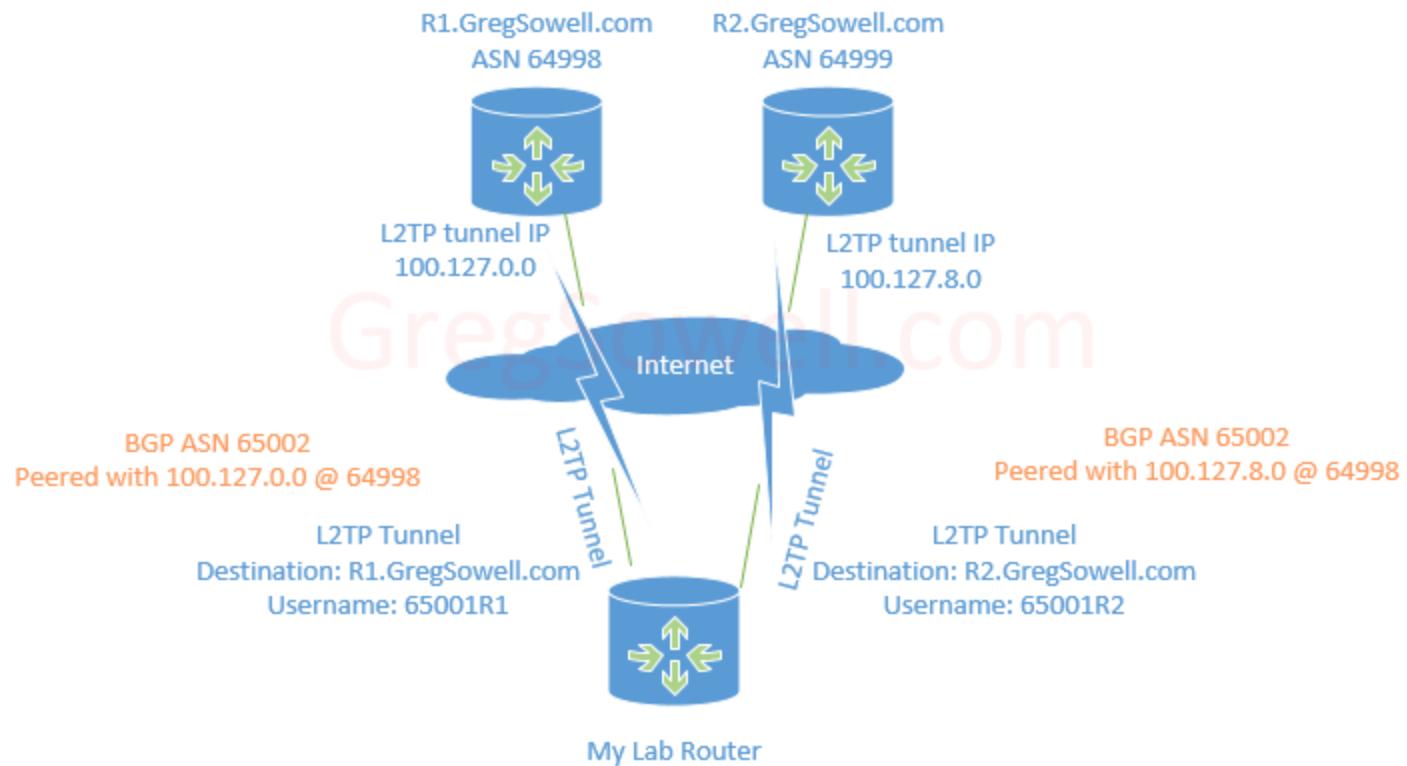
# Create BGP Peering

- ▶ Create static route for tunnel endpoint  
R1.GregSowell.com to my actual next hop
- ▶ Create BGP peering to 100.127.0.0 via my emailed  
AS of 65002

# Current Network 1 ISP



# Dual ISP Network



# Enabling Second ISP

- ▶ Create static route
- ▶ Create L2TP Tunnel
- ▶ Create BGP Session
  - ▶ Also some troubleshooting

# Manipulate Local Preference

- ▶ Affect the best path selection process
- ▶ Higher is better
- ▶ Transitive inside of a single AS
- ▶ Higher is better

# Prepending Outbound

- ▶ Affect the best path selection process
- ▶ Add additional hops to the AS\_PATH path attribute
- ▶ Artificially make a route seem further away
- ▶ When done to upstreams it manipulates inbound routing



Questions?



One last thing, shake my hand,  
tell me your story, and buy the  
brothers a beer!

Thanks and happy routing!

# Resources

- ▶ BGP Lab Portal
  - ▶ [http://gregsowell.com/?page\\_id=5771](http://gregsowell.com/?page_id=5771)
- ▶ Greg's Blog
  - ▶ <http://GregSowell.com>
- ▶ TheBrothersWISP
  - ▶ <http://thebrotherswisp.com/>
  - ▶ <http://Patreon.com/thebrotherswisp>