The Brothers WISP

Greg Sowell Consulting

Route it like it's HOT

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

▶ Author at Lynda.com/gregsowell

The Brothers WISP

TheBrothersWISP.com

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
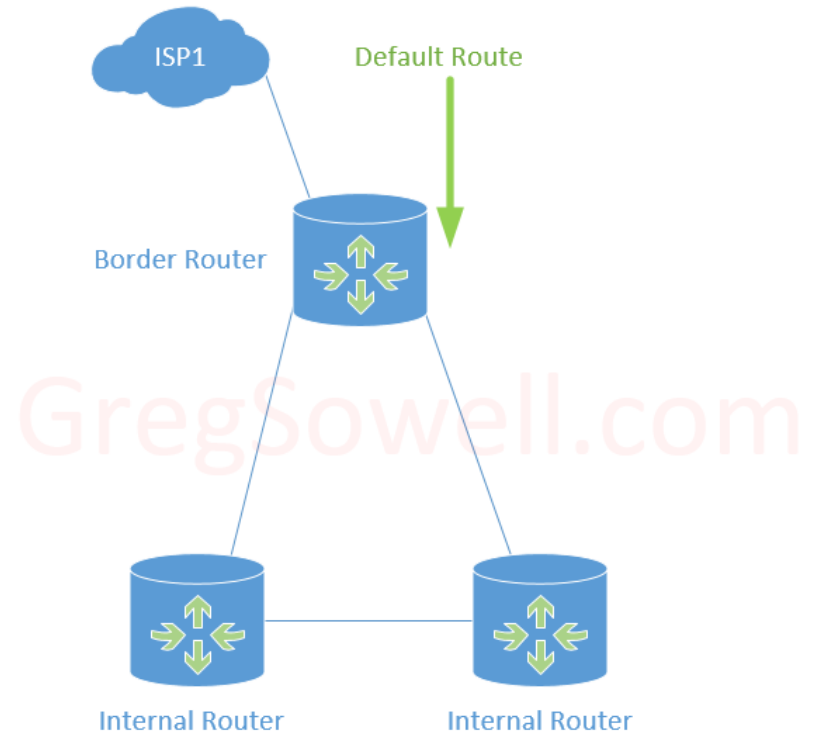
BGP Route Feeds - Partial

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

Partial

ISP1 ISP2

Border Router

Internal Router   Internal Router

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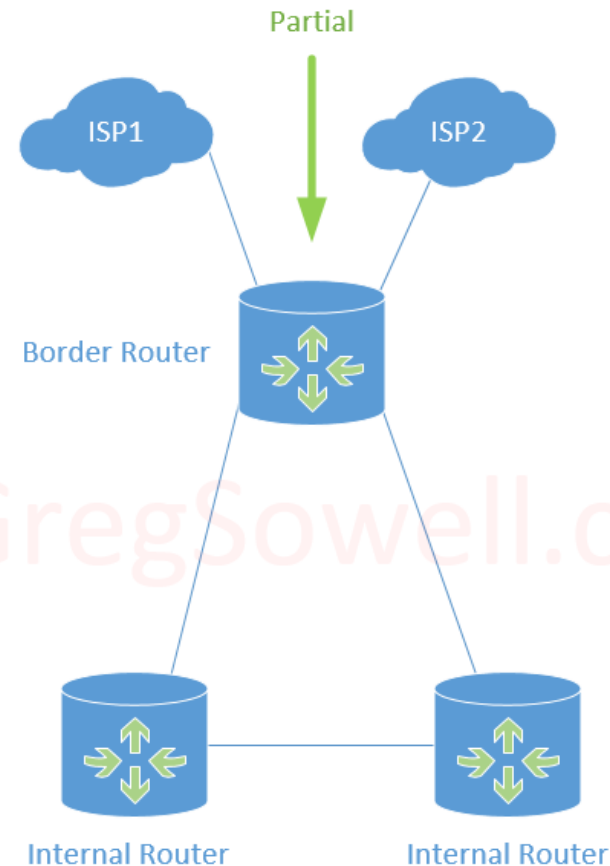
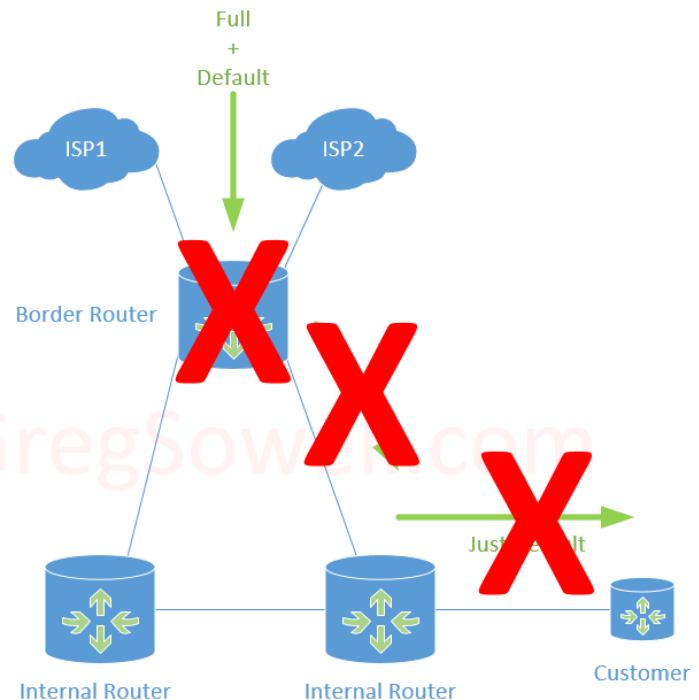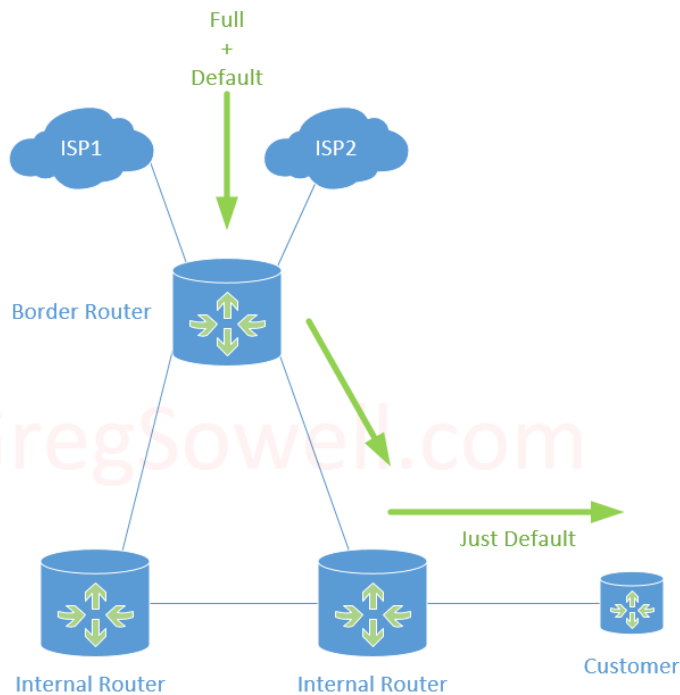# BGP Route Feeds - Full

- All routes known to provider
  - Best for path selection with multiple providers
  - Requires additional router resources
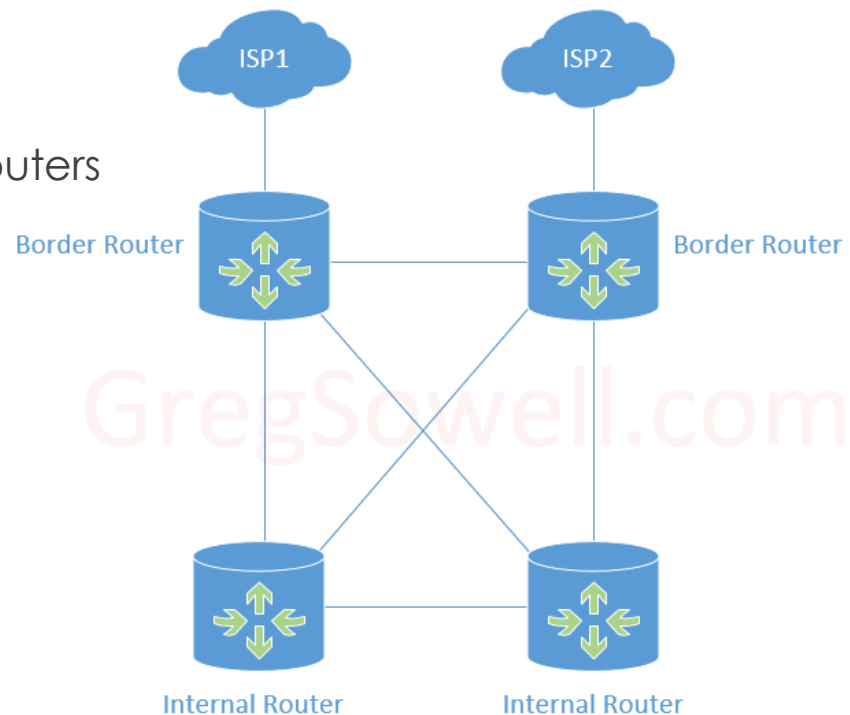 - *I recommend also pulling default*
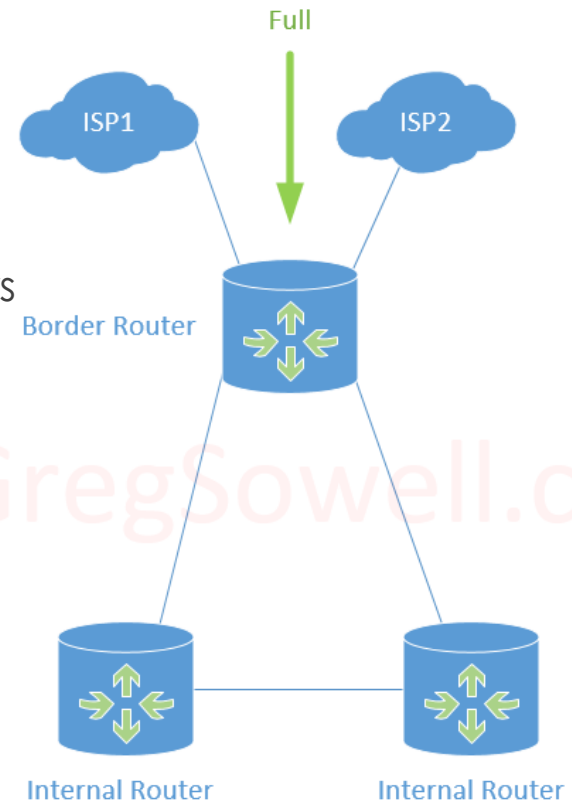
Why Always Pull Default Too

▶ 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

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.

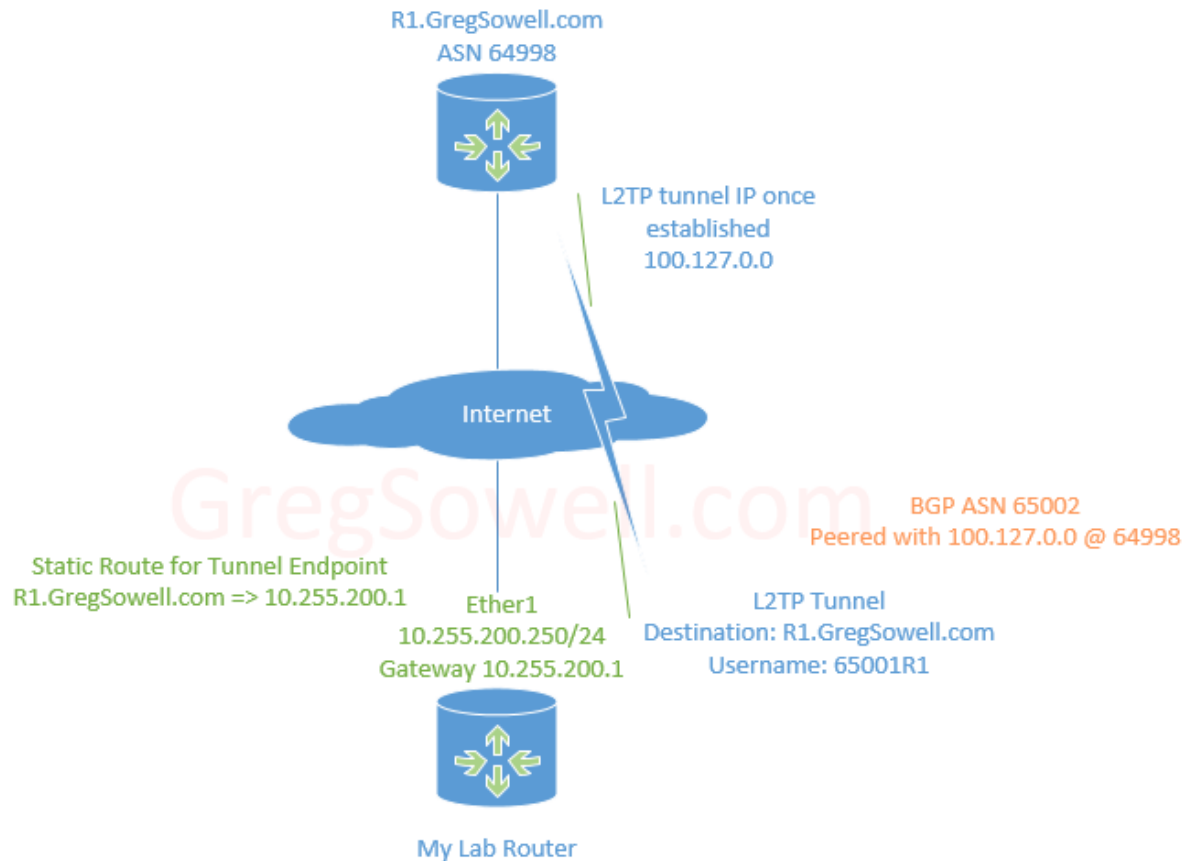Kind regards,
Greg Sowell

Create a Tunnel

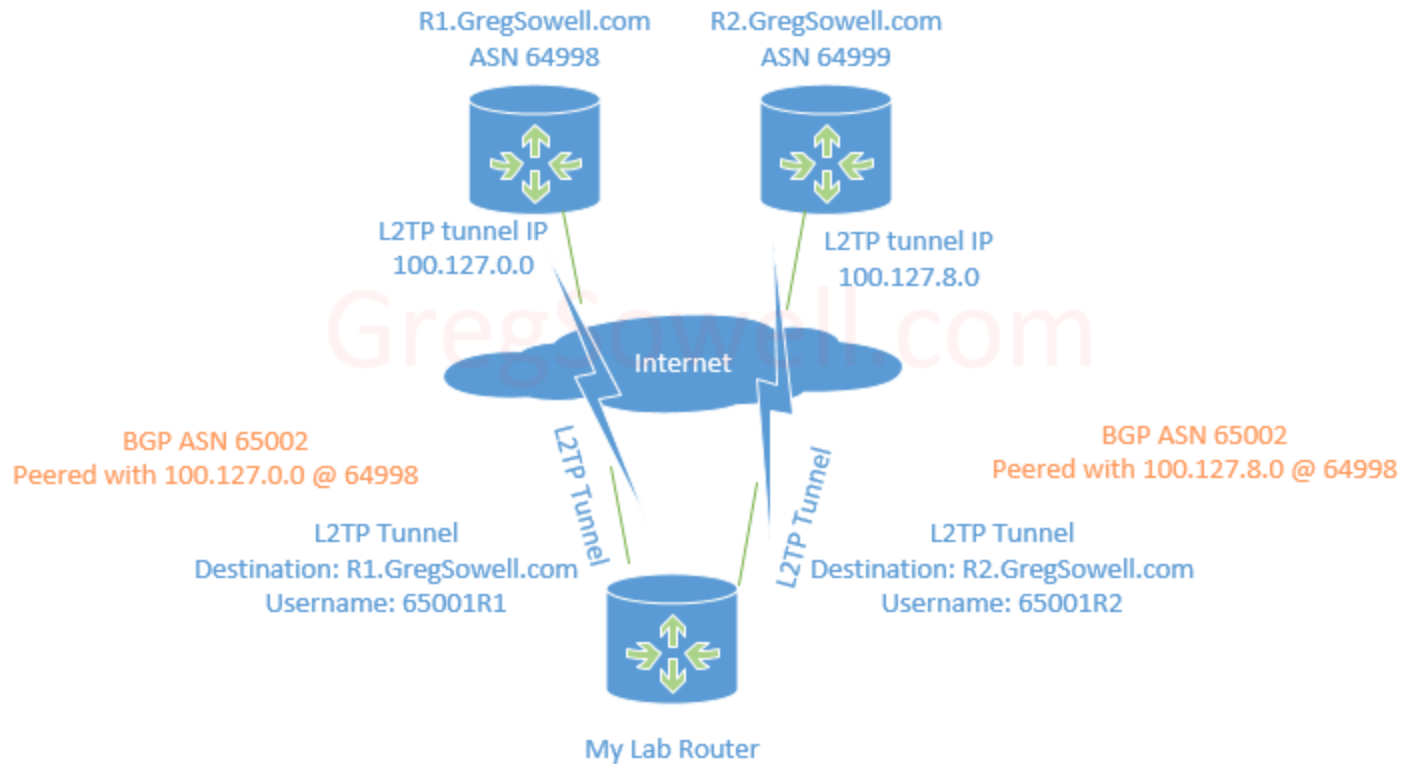▶ Create L2TP tunnel to R1.GregSowell.com with the username and password provided.
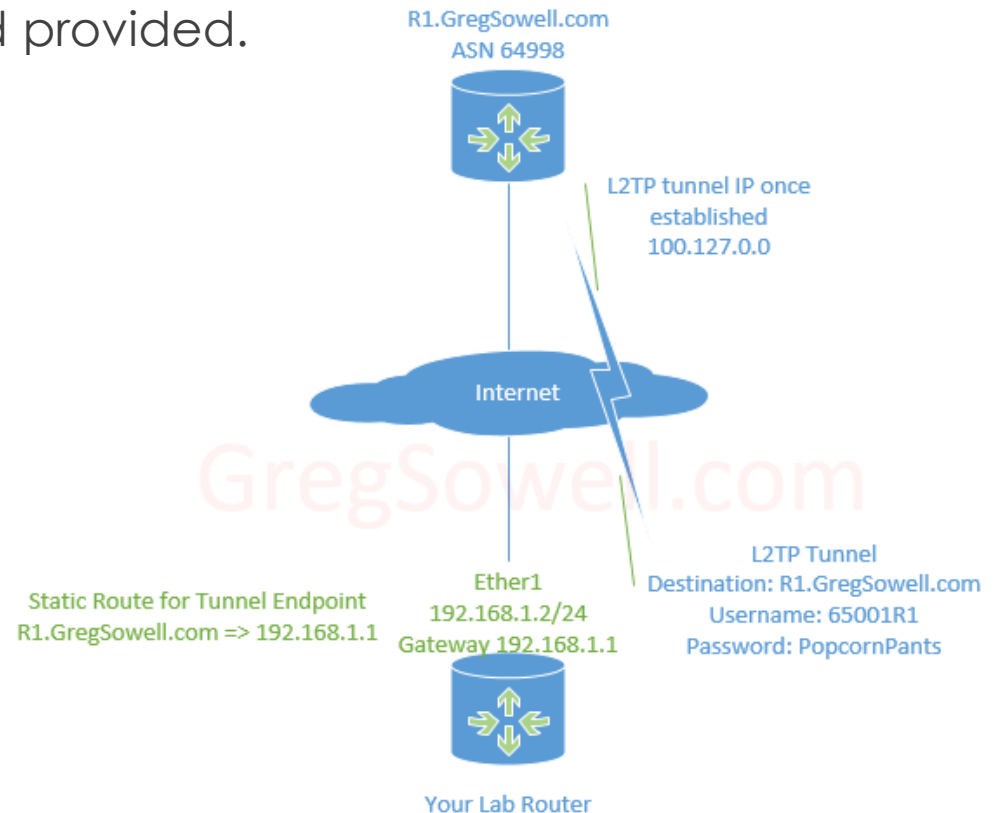
Create BGP Peering

▶ 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

R1.GregSowell.com
ASN 64998

L2TP tunnel IP once
established
100.127.0.0

Internet

GregSowell.com

BGP ASN 65002
Peered with 100.127.0.0 @ 64998

Static Route for Tunnel Endpoint
R1.GregSowell.com => 10.255.200.1

Ether1
10.255.200.250/24
Gateway 10.255.200.1

L2TP Tunnel
Destination: R1.GregSowell.com
Username: 65001R1

My Lab Router

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
- Greg's Blog
  - http://GregSowell.com
- TheBrothersWISP
  - http://thebrotherswisp.com/
  - http://Patreon.com/thebrotherswisp