Operational Requirements for Secured BGP

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- Must support today's uses of BGP
- Must support all legal policies
- *May* require minor changes to how such policies are carried out, but it's better if no changes are required, especially downstream
Objections

- New failure modes
- Cost
  - Capital and operational
- Dirty data
  - Applies to any possible solution
- Some ISPs won't publish policies
- Phased deployment
New Failure Modes

- Yes – there are new ways to lose connectivity
- Secured BGP is designed to reject some routes; mistakes or buggy software can trigger this
- Of course, routing misconfigurations and attacks can cause loss of connectivity, too – remember AS 7007?
Cost

• Capital costs
  – Some initial outlay; Moore's Law will help
• Operational expenses
  – ISPs and RIRs must run CAs
  – Big problem is likely to be customer care
• Who pays? What's the incentive?
• Database cleanup
  – RIRs have already been working on this
  – Good area for government funding
Policies

- Policies are hard to intuit
- Some proposed solutions require knowledge of policies; some ISPs won't publish them
- Only solutions are to find a security solution that doesn't require that, or to persuade the ISPs that they're wrong
  - The latter hasn't worked well in the past
Phased Deployment

- Can't deploy everywhere at once, even within an ISP
- Should give preference to solutions that work well in a phased deployment scenario
- Add tuning knobs for “security radius”?  
- *Must* have mechanism for authoritative determination of whether or not an advertisement should have been signed
Security Warning

• We don't have to have perfect security

• However... it doesn't make sense to go to great effort to deploy a solution that the attackers can bypass

• Critical routers have been compromised in the past; there's no reason to think that can't happen again