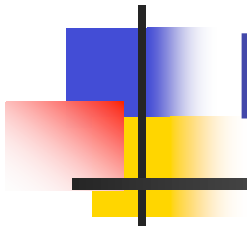
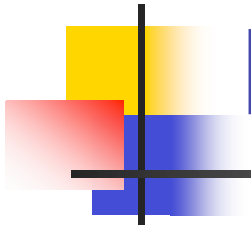


BGP Flap Damping

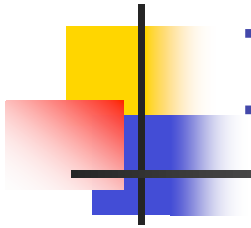
Where to now?

Philip Smith
RIPE51, Amsterdam



History

- Early Internet was susceptible to “routing storms”
  - Repeated withdrawal and re-announcement of /24 address blocks
  - Consumed significant CPU on early routers
  - Caused instability in the Internet
- “Flap damping” proposed to mitigate the effects of this instability
- Route flap damping was introduced to BGP4
  - RFC2439

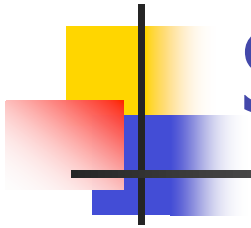


Issues

- Implementations are highly configurable
- No prior operational experience of the optimum configuration
- Operational experience showed that vendor defaults seemed too aggressive for the operational Internet
  - A couple of prefix flaps resulted in disconnectivity in the order of tens of minutes
  - BGP reset or router restart had severe implications for ISPs in the emerging commercial Internet

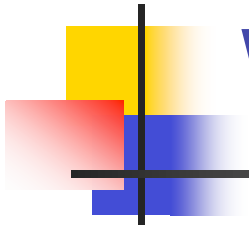
Routing WG activity

- RIPE 178 documented the problems and proposed acceptable route flap damping configuration parameters
- Updated by RIPE 210 to include “Golden Networks”
  - The address blocks of the 13 Root Servers
- Further updated by RIPE 229
  - Added website and more configuration examples



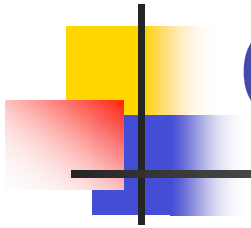
Serious Problems:

- "Route Flap Damping Exacerbates Internet Routing Convergence"
  - Zhuoqing Morley Mao, Ramesh Govindan, George Varghese & Randy H. Katz, August 2002
- "What is the sound of one route flapping?"
  - Tim Griffin, June 2002
- Various work on routing convergence by Craig Labovitz and Abha Ahuja a few years ago
- "Happy Packets"
  - Closely related work by Randy Bush *et al*



What next?

- Should RIPE 229 be declared obsolete? Or updated?
- Is flap damping bad for your network?
  - Do we need flap damping any more?
- Needed at Internet edge?
  - i.e. ISPs who are not providing transit to any other ASNs
- Needed in the Internet core?
  - Transit providers



Options:

1. Declare RIPE-229 obsolete?
2. Declare flap damping harmful?
3. Re-open work:
    a. Volunteers?
    b. To produce what?