

Cutouts Are Bad

- <http://bill.herrin.us/network/201010-cutouts.ppt>

What is a Cutout?

207.199.128.0/18 - ISP

207.199.136.0/23 –
multihomed customer

ISP's large IPv4 block
Announced via BGP to
ISP's peers and upstream
transits

Multihomed customer's
Cutout block –
announced via BGP to
several ISPs

What's wrong with Cutouts?

- You gain nothing – multihomed orgs cost just as many routing slots and IP addresses using Cutouts as they do using RIR addresses.
- Disaggregation for Traffic Engineering (TE) indistinguishable from Cutouts
- TE costs you a lot of money

The other guy's TE costs you money!

- CIDR Report 9/24/2010

- | ASnum | NetsNow | NetsAggr | NetGain | % | |
|---------|---------|----------|---------|-------|-----------|
| Table | 337009 | 208022 | 128987 | 38.3% | All ASes |
| AS6389 | 3779 | 282 | 3497 | 92.5% | BellSouth |
| AS4323 | 4468 | 1924 | 2544 | 56.9% | twtelecom |
| AS19262 | 1819 | 285 | 1534 | 84.3% | Verizon |

- Four cents per BGP route per router per year.
- $\$0.04 \times 128,987 \times \text{your } 100 \text{ routers} = \text{half a million bucks}$
- $\$0.04 \times 128,987 \times 150,000 \text{ BGP routers worldwide} = \$775 \text{ million per year to carry all that TE.}$

The Traffic Engineering Cutout Problem

207.199.128.0/18 - ISP

207.199.128.0/20 –
TE preference to
receive via a
particular upstream

207.199.136.0/23 –
multihomed customer

Must carry the /18 route

The /20 is discardable, particularly if the ISP is distant. System remains reachable regardless.

The /23 must be carried – you won't always and may never be able to reach it via the /18.

But how do you configure YOUR router to tell the difference between THEIR /20 and /23?

What's wrong with Cutouts?

- Your customers hate it too.
- Renumbering manpower costs money
- Multihomed orgs tend to run valuable systems
- Outages from renumbering issues are expensive

Cutouts

Bad Today

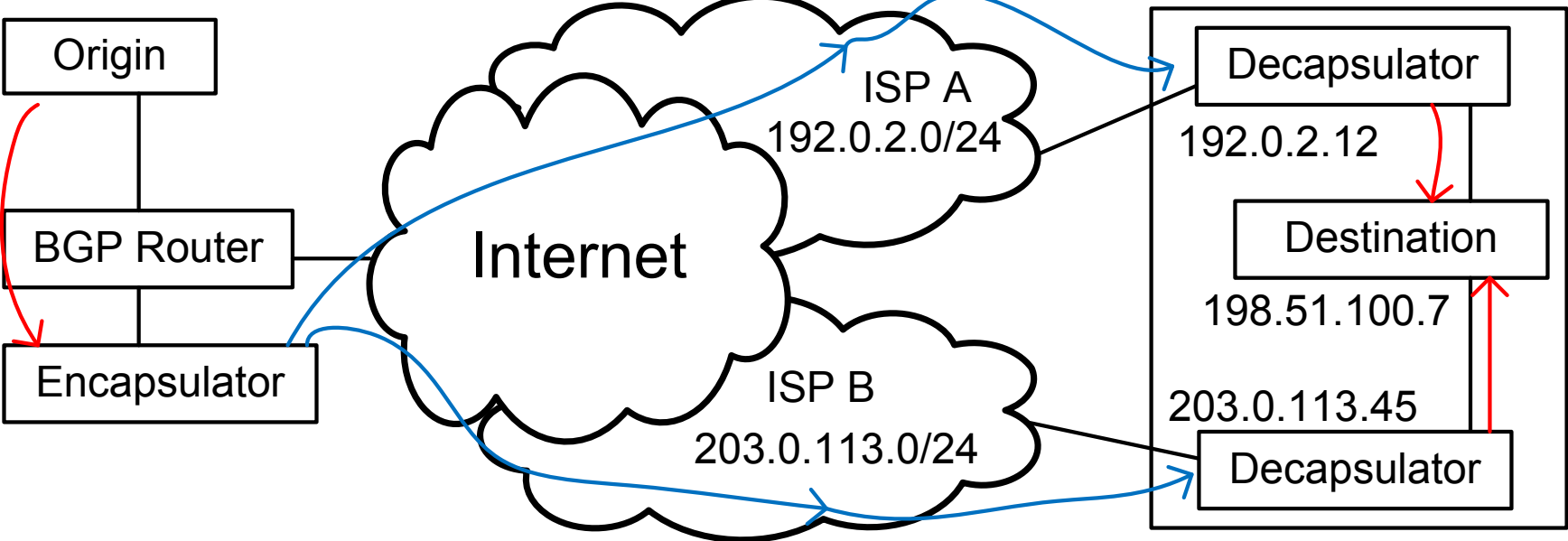
Bad Tomorrow

Future Tech: map-encap

- IRTF Routing Research Group trying to make your routers less expensive.
- “Map-encap” creates a second tier routing system using dynamic tunnels – cheap.

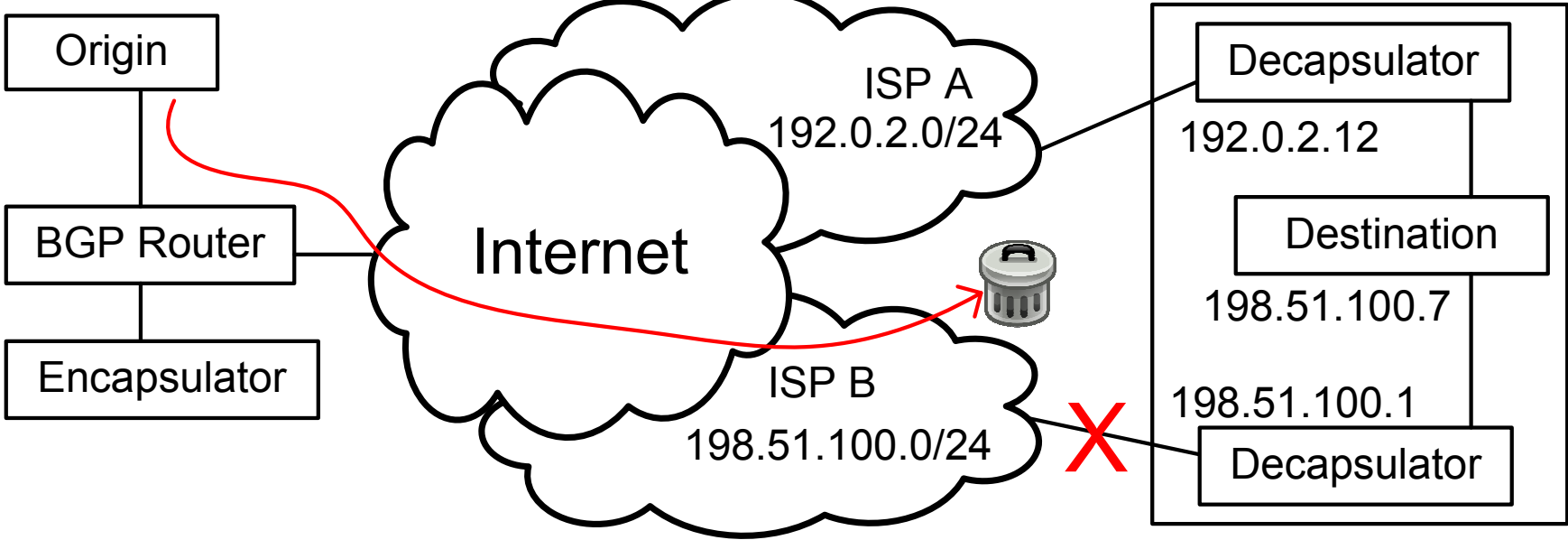
Future Tech: map-encap

Send to: 198.51.100.7



Cutouts Break Map-Encap

Send to: 198.51.100.7



What's the solution?

- Stop requiring small multihomed orgs to use cutouts.
- Don't allow cutouts to enter use in IPv6.
- Let multihoming with BGP qualify an org for an ARIN direct assignment. Period.

Conclusion

- Cutouts are Bad.
- Cutouts waste our money.
- Cutouts kill tech that would save us money.
- Let's fix ARIN policy so we can stop using them.

- <http://bill.herrin.us/network/201010-cutouts.ppt>
- <http://bill.herrin.us/network/bgpcost.html>