



# IPv4 Prefix Lengths Some Observations and Trends

René Wilhelm, Antony Antony

Daniel Karrenberg  
RIPE NCC

[daniel.karrenberg@ripe.net](mailto:daniel.karrenberg@ripe.net)



# The Questions

On the EOF coordination list ...

Gert Doering said on 29/2/08 19:20:

*... Plus some time for discussion :*

*"is 'announce all your space as /24 or /25'  
really the best approach we can come up with  
to prevent this sort of problem?"*

*This scares me.*



# The Questions

Philip Smith:

Ummm, this has been happening for years. Why do you think half the BGP table is made up of /24s ? ...

Joao Damas:

Actually finding the reasons for the /24 deaggregation rather than stopping at the first plausible answer might be interesting research. We too often repeat mantras ... (even if not easy or immediate).



# Some Facts (Measured!)

## Work in Progress

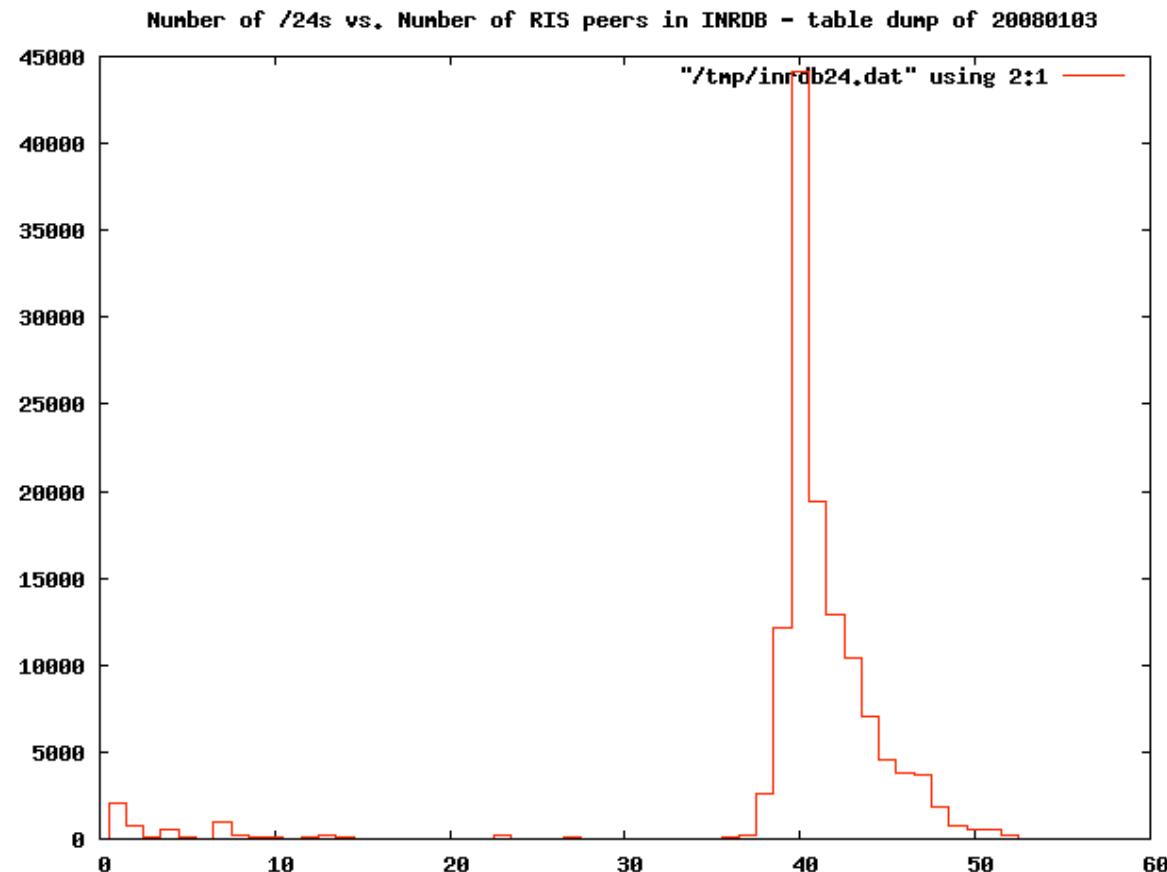




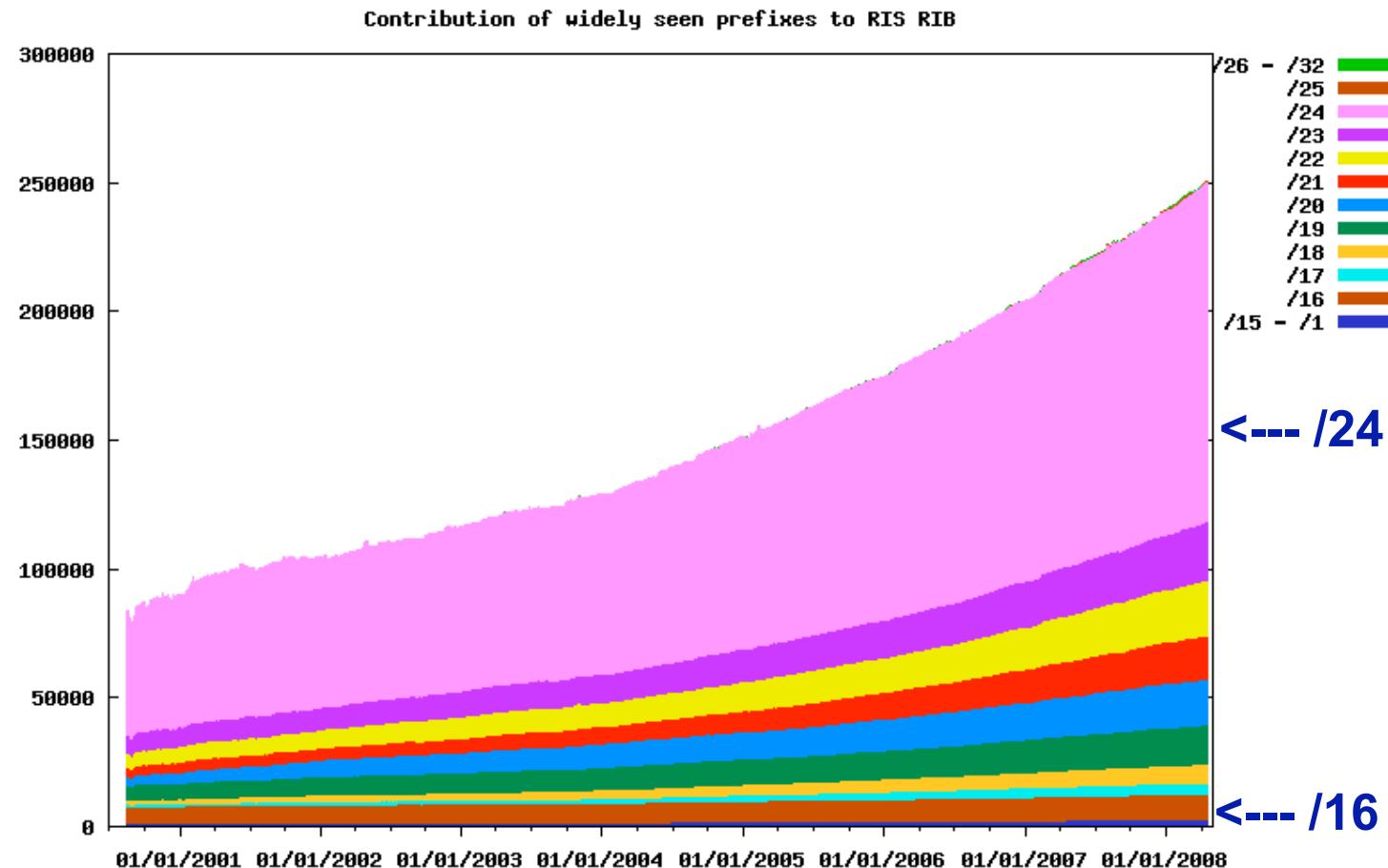
# Some Facts - Measurement Method

- All the following graphs:
  - based on observed Internet routing data from the RIS
  - 5 route collectors: rrc00, rrc03, rrc06, rrc13, rrc15
  - time interval: ~ 2001 - present
  - disregarding local routes, e.g. those seen from < 10 peers

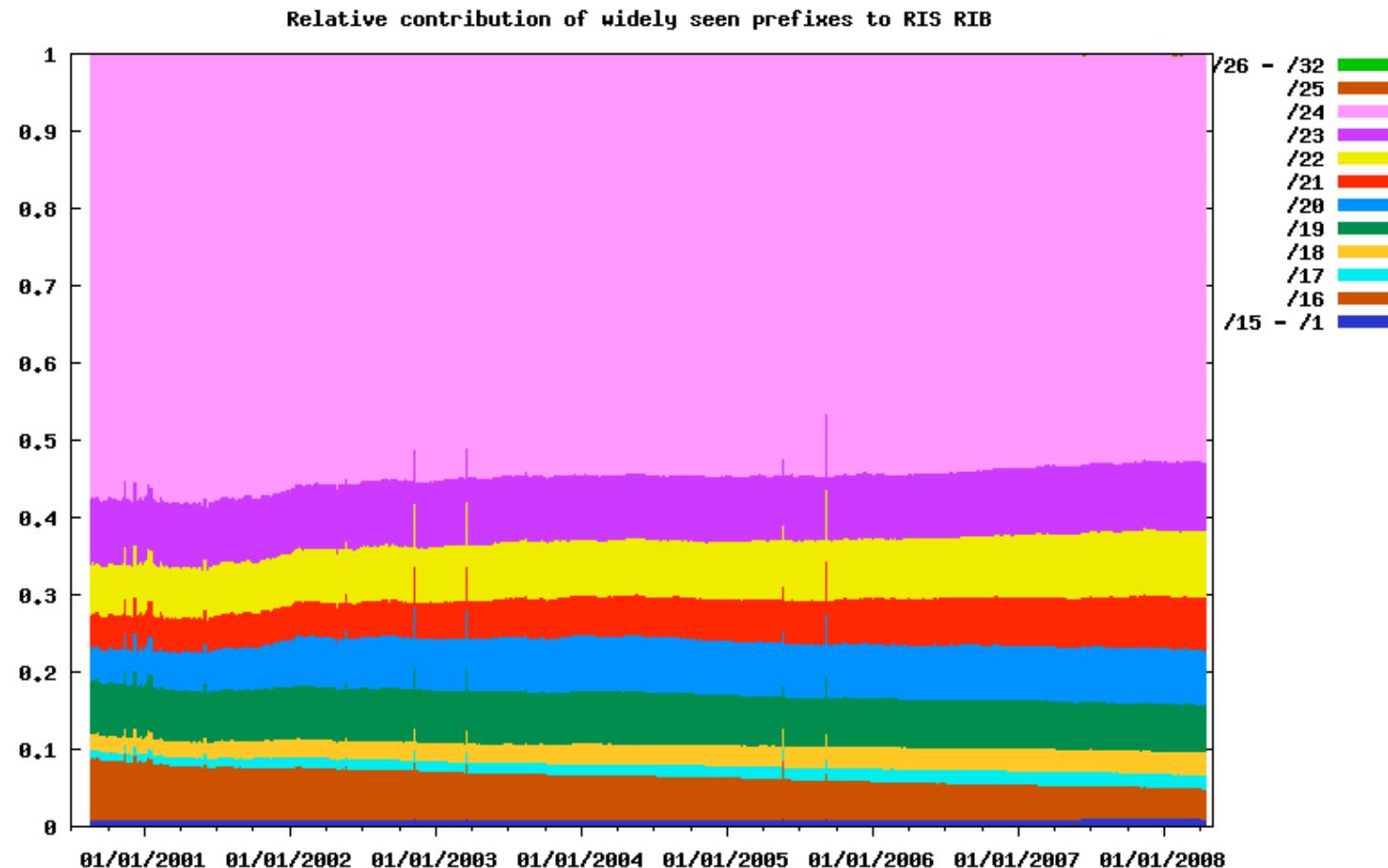
# Bi-Modal Distribution



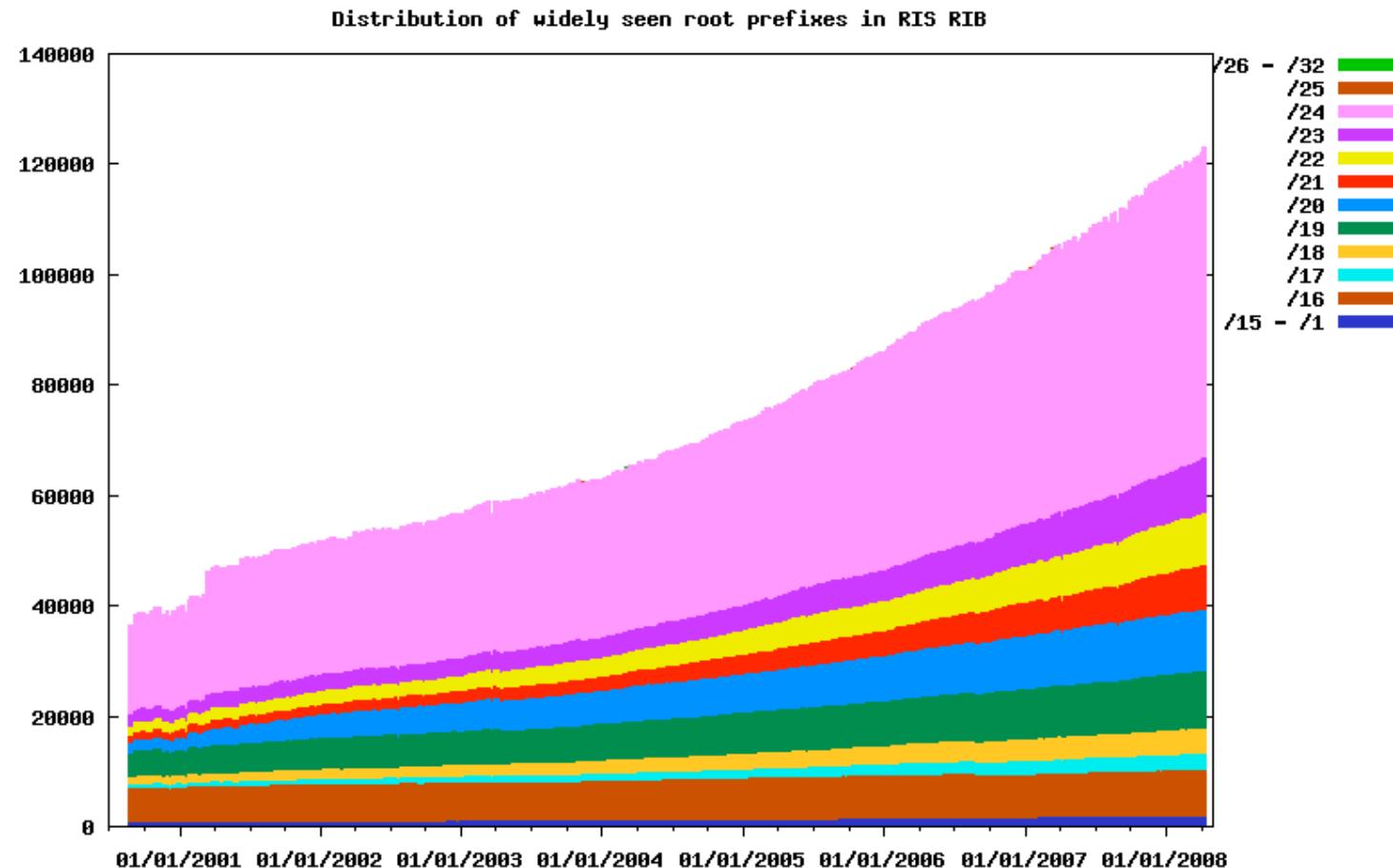
# Prefix Lengths in Global Routing



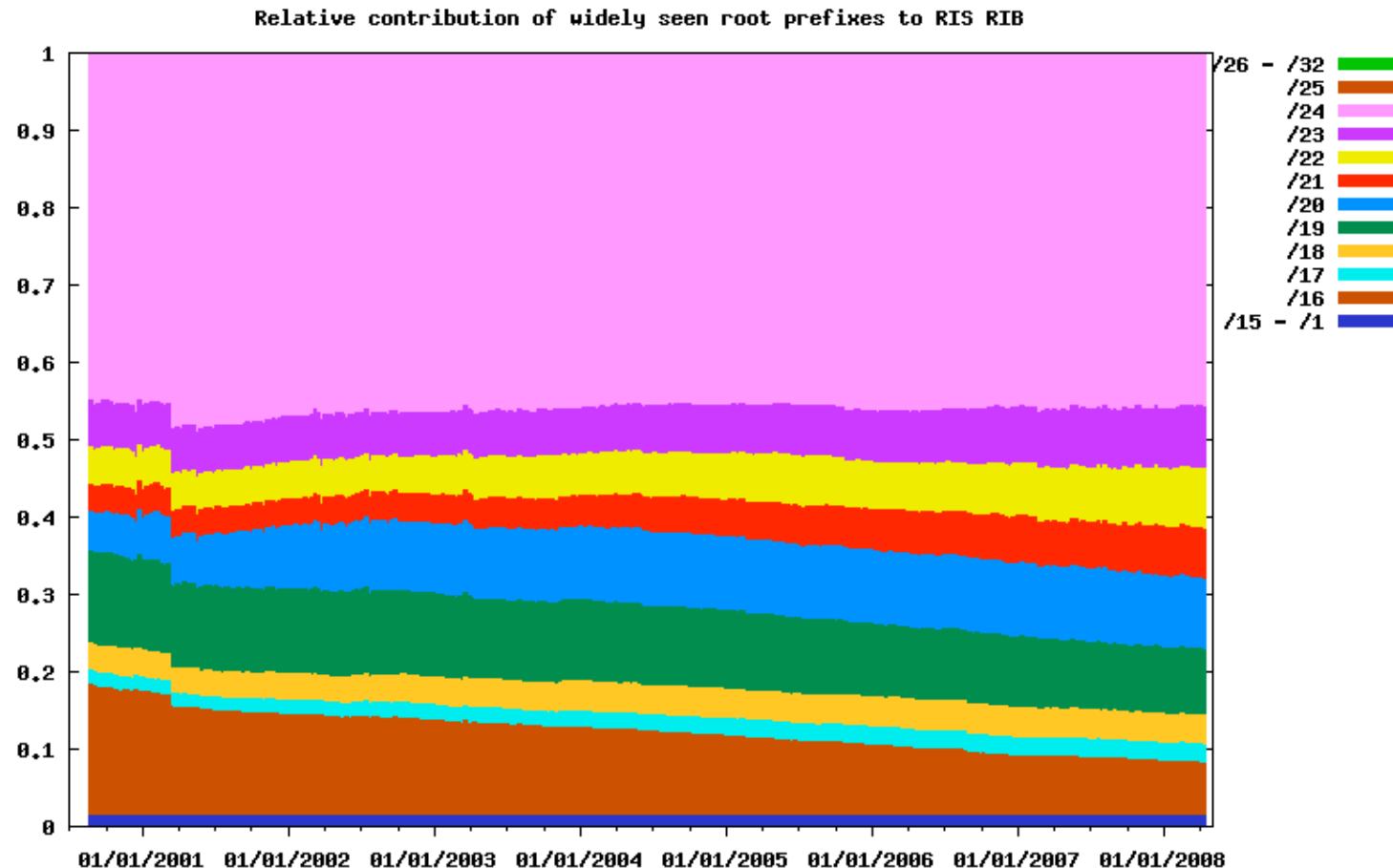
# Prefix Lengths in Global Routing



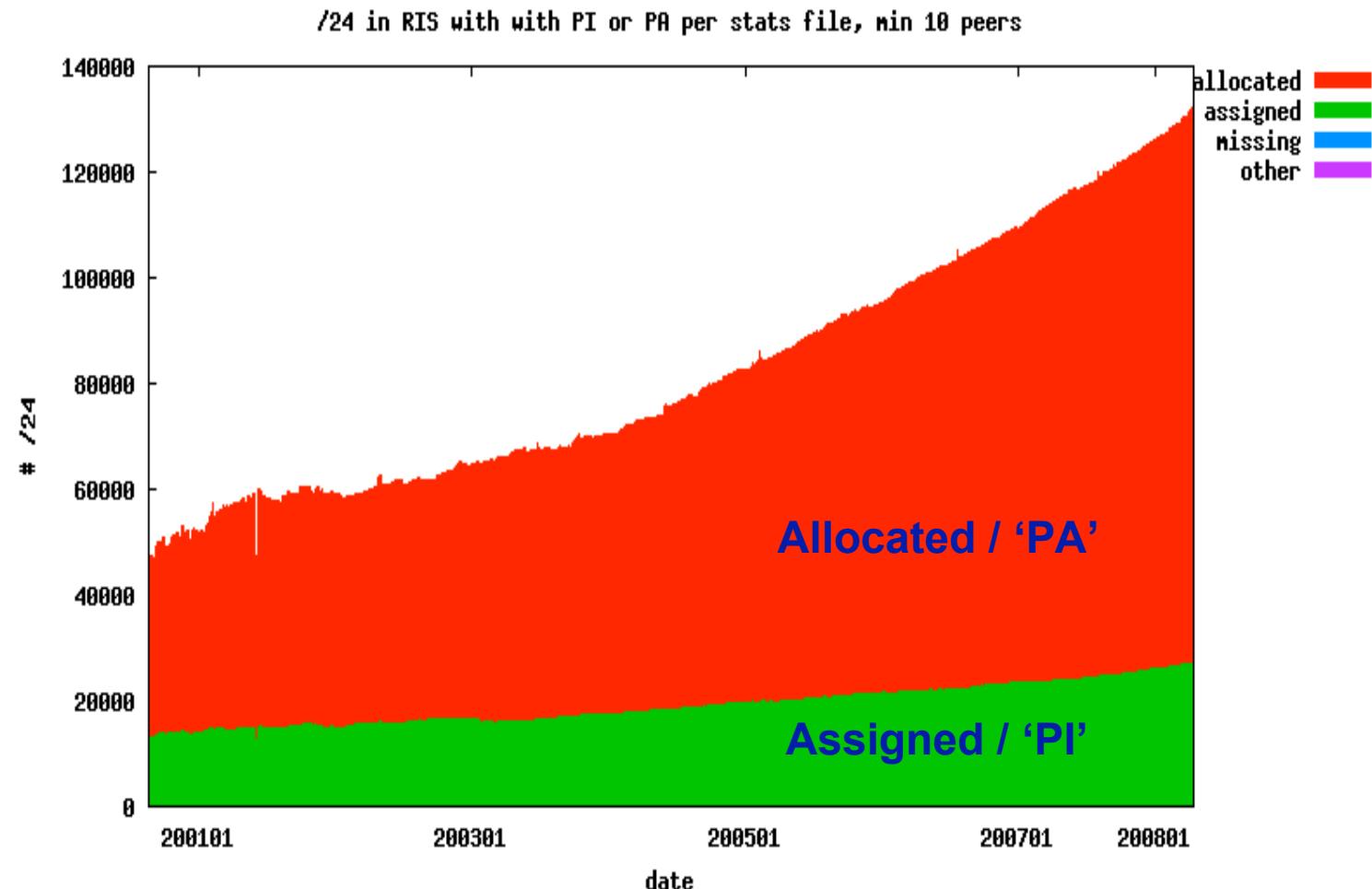
# 'Least Specific' Routes



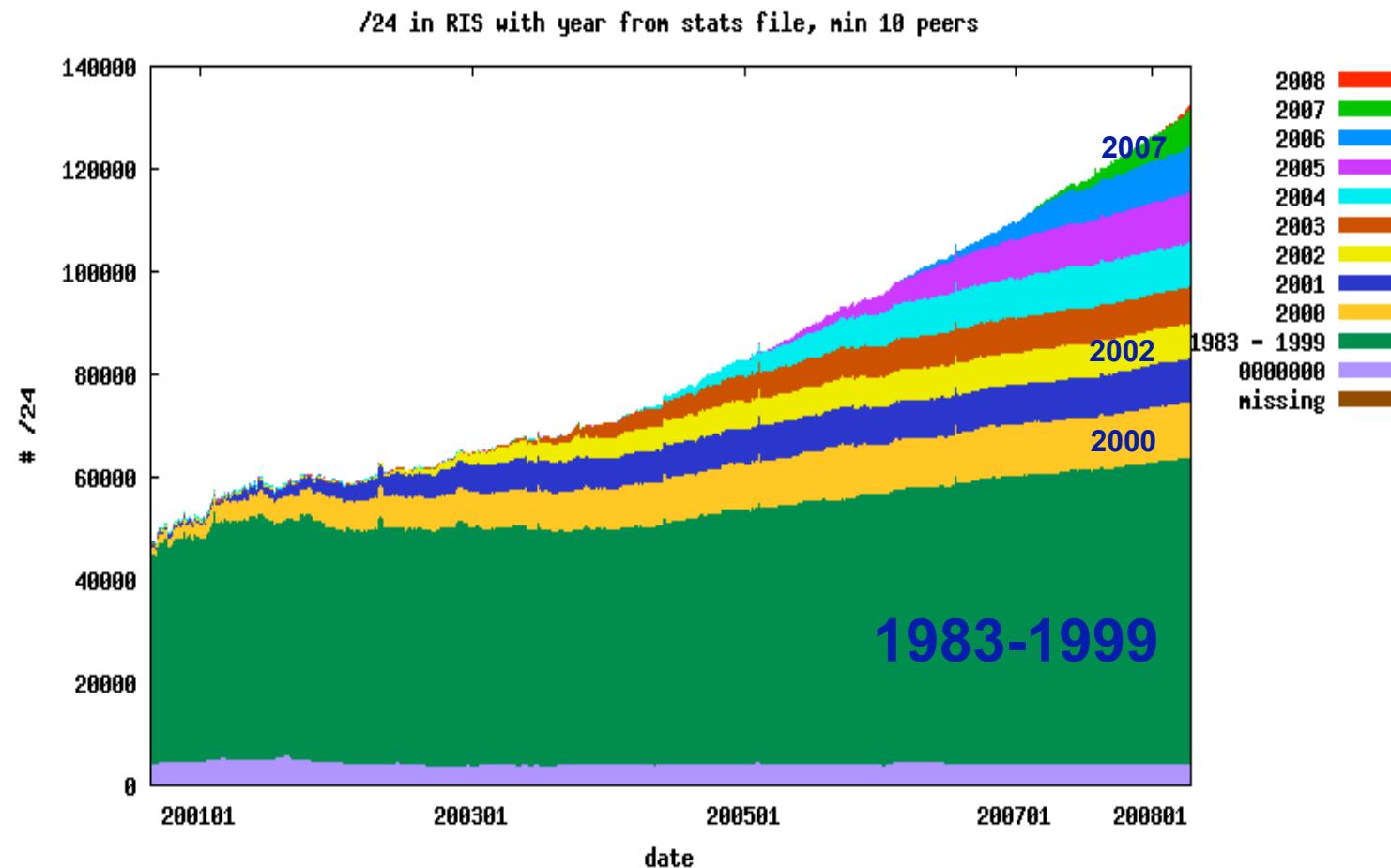
# 'Least Specific' Routes



# /24s - 'PI vs PA'



# /24s - by Year of Allocation





# Behind the Scenes

- Implemented new machinery for analysis
- RIS Data
  - ~ start of RIS - present
  - 5 route collectors: rrc00, rrc03, rrc06, rrc13, rrc15
  - > 76,000,000,000 observed RIB entries ( $76 \times 10^9$ )
- Other Data
  - RIR Stats Files
  - RIPE Database
  - ...
- Easy to design, implement and (re)-run an analysis



# Summary

- Work in progress
- Will publish results shortly
- Machinery for further analysis in place
- Suggestions for further analysis ?



# Credits

Science Group Lounge – Marrakech

rrc03-2005 Width: 144

**compression, 512MB SQL, 3GB V3**

	Q1-2	Q3-4	SUM
os old	0	3,945,168	
os new	13,364,150	10,055,372	<b>23,419,522</b>
os total	13,364,150	14,000,540	
ime	51,055	130,912	
sec	262	107	
	206,773	220,793	
h time	52	46	
h/sec	3,976	4,800	
	20,902	22,216	
ne	5	5	
c	4,180	4,443	
	57,001,386	69,855,669	
sh time	14,045	49,113	
s/sec	4,058	1,422	
time	65,157	180,076	
ssing time (sec)	81,771	199,684	<b>281,455</b>
essing time (hour)	<b>22.7</b>	<b>55.5</b>	<b>78</b>
	526	530	<b>1,056</b>
essed	1,472,402,272	1,548,897,422	<b>3,021,299,694</b>
	18,006	7,757	<b>10,735</b>
	155	377	
size			<b>2,482,672,000</b>
es size			<b>3,834,711,885</b>
exes size			<b>10,557,998,080</b>
il size			<b>14,392,709,965</b>
n probability			

The video conference interface shows a grid of participants. The top row has two participants: Robert Kostecki and Daniel Karrenberg. The middle row has two participants: Karin Wilhelm and Tiziana. The bottom row has two participants: Antony Antony and a woman. A public chat log at the bottom shows the following messages:

- [4:00 PM] Robert Kostecki joined.
- [4:00 PM] Karin Wilhelm joined.
- [4:07 PM] Tom Vest joined.
- [4:03 PM] Antony Antony joined.
- [4:23 PM] Tiziana joined.
- [4:25 PM] Tiziana left.



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n probability			

Robert Kisteleki Daniel Karrenberg

Antony Antony

Public

[4:00 PM] Robert Kisteleki joined.  
[4:00 PM] Ramon Wilhelm joined.  
[4:07 PM] Tom Vest joined.  
[4:09 PM] Antony Antony joined.  
[4:23 PM] Tiziana joined.  
[4:25 PM] Tiziana left.



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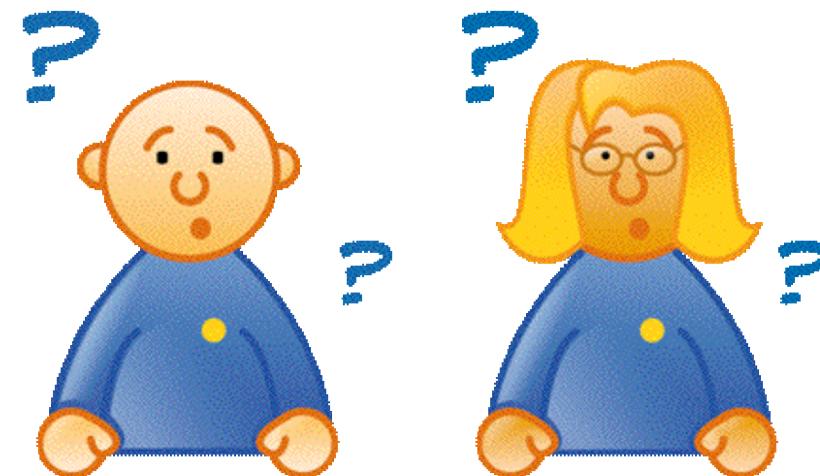
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n probability			

Participants:

- Robert Kisteleki
- Daniel Karrenberg
- Karol Idris
- Toni West
- Antony Antony
- Tiziana

Log:

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# Questions?