Religion, Politics and the End of the World
The End of the World is nigh (er)! 

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(Another) Review of IPv4 consumption
IPv4 Exhaustion Prediction Technique

- Assemble daily data for the past 1000 days on:
  - IANA to RIR allocations
  - RIR allocation rates
  - Advertised address pool
  - Unadvertised pool
Prediction Technique

1. Fit a mathematical model over the advertised address pool data as a function of time
2. And then model the unadvertised address pool size as a function of the advertised pool
3. Derive industry demand as the sum of the two pools
4. Then model RIR actions by simulating allocations to match demand
5. Then model IANA actions by simulating IANA to RIR policies
6. Then model the operation of the address distribution system
7. Until the IANA pool exhausts!
Underlying Assumptions

- Tomorrow is a lot like today
- Trends visible in the recent past continue into the future

This model assumes that there will be no panic, no change in policies, no change in the underlying demand dynamics, no disruptive externalities, no rationing, and no withholding
  - No, really!
Modelling Data – IPv4 Advertised Address pool since 2000
Modelling Data – IPv4 Advertised Address pool since 2000
1st Order Differential

First order differential of advertisements

Advertised Address Growth Rate

Linear Best Fit
Curve Fitting
Curve Fitting Error

![Graph showing curve fitting error with dates from 2004.5 to 2007 and error values ranging from -3 to 2](image)
Selecting a predictive model

- Lowest error on fit to data is the quadratic growth model \( (n^2) \)
  - Linear and exponential growth models indicate a worse fit to recent data
  - i.e. Address demand is increasing
The Current IPv4 Model

The graph shows the total address demand, along with the advertised and unadvertised addresses over time. The x-axis represents the years from 2000 to 2010, and the y-axis represents the address count in millions. The graph includes various data points and lines representing different address pools and their trends over the years.
The Current IPv4 Model

The diagram shows the address count over time for different pools, including IANA Pool and RIR Pool. The graph indicates data and prediction trends from 2000 to 2010.
The Current IPv4 Model
So -- when?

In this model, IANA allocates its last IPv4 /8 to an RIR on the 18th December 2009

This is the model’s predicted exhaustion date as of the 9th May 2007. Tomorrow’s prediction may be different!
But …

This curve fitting is just an exercise in numbers

Reality often turns out to be different

Just how different reality will be is something you need to determine *for yourself*

http://ipv4.potaroo.net