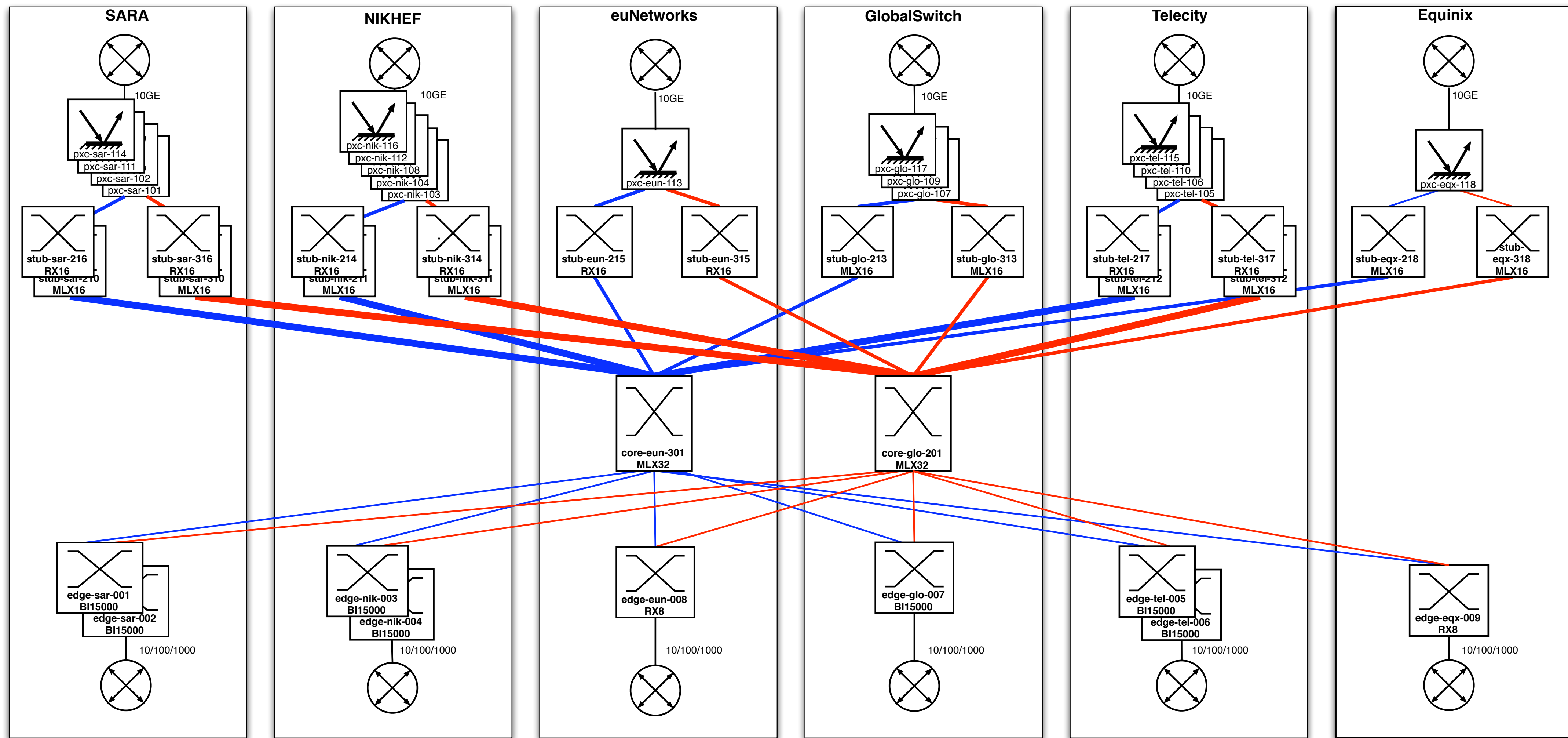


# Capacity planning at AMS-IX

[Henk.Steenman@ams-ix.net](mailto:Henk.Steenman@ams-ix.net)



# AMS-IX 2009 HI Platform



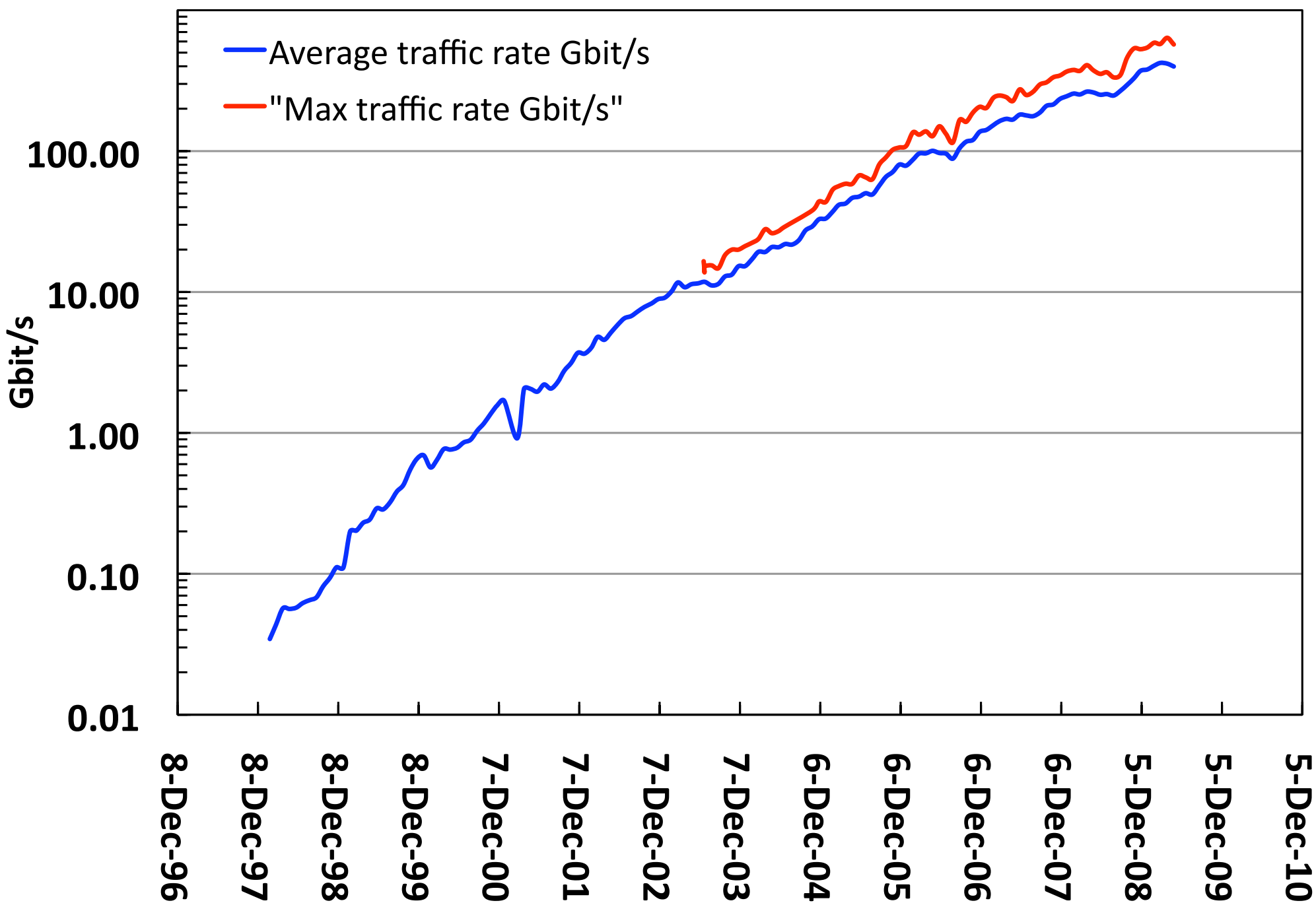
# What capacity to plan

- ▶ Limited resources on:
  - ▶ Access switches
    - ▶ Specifically the number of 10GE access ports
- ▶ Inter switch link bandwidth capacity
  - ▶ Number of 10GE ports on core switches
  - ▶ Number of 10GE ports on access switches for ISLs

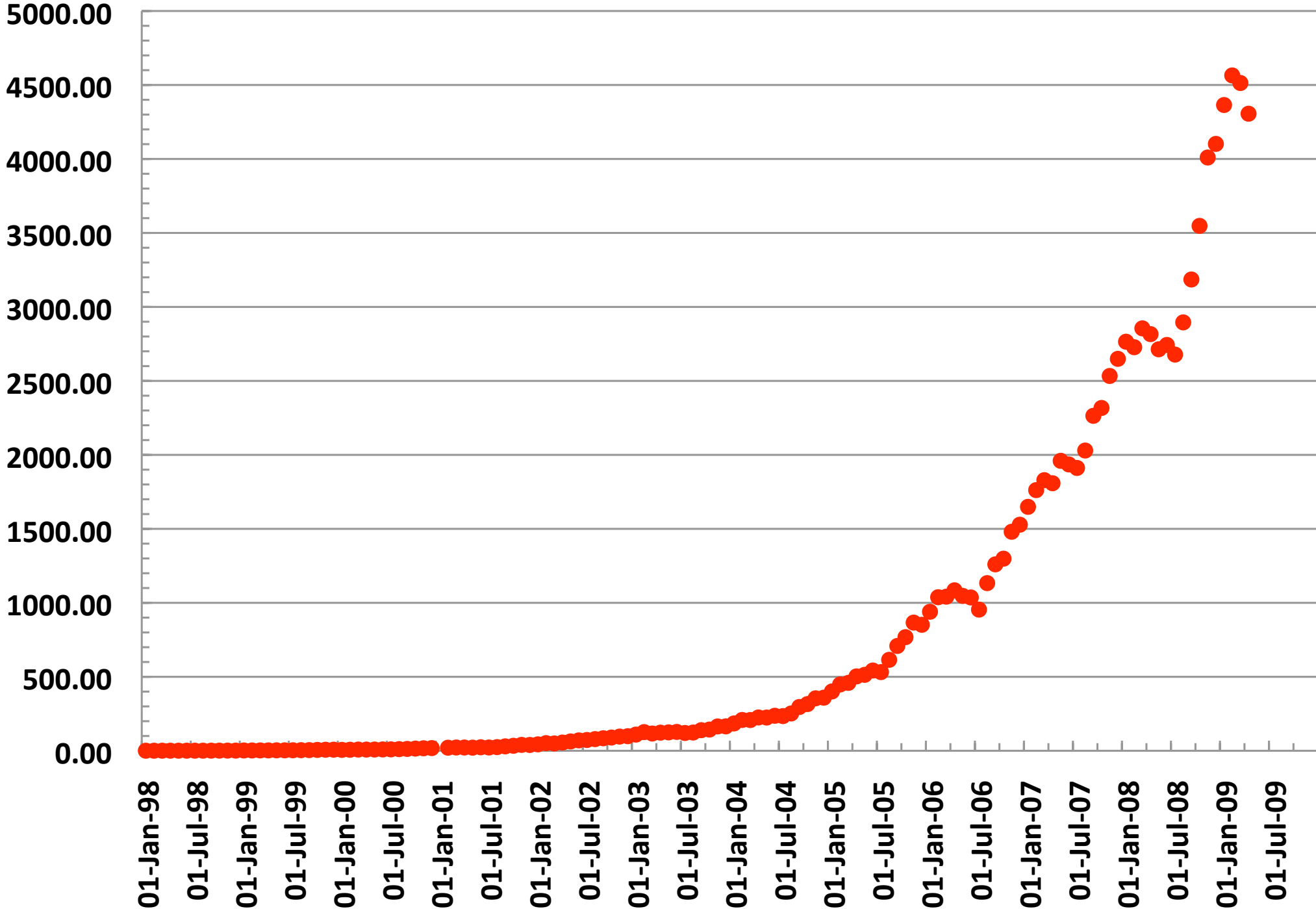
# Input data

- ▶ Historical traffic data
  - ▶ Total platform traffic, traffic per customer ports, access switches, core switches, sites etc
  - ▶ sFlow peering data
- ▶ Historical port growth data
  - ▶ number of GE, 10GE customer ports, LAG size growth
  - ▶ Life cycle of customer access port type
- ▶ Effects of introducing new access technologies on ports and traffic
- ▶ AMS-IX member input
  - ▶ Meetings, survey etc.
- ▶ Vendor information on availability of 40/100GE, high density 10GE etc

Average and Peak traffic

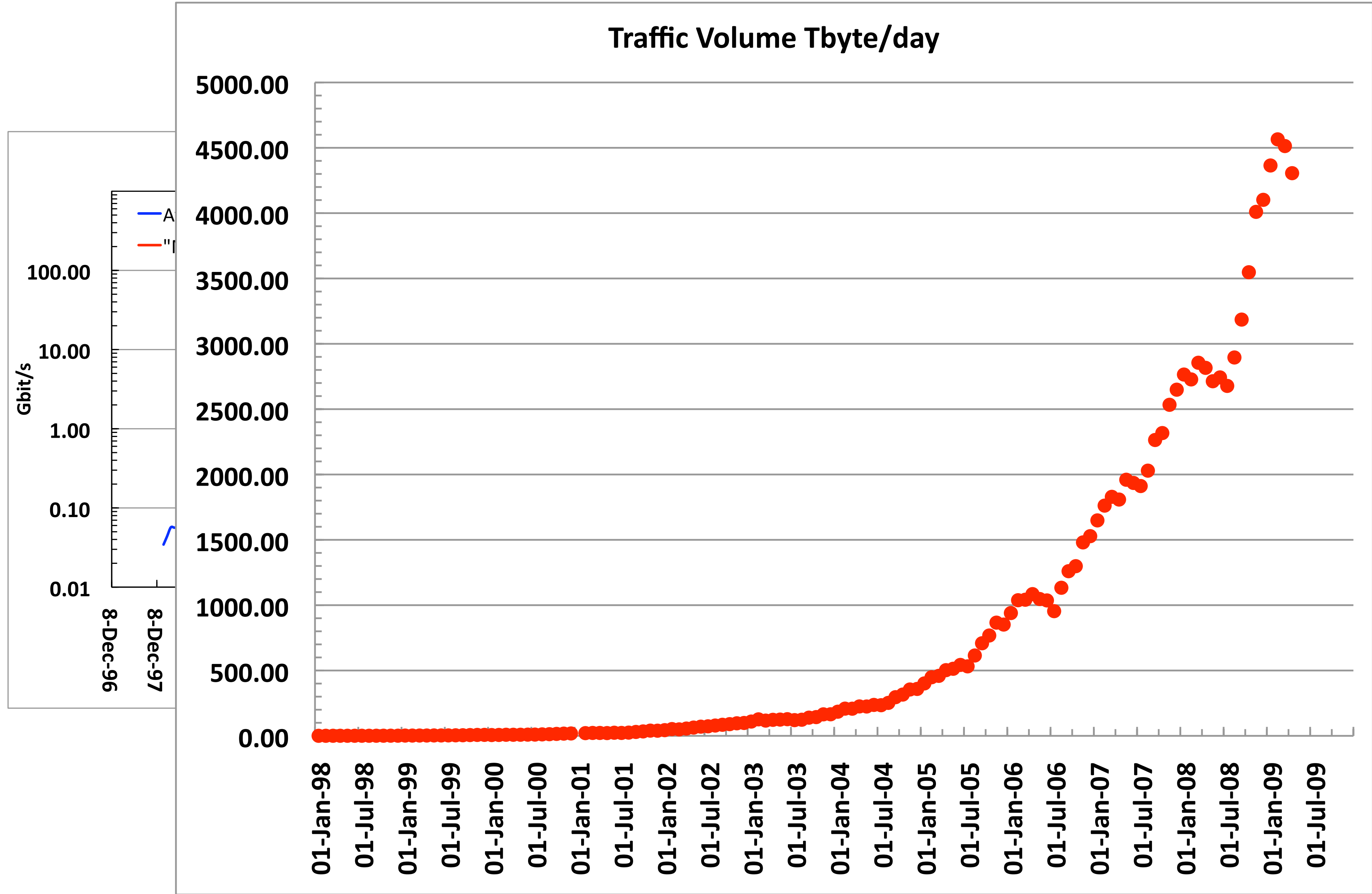


Traffic Volume Tbyte/day



# AMS-IX Historical Traffic Growth

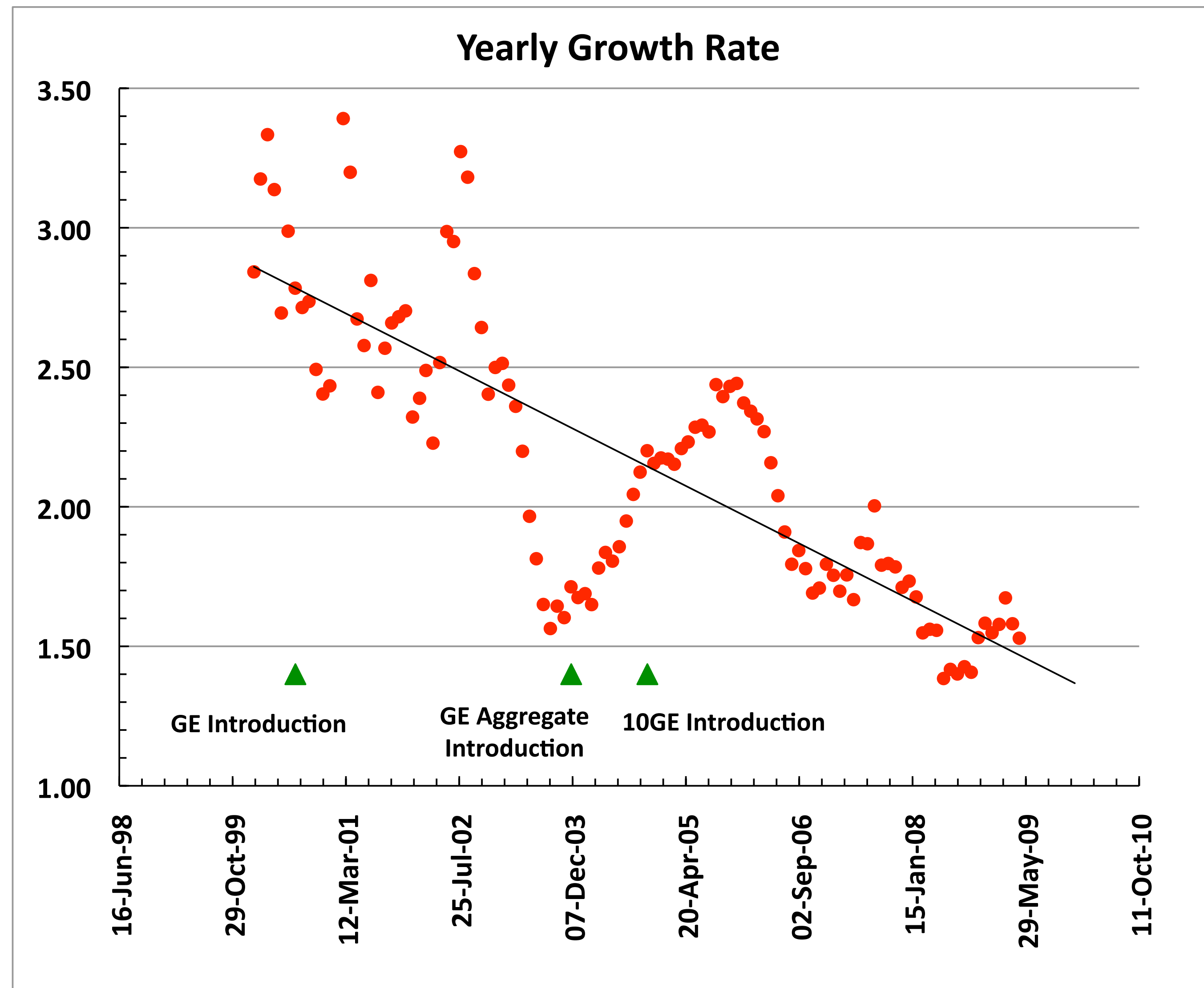




# AMS-IX Historical Traffic Growth



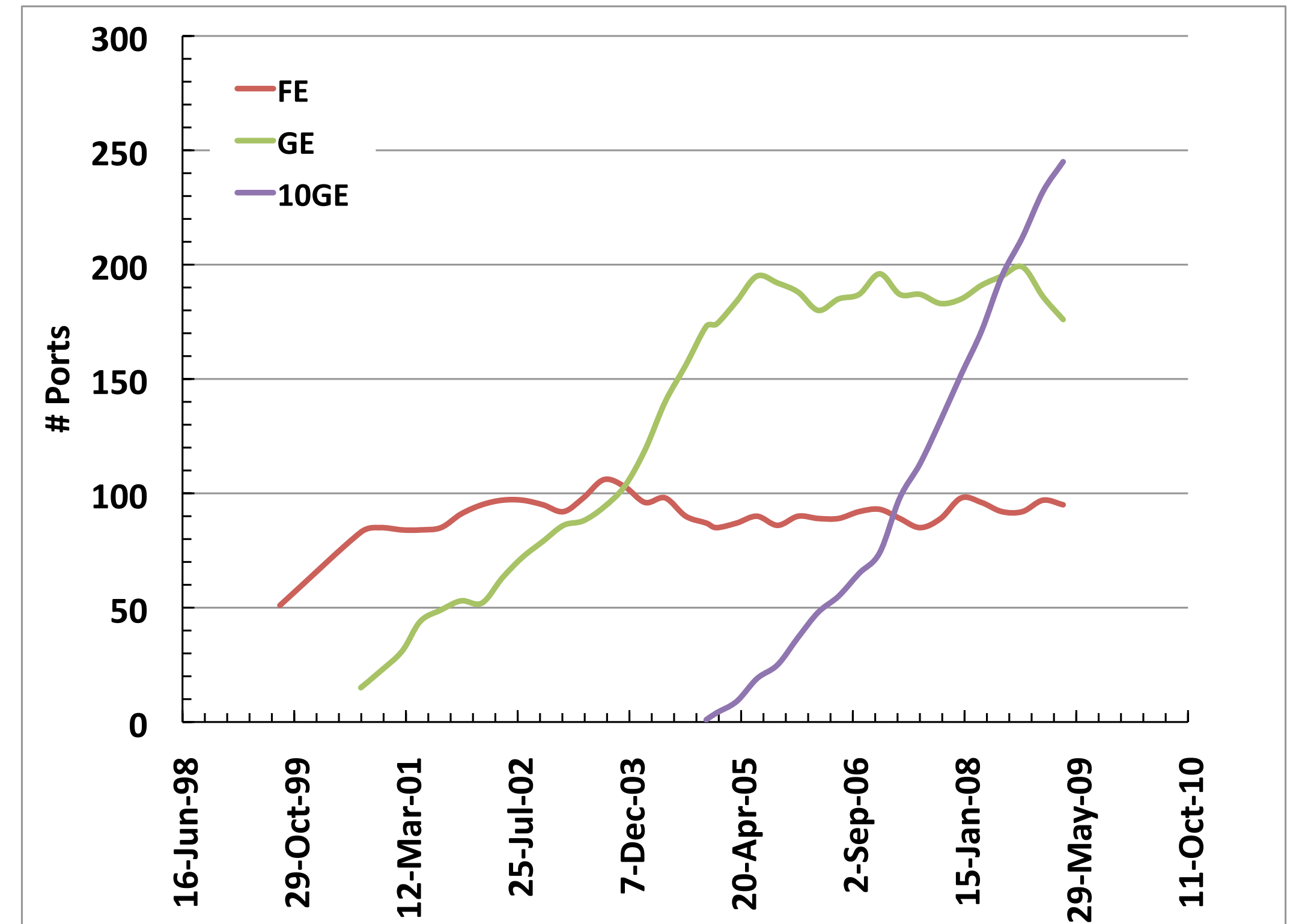
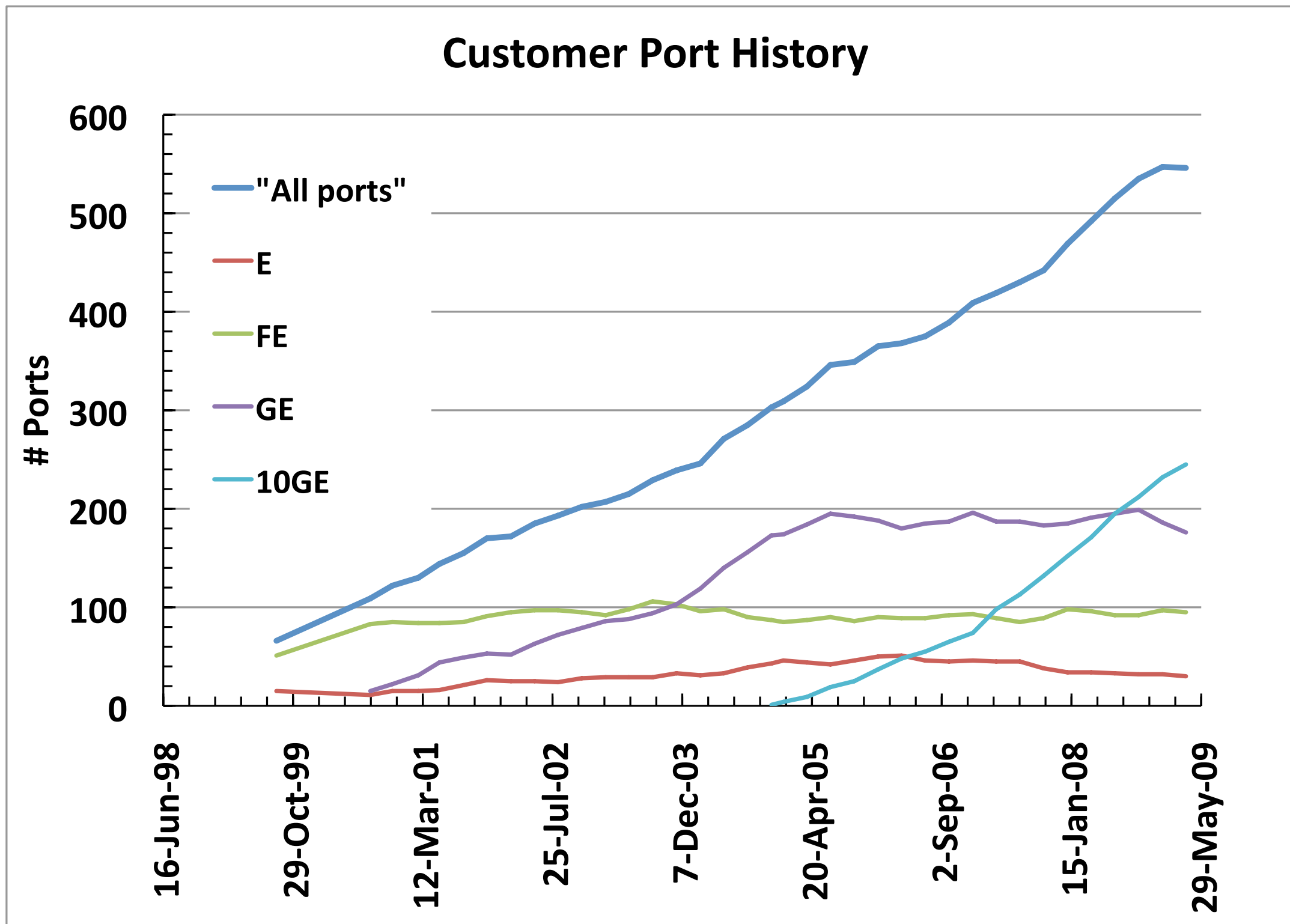




## AMS-IX Yearly Traffic Growth

Effect of introducing GE LAG and 10GE access ports



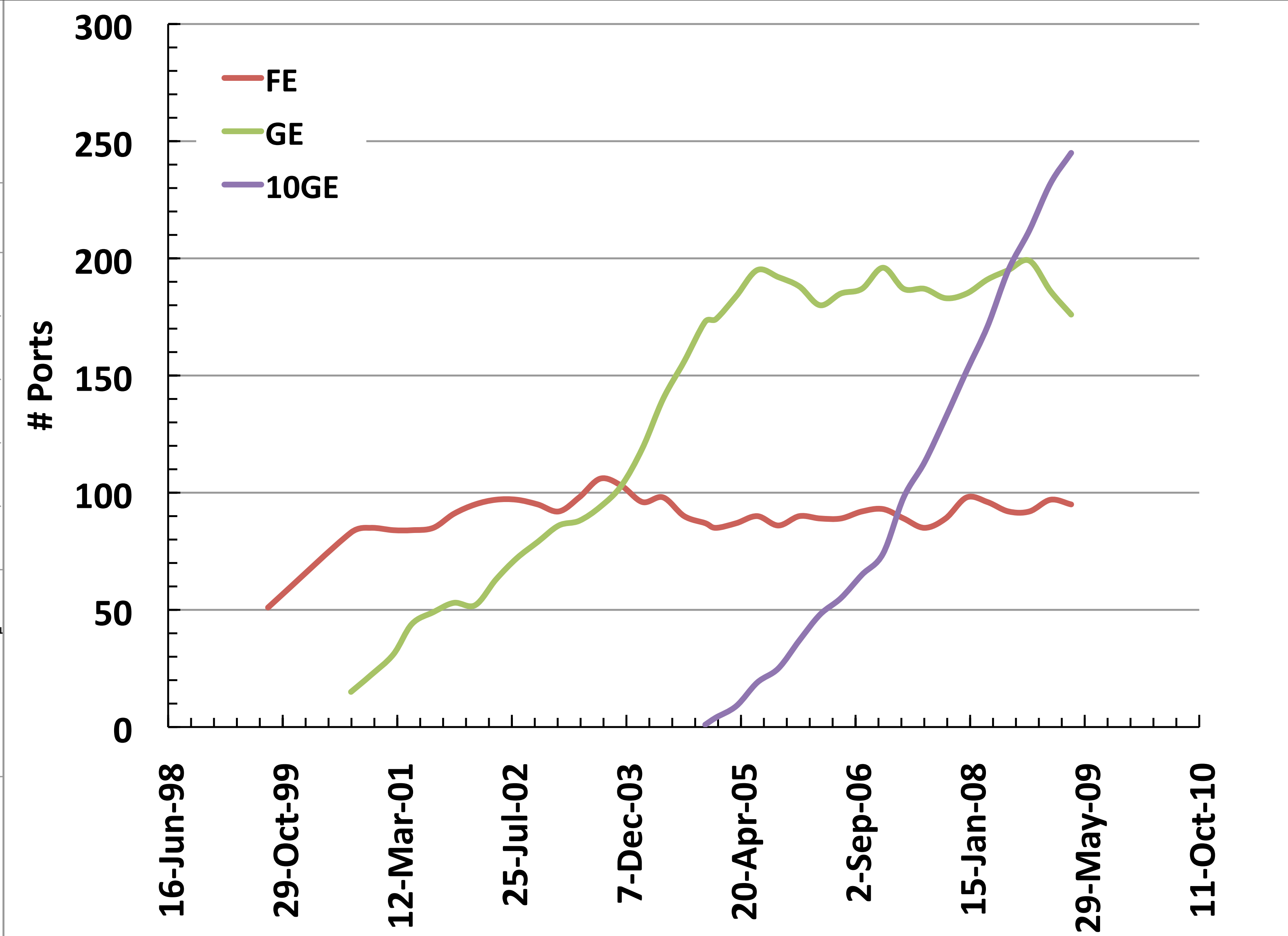
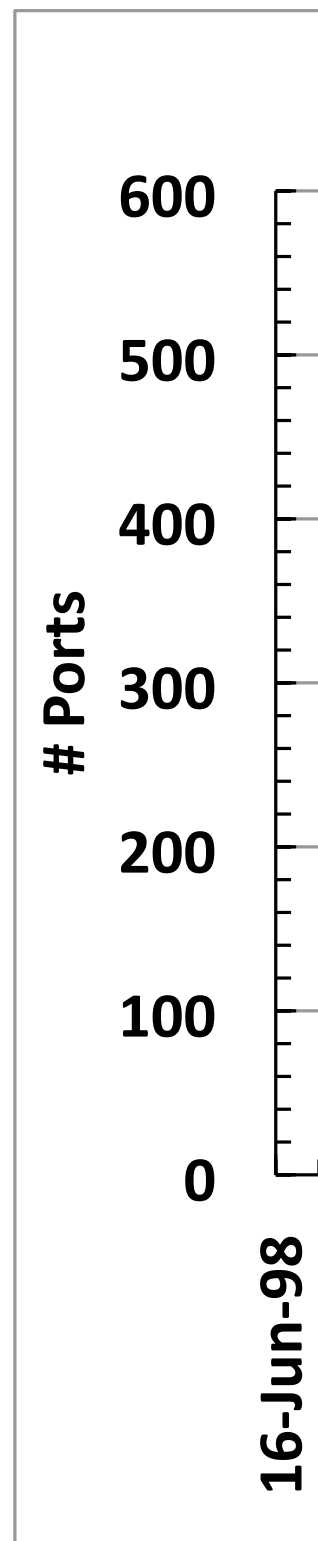


# AMS-IX Historical Port Growth

## Typical access port life cycle



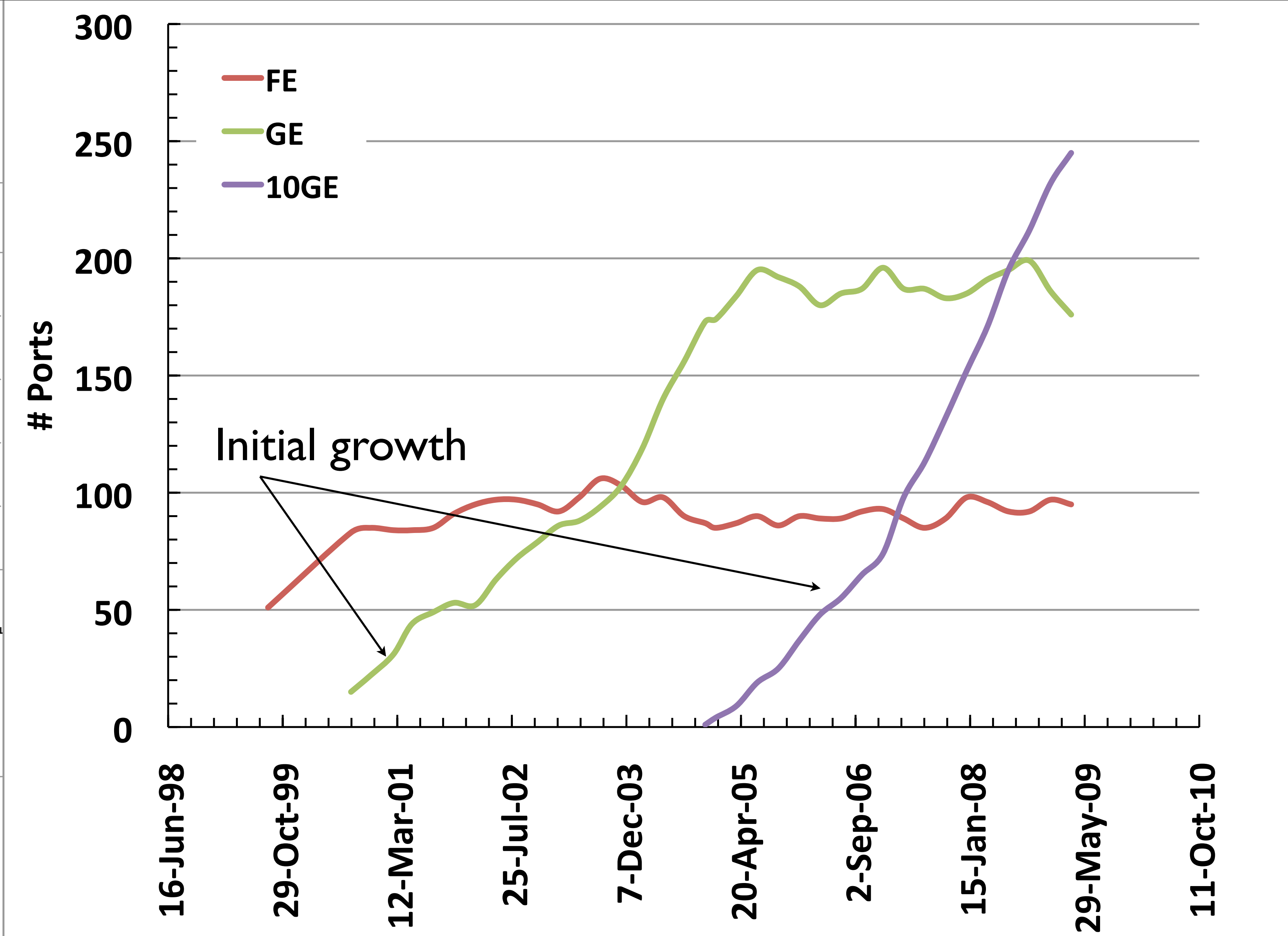
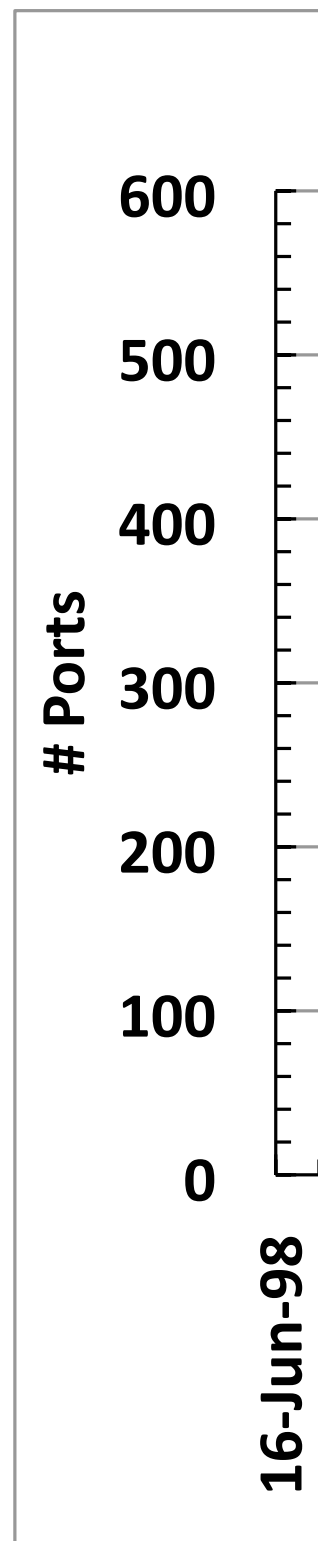




AMS-IX Historical Port Growth

Typical access port life cycle

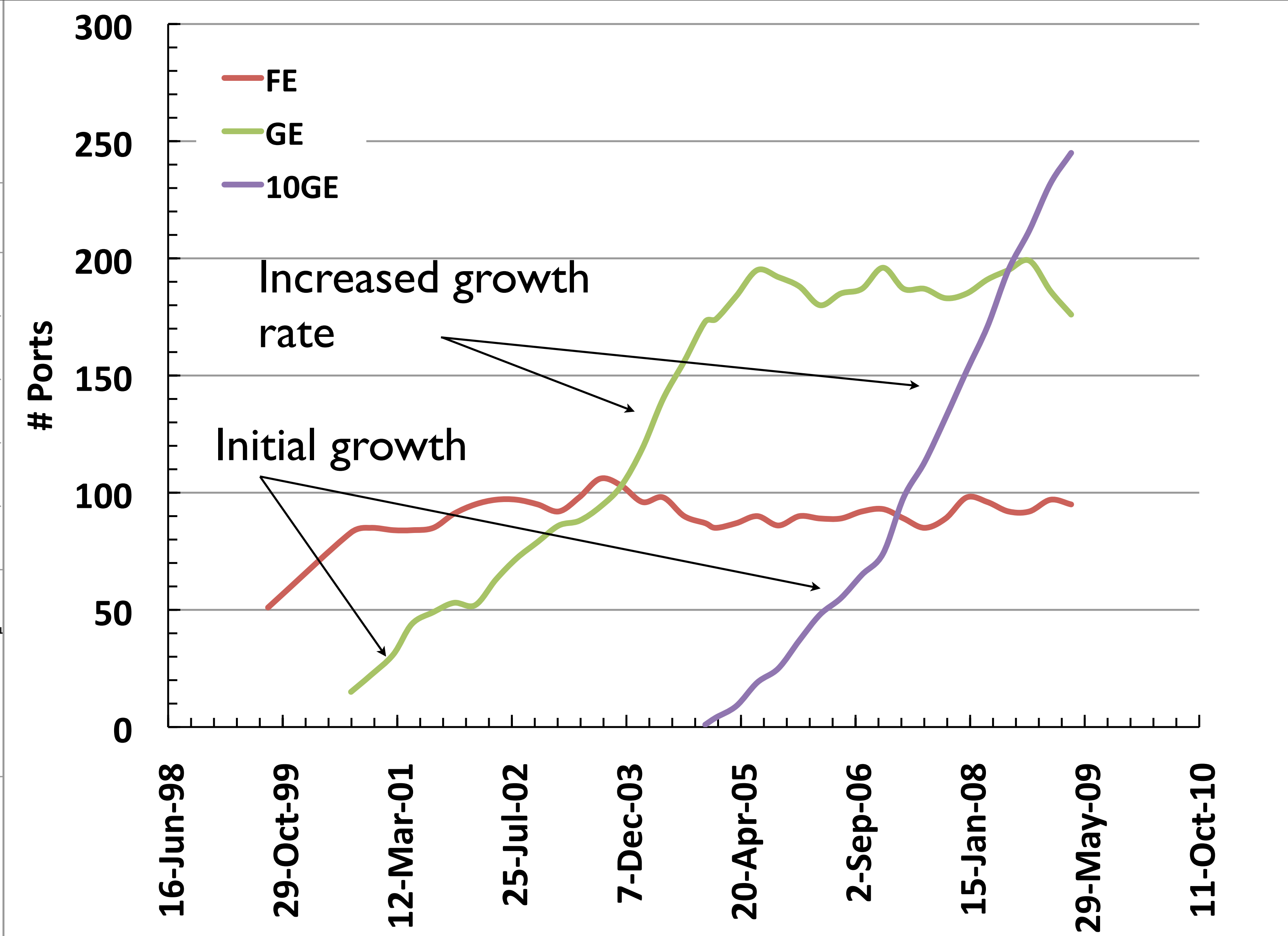
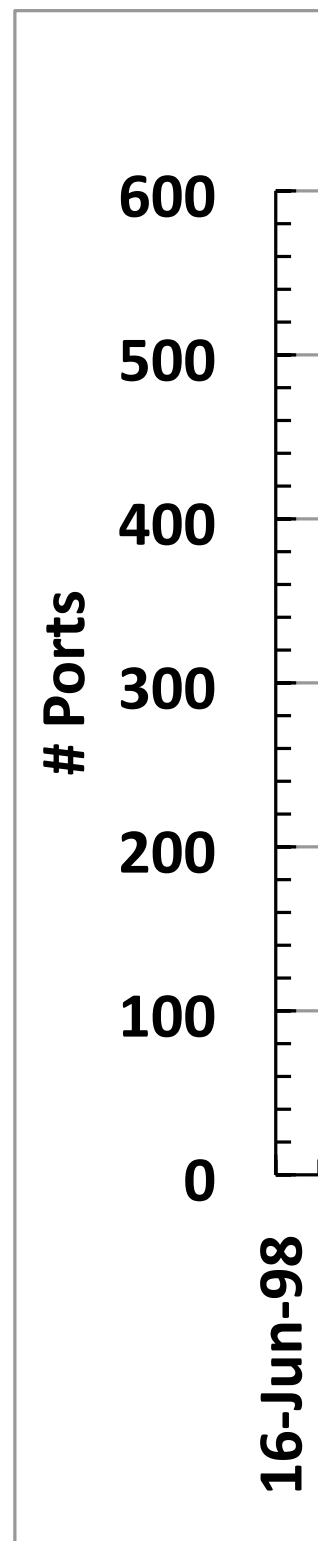




# AMS-IX Historical Port Growth

## Typical access port life cycle

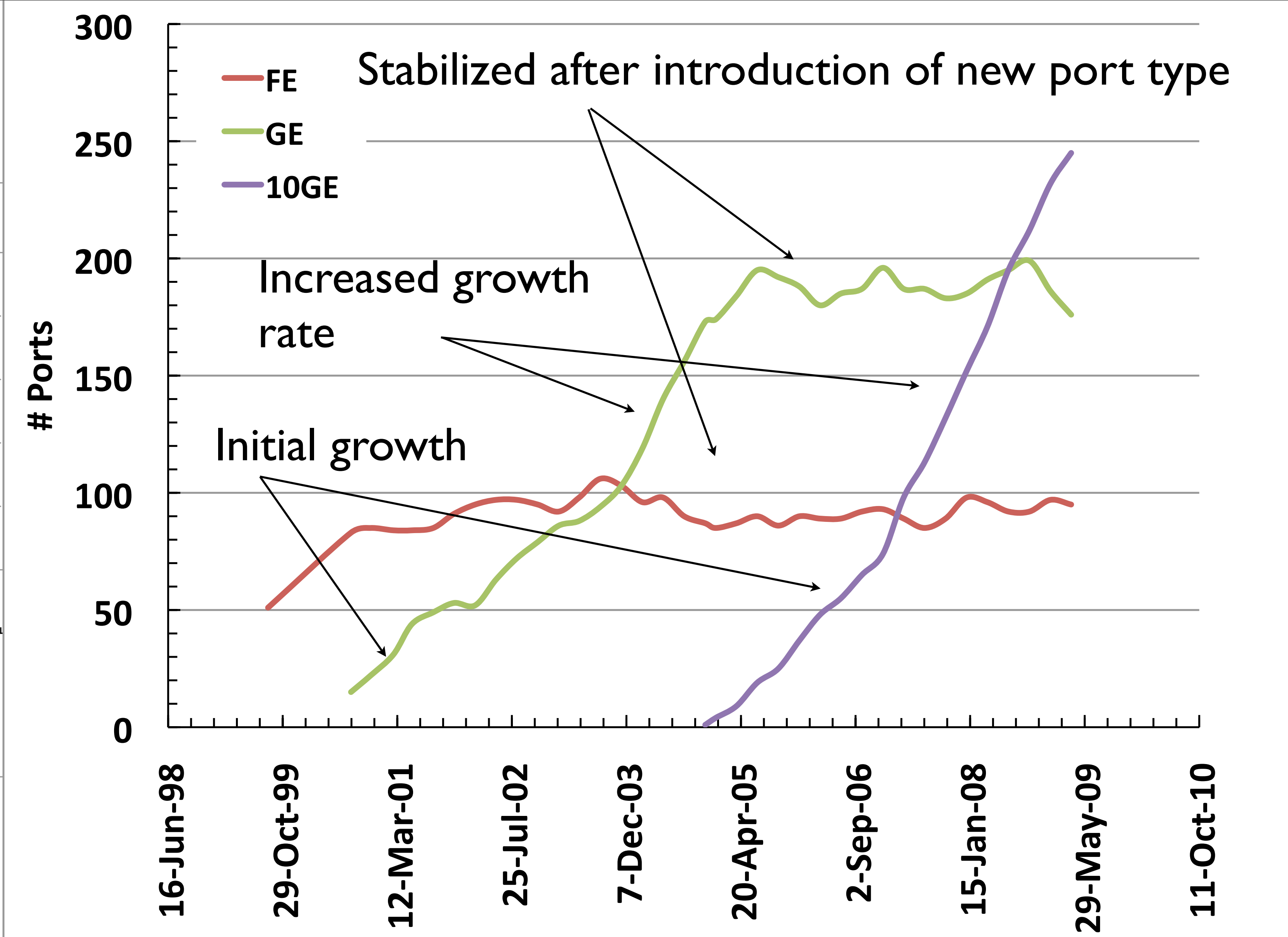
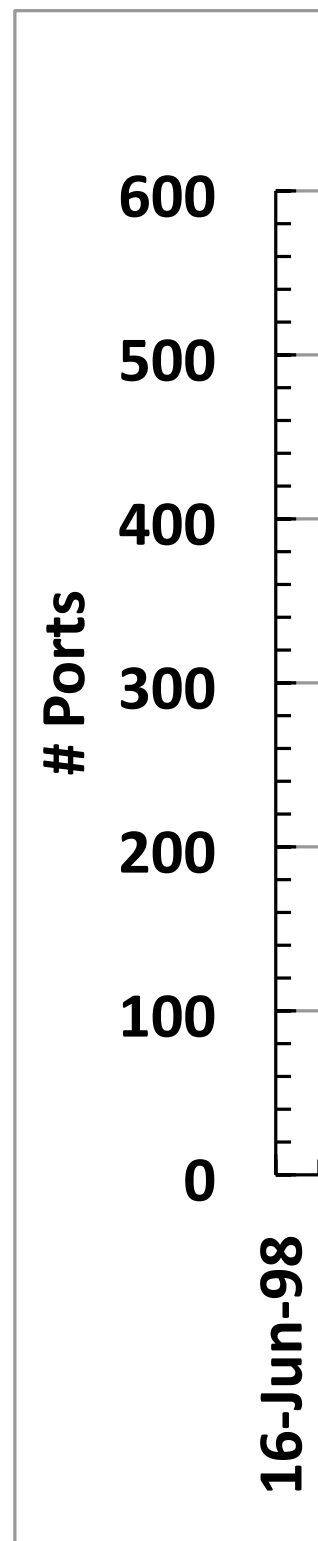




# AMS-IX Historical Port Growth

## Typical access port life cycle

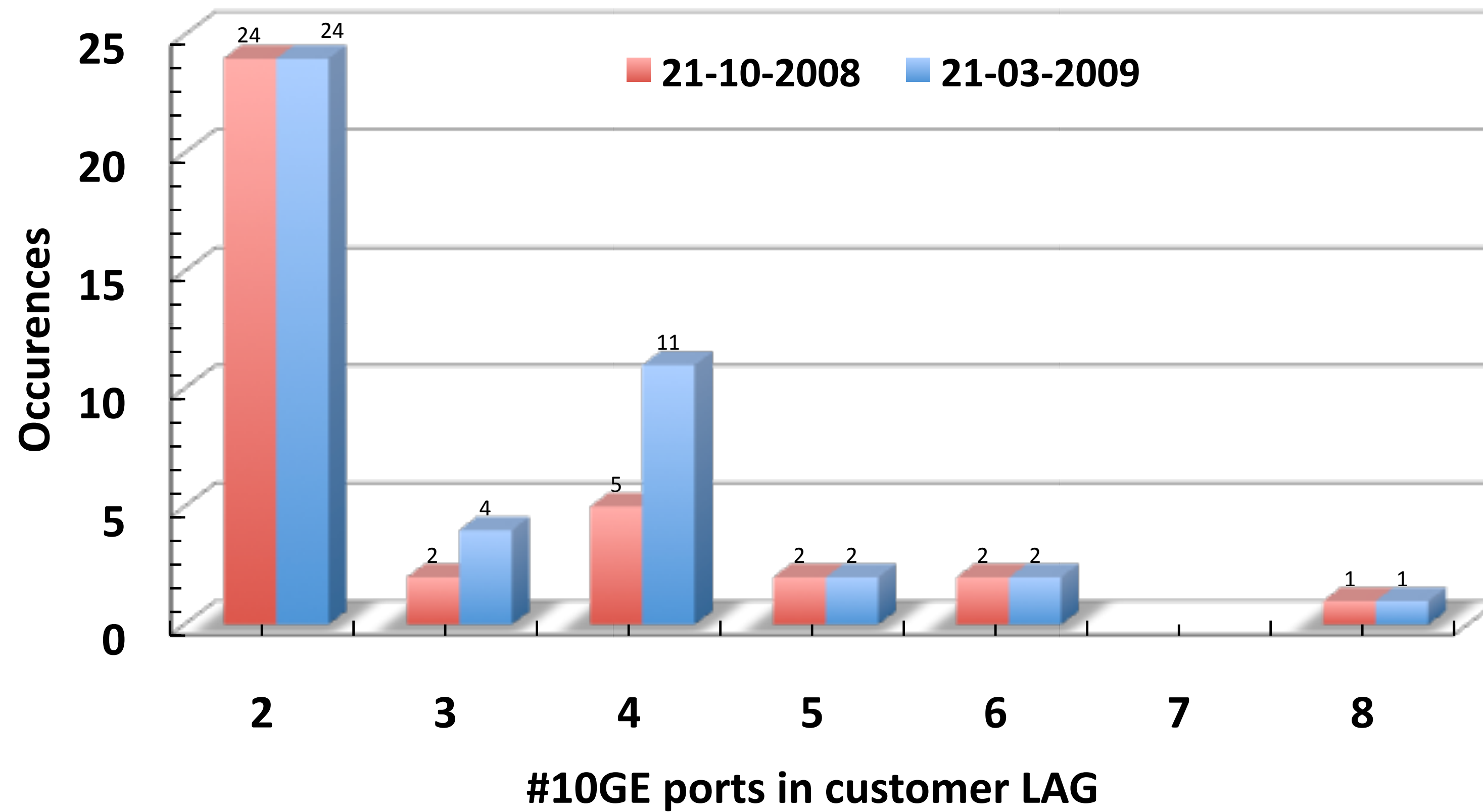




AMS-IX Historical Port Growth  
Typical access port life cycle



## 10GE LAG size distribution



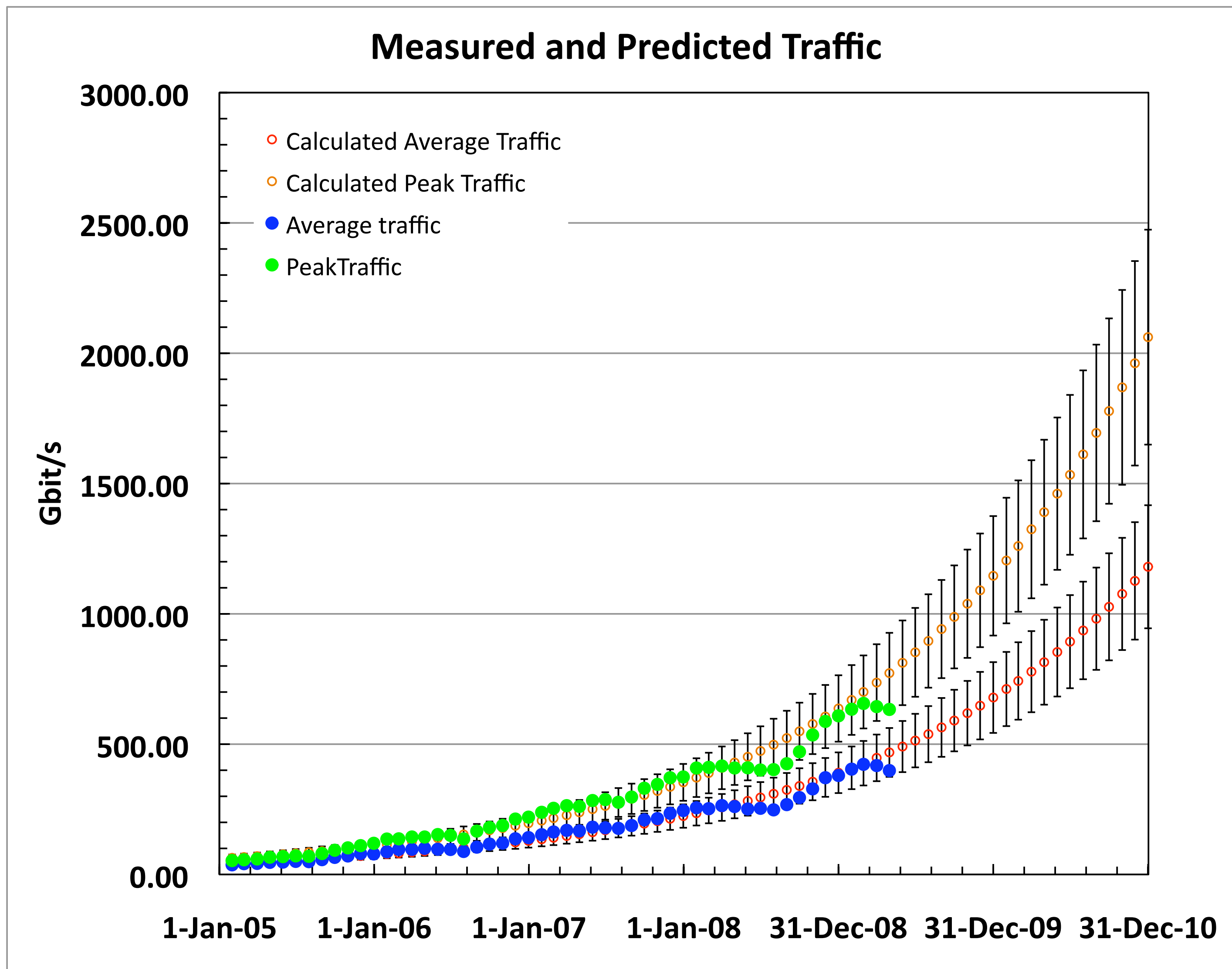
## 10GE LAG-size distribution



# Predicting the future

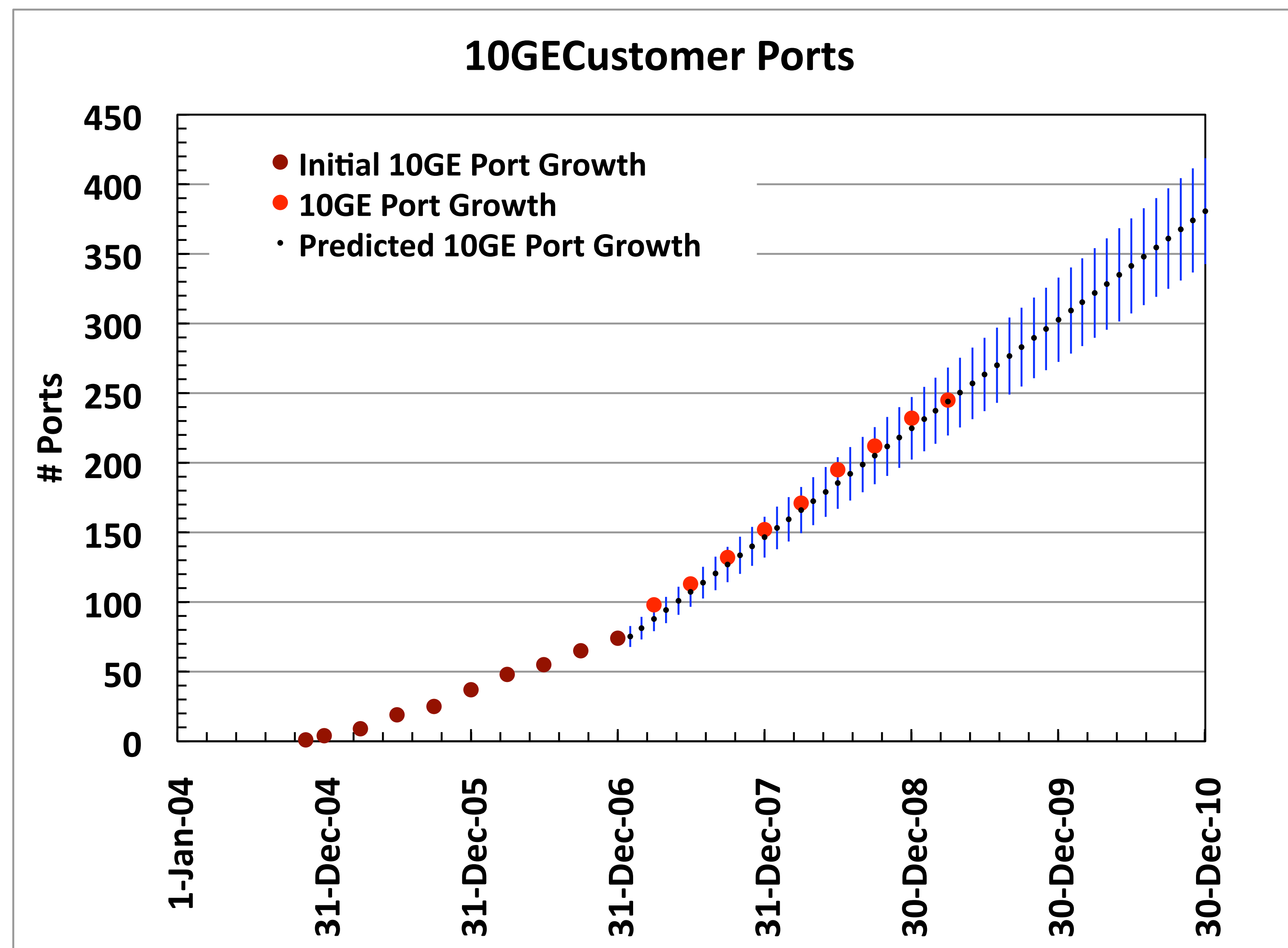
- ▶ Regression analysis on historical data
  - ▶ Logarithmic fit to the last 3 years of historical traffic data
    - ▶ Estimate total traffic level up to Dec 2010
  - ▶ Linear fit on the last 2 years of 10GE customer ports
    - ▶ Estimate number of 10GE ports up to Dec 2010
- ▶ Attempt to get an idea of longer term access port developments (10GE and 40/100GE)
  - ▶ Use access port life cycle model together with linear growth model
- ▶ Traffic and Ports lead to required size of core and access switches as well as ISL size.



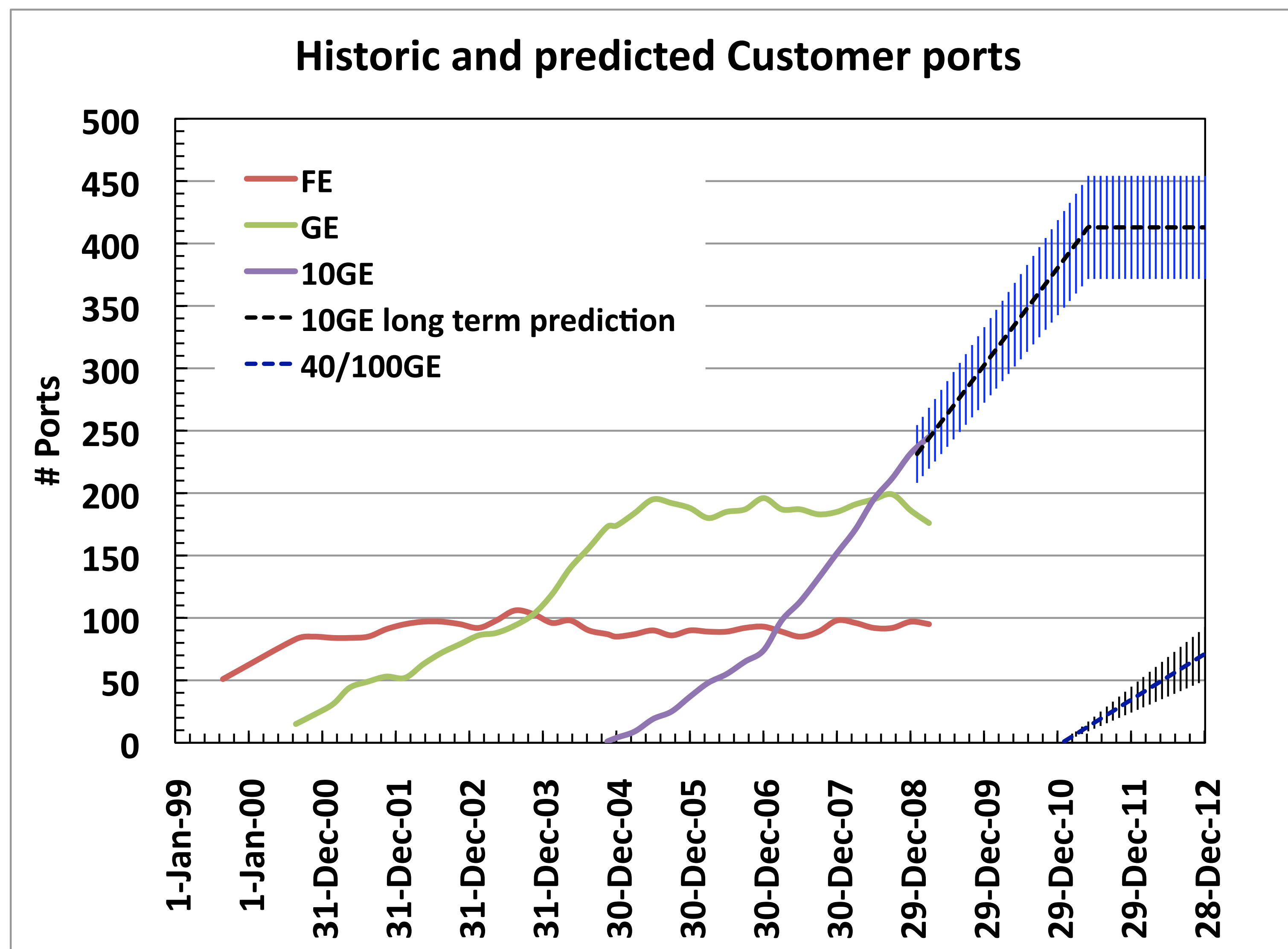


# AMS-IX Predicted Traffic Growth





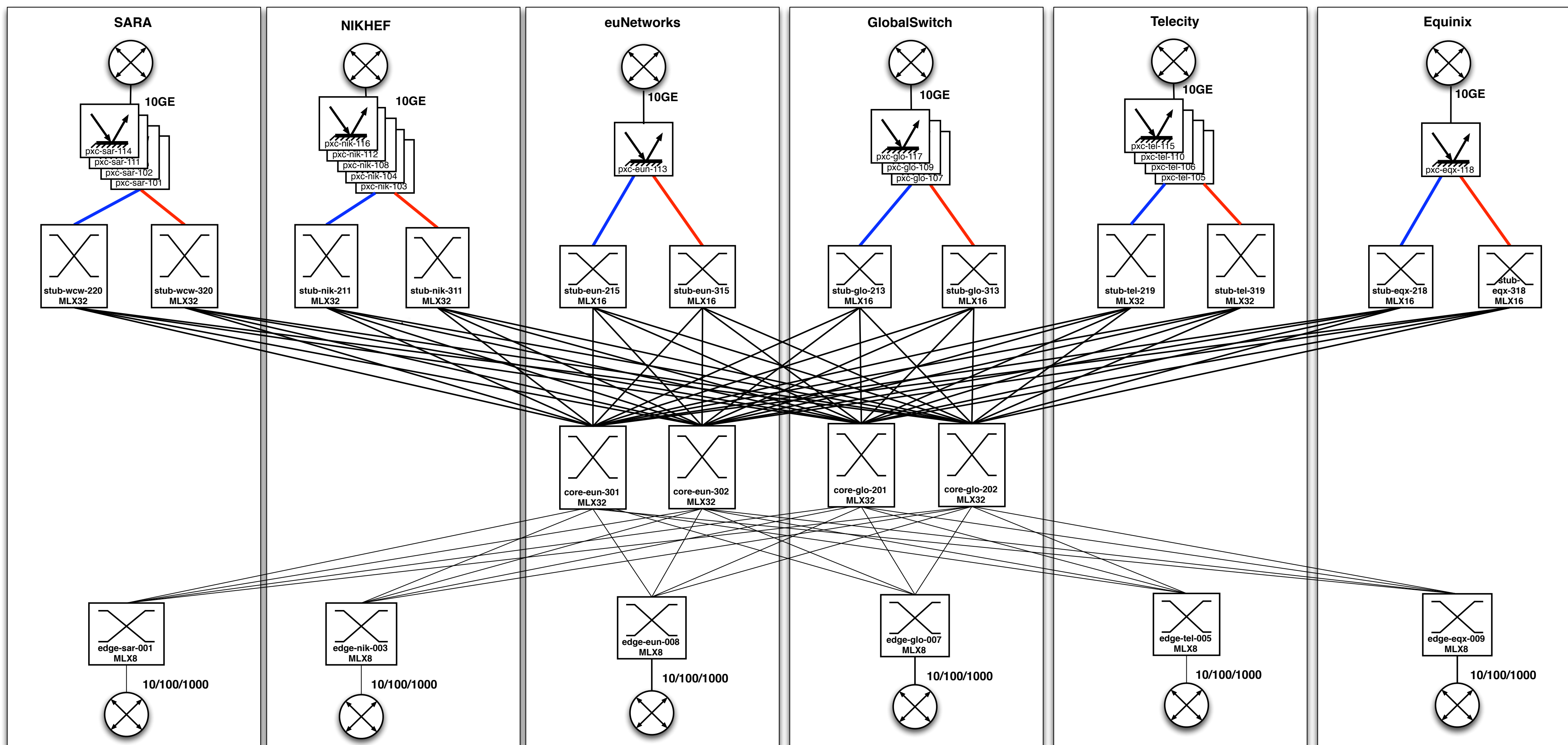
# AMS-IX Predicted 10GE Customer Port Growth



## AMS-IX Estimated 10GE Customer Port Growth (long term)

# Some Conclusions

- ▶ Growth of 10GE access ports with another 100 to 150 in the next 1.5 year and increase in 10GE LAG size.
  - ▶ Access switches with more 10GE ports required
  - ▶ New access sites
- ▶ Growth of traffic
  - ▶ Larger (more 10GE ports) or more core switches needed
    - ▶ But not available before end of 2009 or early 2010
- ▶ Input to our yearly budgetting sessions



# New AMS-IX architecture

## To be explained extensively friday afternoon