Performance Tuning and Benchmarking

William Favre Slater III

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Performance Tuning and Benchmarking

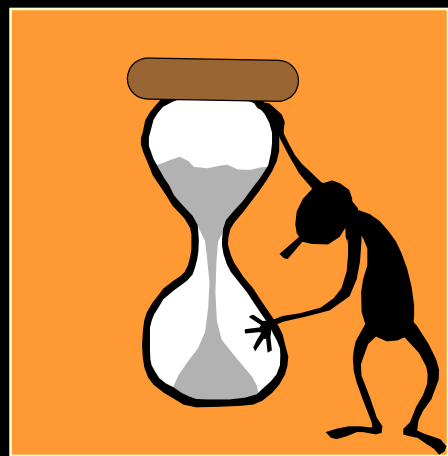
- Introduction
- Concepts of Performance
- Areas to look at
- Nationwide Application Components
- How to Build a Performance Tuning Team
- Conclusion

Introduction

- Distributed systems are challenging to tune because of
  - Complexity: They are composed of a large number of separate hardware and software components
  - They are geographically dispersed
  - There are several people responsible for making it work properly
  - Knowns, Part I: There are knowns we have control over
  - Knowns, Part II: There are knowns we have little control over
  - Unknowns, Part I: There are unknowns we have little control over
  - Unknowns, Part II: There are unknowns we have control over, but we don’t know about them.
- This presentation will cover some of the basic concepts we need to understand in order to map out a plan to deal with this very important area.

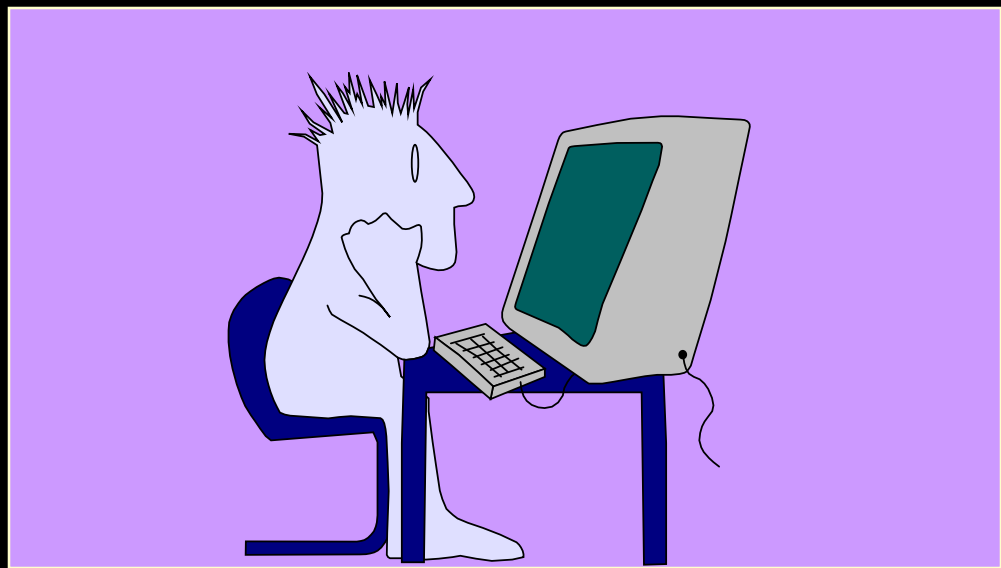
Concepts of Performance

- Two Views of Performance
- Different Views of Response Time
- Throughput Chain
- Weakest Link Concept
- Performance Goals for Nationwide's Application
- How do you measure performance?



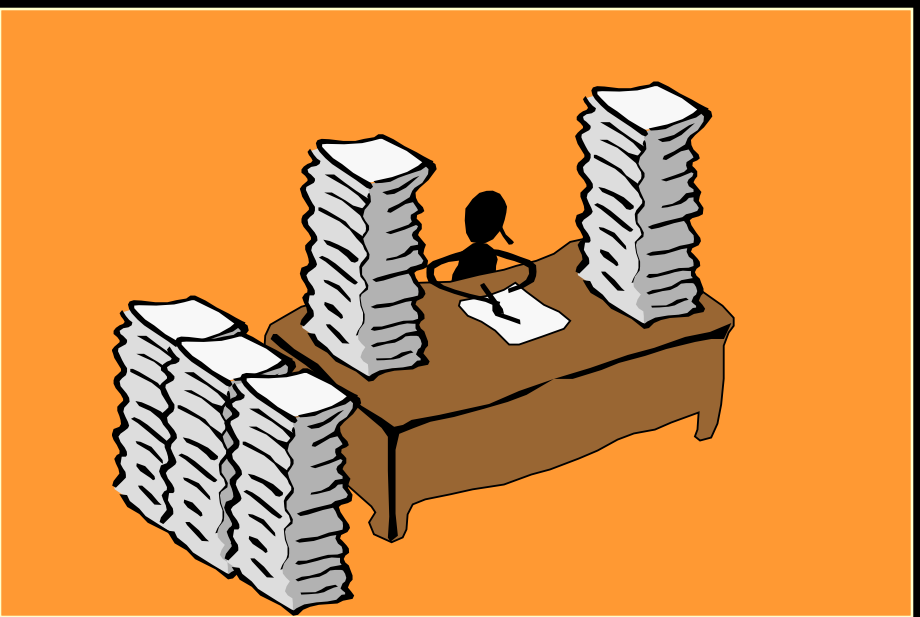
Two Views of Performance: Response Time

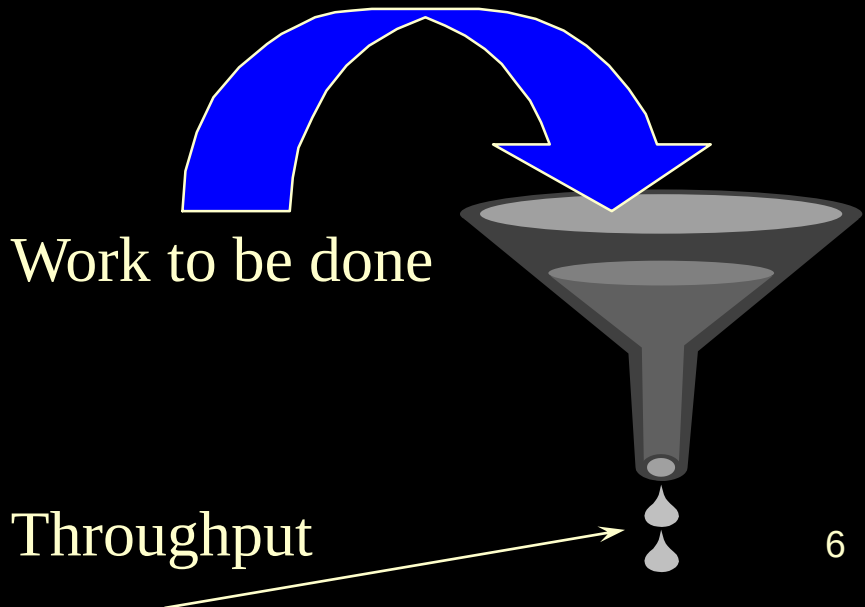
- The user's view: Response Time
- Response time is the measurement of the amount of time needed to do a task.



Two Views of Performance: Throughput

- The Technician's View: Throughput
- Throughput is the amount of work done in a unit of time.





The Relationship of Response Time to Throughput

- Response time, ***R***, and throughput, ***T***, for a single transaction are reciprocals of each other.

$$T = 1/R$$

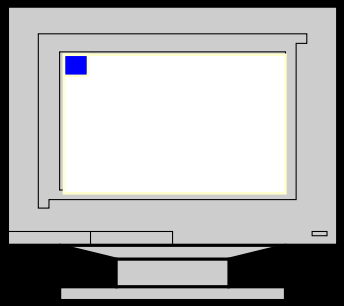
Different Views of Response Time

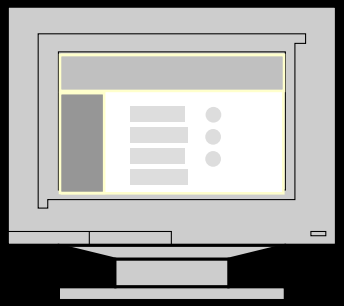
- From the time a key is pressed or a record is completed and the mouse is clicked:
  1. Start of Screen painting
  2. End of Screen painting
  3. Start of fields being filled in
  4. End of all fields being filled in

Different Views of Response Time

1. Start of Screen painting
2. End of Screen painting
3. Start of fields being filled in
4. End of all fields being filled in

1





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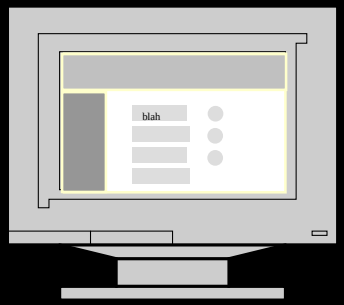

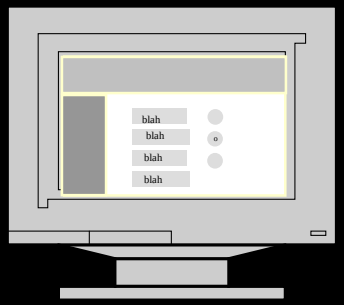

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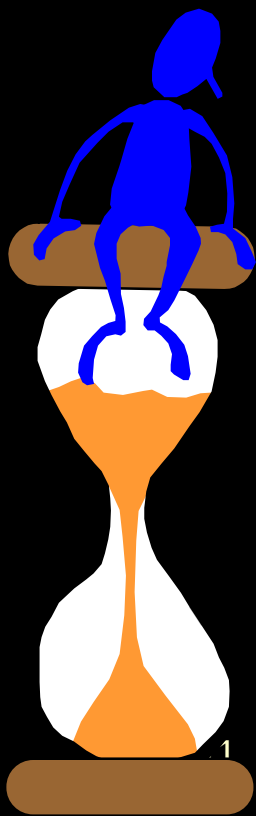
Our Performance Goals for Nationwide's Application?

- 3 second response time for AS/400 server transactions?
- Sub-second response time for client interactions?
- 3 second response time for NAPS server transactions?

How Do You Measure Performance?

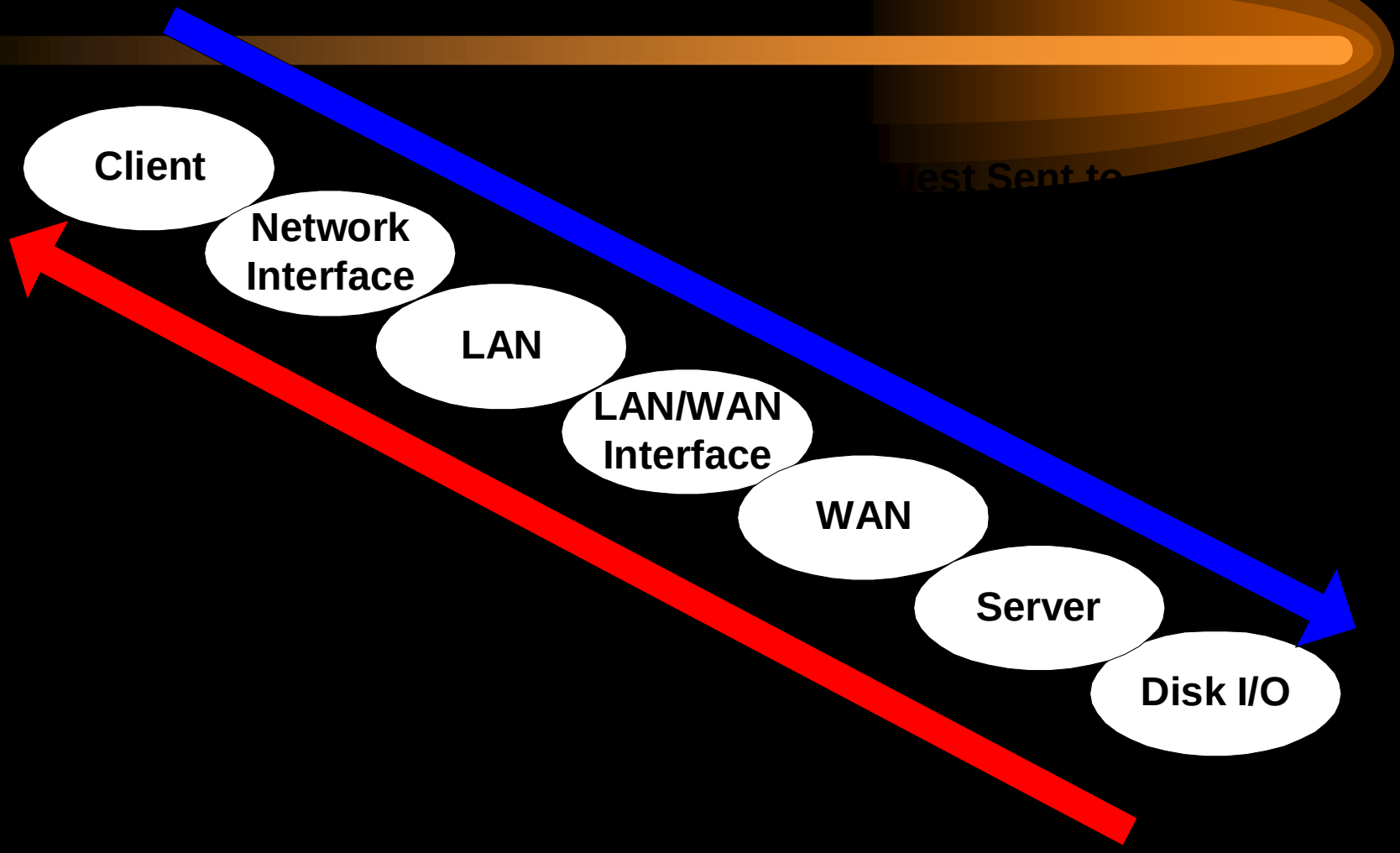
- Determine what the optimum performance is for a given event and component
- Observe representative samples of that event's performance.
- Compare the average performance with the optimum performance



Example of Performance Measurement

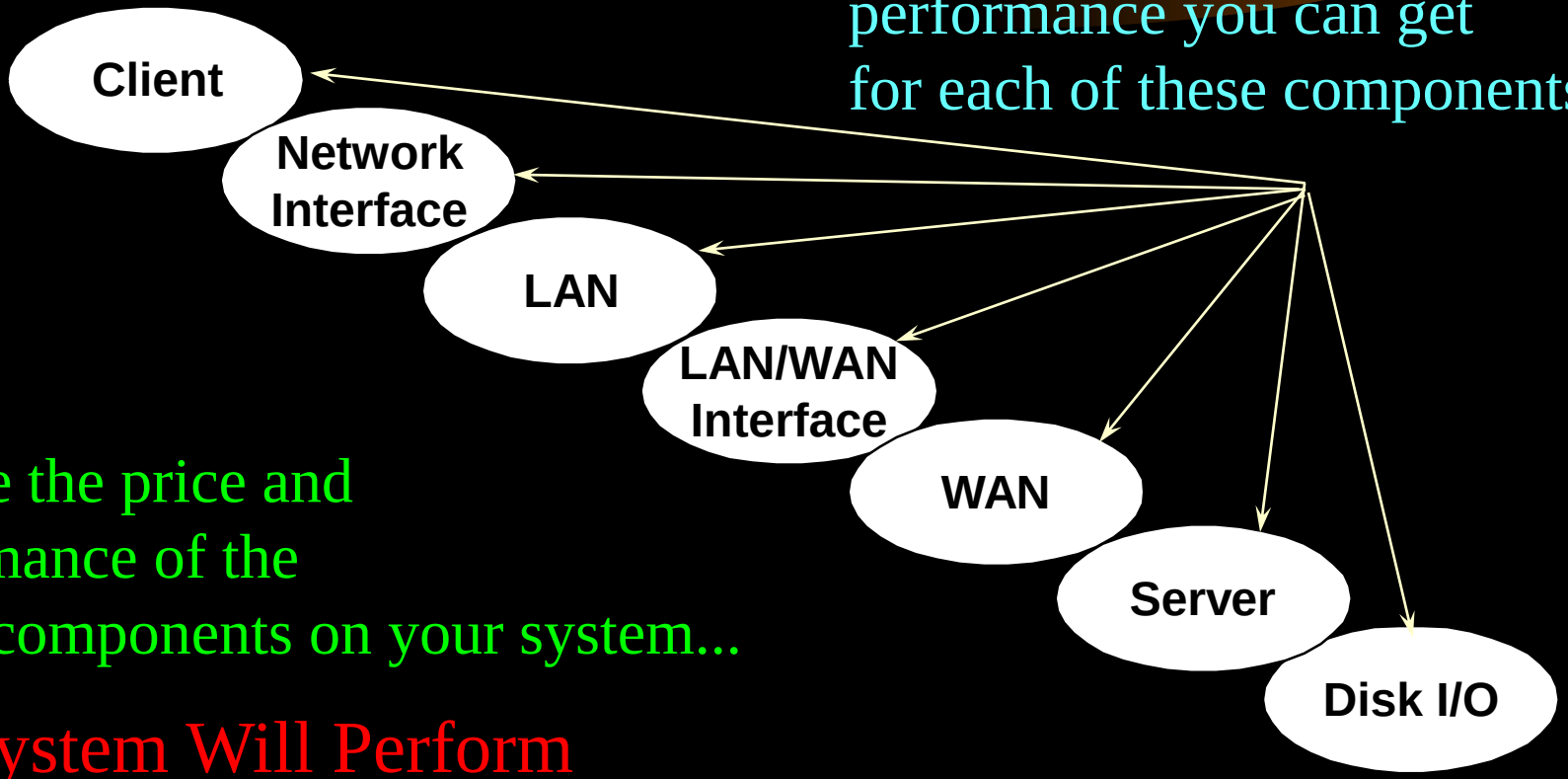
- Server-based tools to measure network traffic
- Collection of database transaction logs
- Client-based tools to measure time to/from the server
- Capture of network traffic at key points such as servers, hubs, and routers

Throughput Chain: Areas To Look At



Weakest Link Concept:

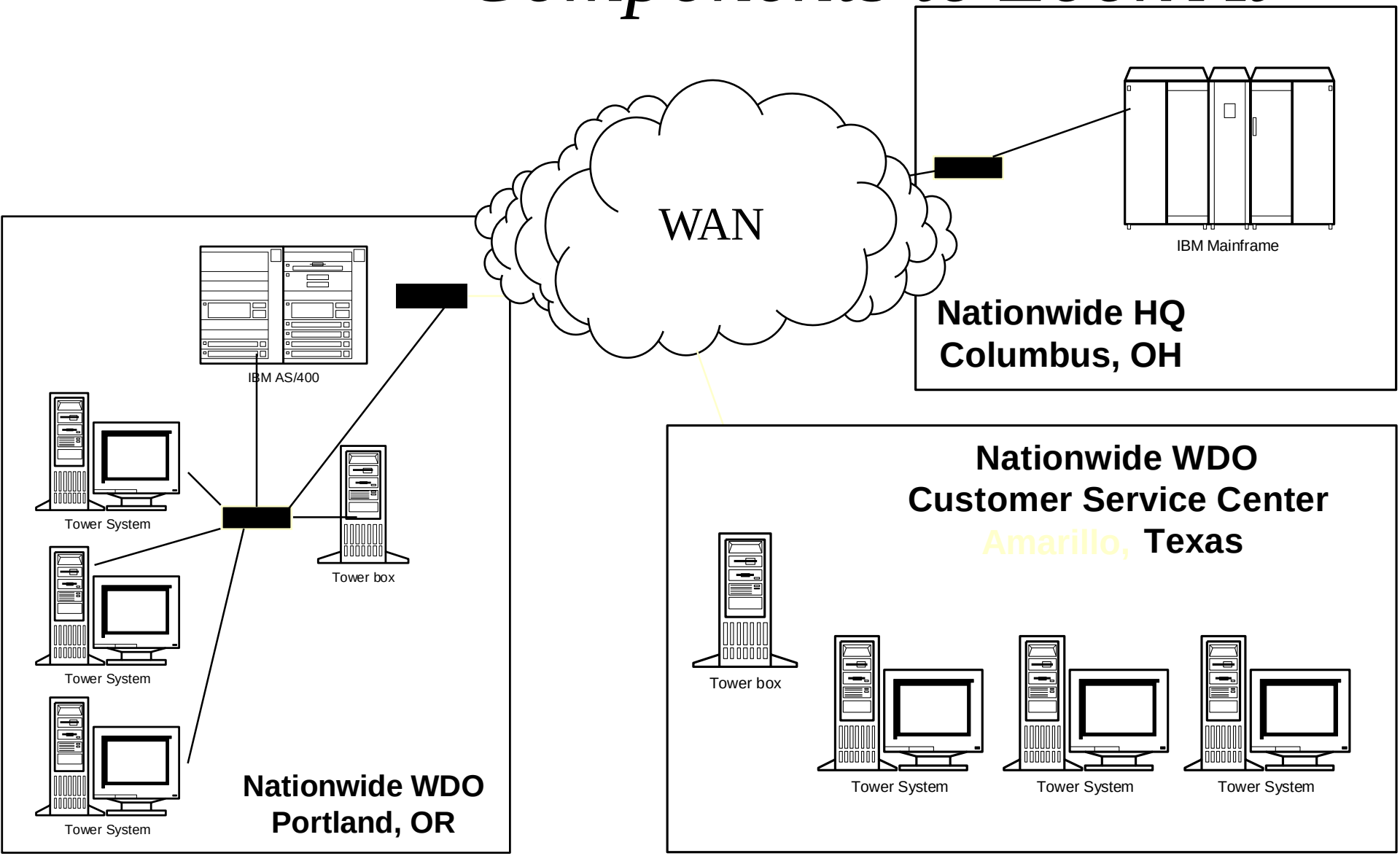
You must know the best performance you can get for each of these components.

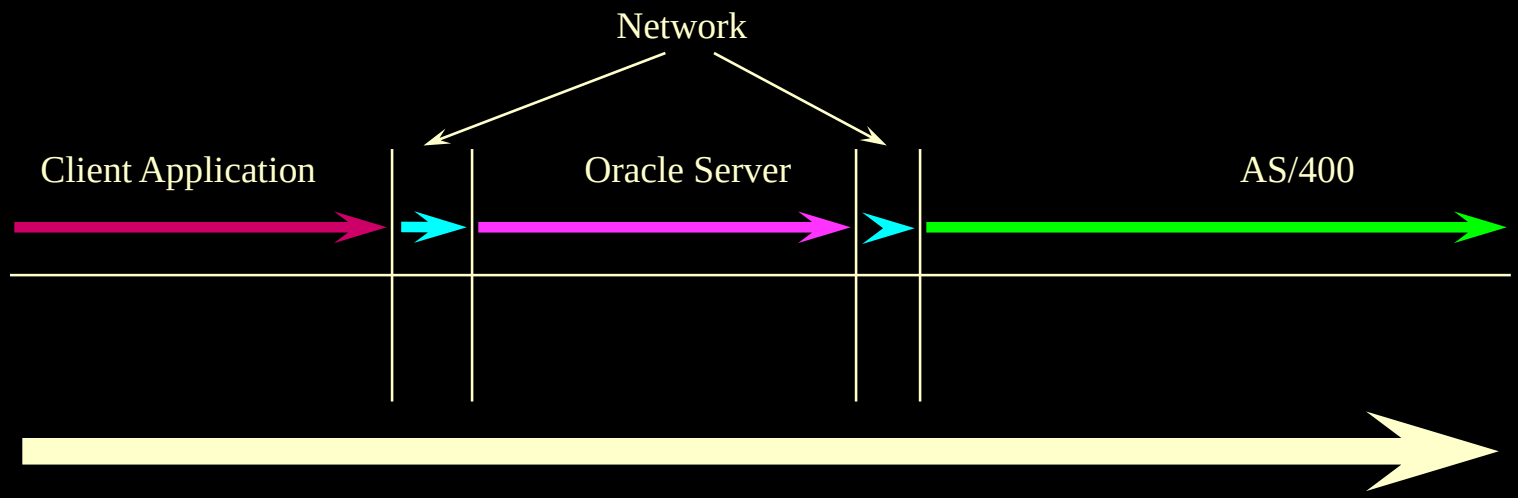


Despite the price and performance of the BEST components on your system...

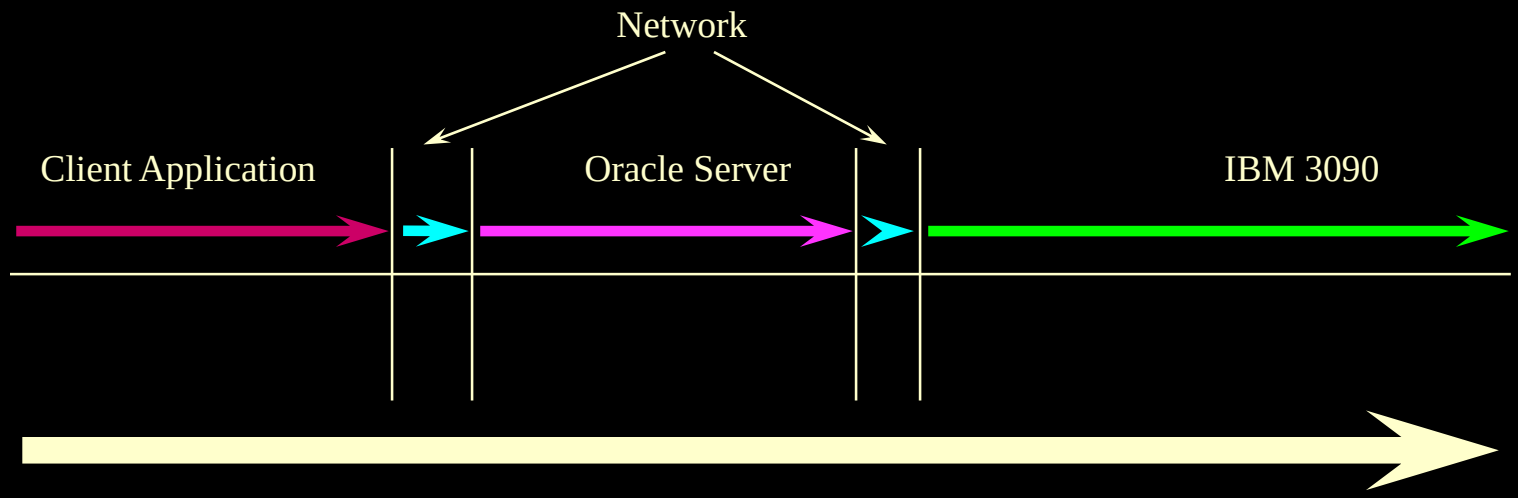
The System Will Perform No Better Than the Weakest (Slowest) Link

Specific Nationwide Application Components to Look At

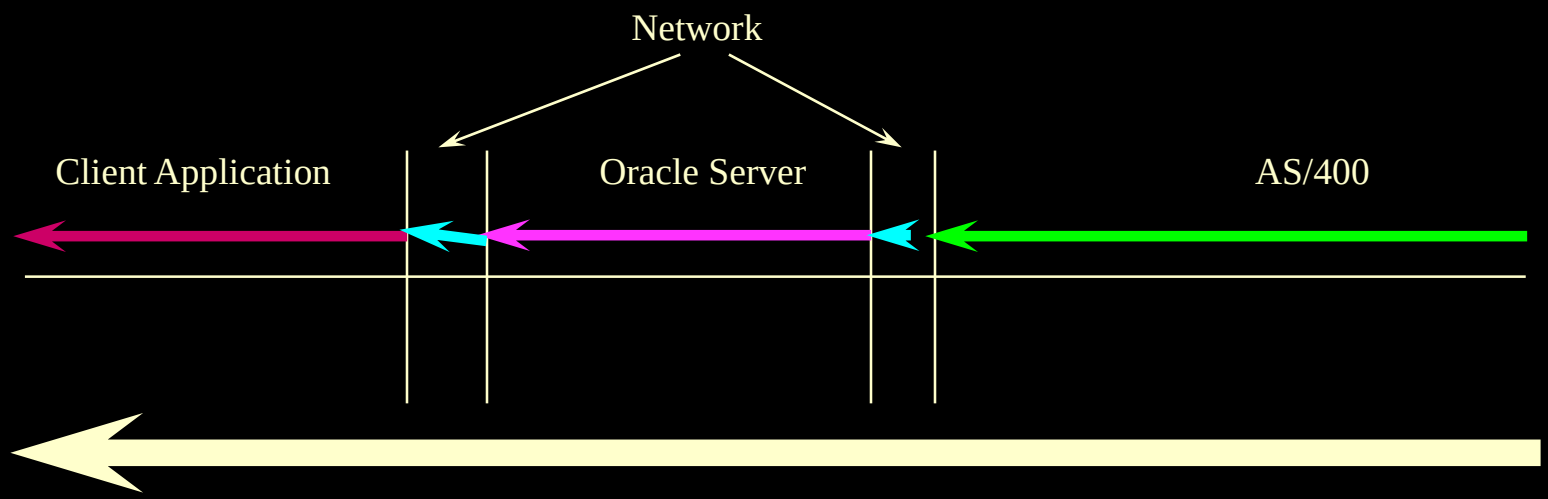




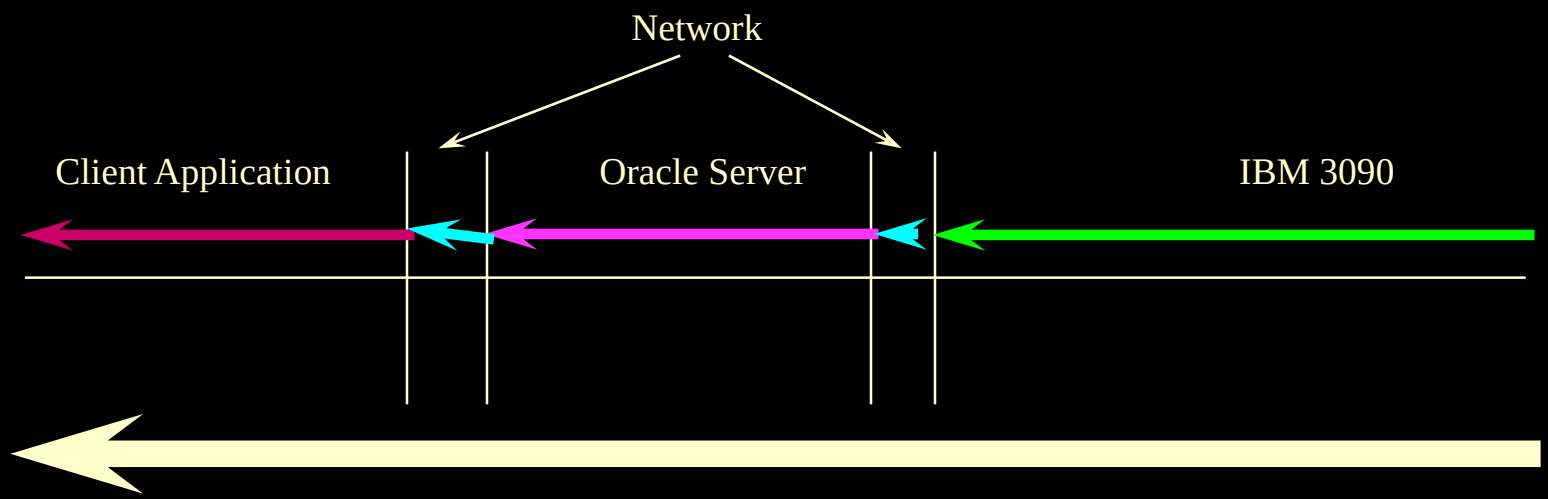
Response Time Going to AS/400 Server



Response Time Going to IBM 3090 Server



Response Time Coming from AS/400 Server

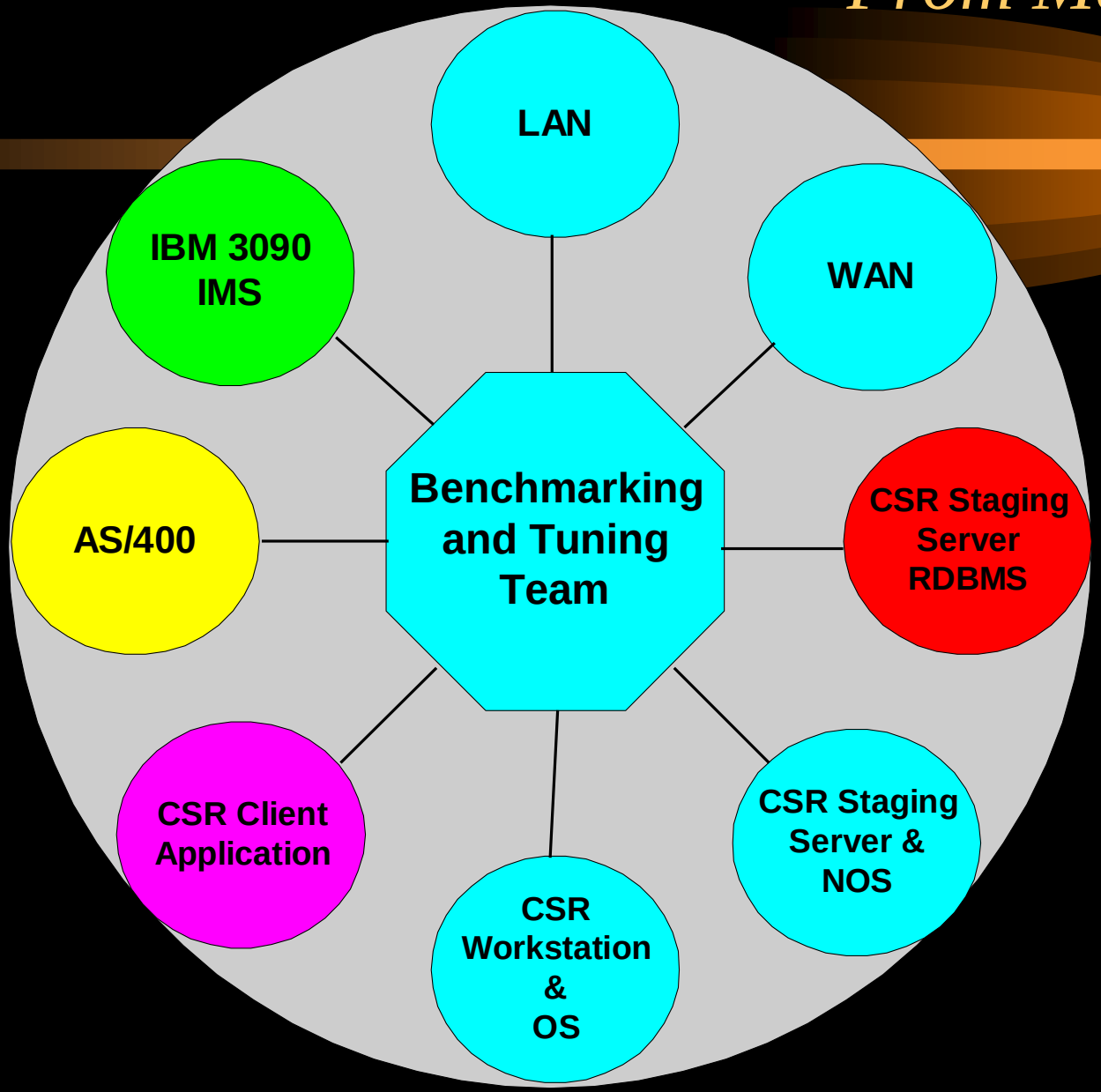


Response Time Coming from IBM 3090 Server

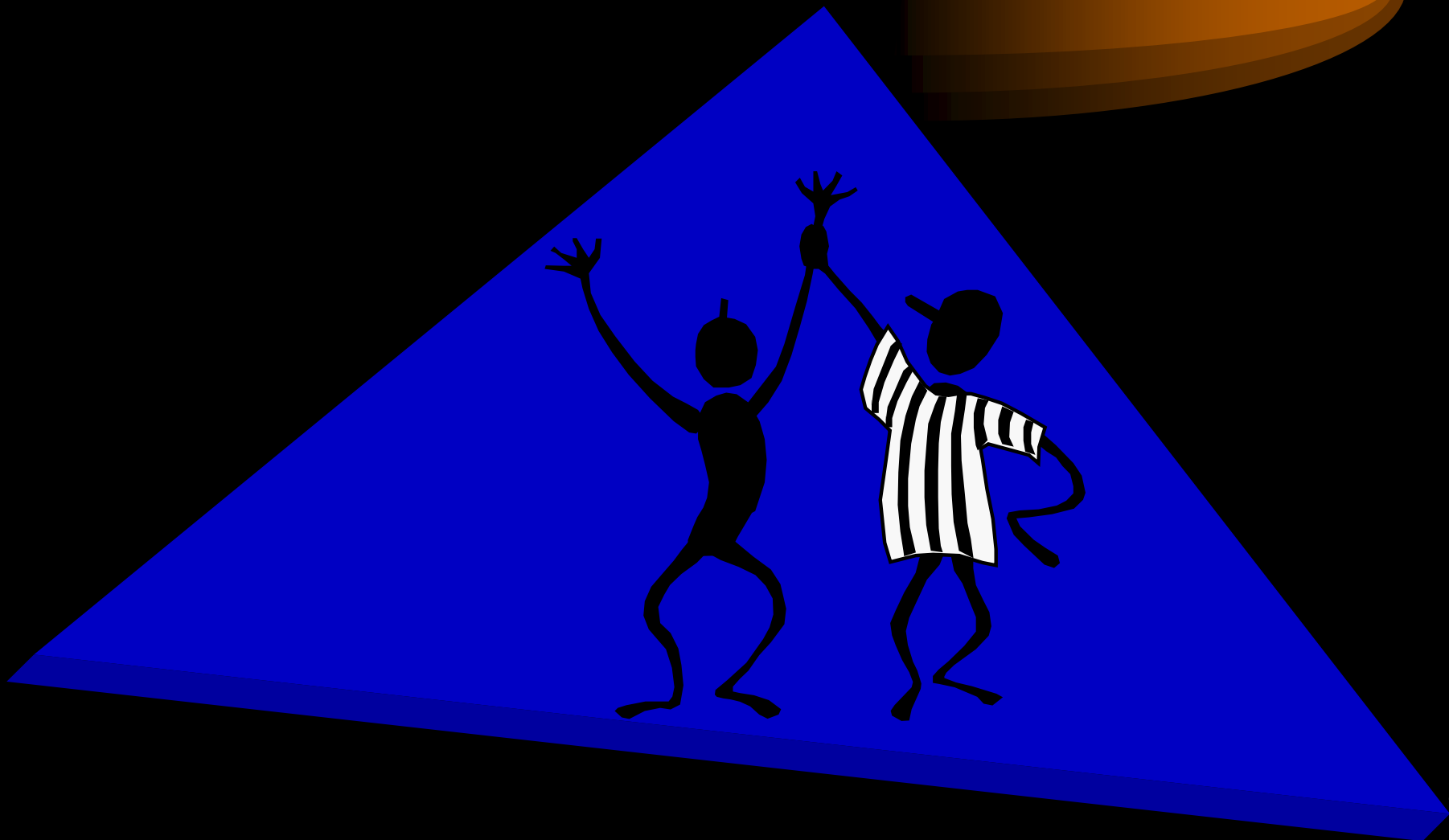
How to Build a Performance Tuning Team

- Involve people from each representative group
- Each Performance Team member must be empowered to help solve problems which relates to their specific area.
- Communicate honestly, clearly, and often
- Keep the customer's satisfaction in mind

The Performance Tuning Team Is Composed of People From Many Areas



Conclusion

- There are many aspects to the performance tuning of a large client/server system.
- The Performance Tuning team ***MUST*** be comprised of people from each representative area, who will work together.
- The user's satisfaction must be a primary focus when tuning the application.

We Can and Will Be Successful!