Course Outline

Mainframe Capacity Planning

Course Summary

Description

This course introduces the subject and methods of capacity planning. It provides the student with information pertinent to the topic of performance management and how this information can be transformed into a vehicle for forecasting capacity requirements.

Topics

- Introduction to Capacity Planning
- Capacity Planning Business Considerations
- System Components of Performance
- Establishing a Performance Baseline
- WLM Metrics
- Forecasting Methods
- Applications Capacity Planning and Scalability

Audience

This course is designed for performance analysts, systems programmers, technical managers and anyone who wants a better understanding of the principles of capacity planning and forecasting.

Prerequisite

Students attending this course should have experience with operating systems and have some exposure to performance management, specifically WLM and/or Performance tools such as RMF, etc. This course is not mathematically rigorous and therefore has no additional requirements for such experience.

Duration

Two Days

Mainframe Capacity Planning

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I. Introduction to Capacity Planning
- A. Why do capacity planning?
- B. Growth issues
- C. Migration issues
- D. Availability
- E. Performance Management versus Capacity Planning
- F. Discussion illustrating the different objectives of tuning versus planning.
- G. Relationship between design, tuning and constraint
- H. Discussion about the role of capacity planning during the initial phases of application design, the ability to tune applications and natural constraints (or bottlenecks).

II. Capacity Planning Business Considerations
- A. Financial aspects of capacity planning
- B. Discussion about the financial considerations in meeting capacity objectives.
- C. Service level agreements
- D. Discussion about the importance of having agreements to define expectations and lend credence to future projections.
- E. Chargeback and accounting considerations
- F. Discussion about the importance of having a reliable means of accounting for business purposes.
- G. Reliability of internal predictions
- H. Discussion about reliance on internal predictions regarding growth and expectations.

III. System components of performance
- A. Hardware
- B. Discussion to acquaint the student with the elements of hardware architecture, platform differences, and the components of performance.
- C. Software
- D. Discussion regarding the performance implications of various software designs.
- E. Software exploitation of architectures
- F. Discussion about the ability for software products to exploit particular architectural aspects of hardware.
- G. Bottlenecks

- H. Discussion about the "natural" bottlenecks that occur in systems.
- I. Performance metrics
- J. Discussion about the essential metrics that need to be captured to begin establishing a baseline of performance.

IV. Establishing a performance baseline
- A. Performance measurement
- B. What to measure?
- C. Reliability of measurements
- D. Understanding the measurements and applying them to establish a baseline.
- E. Historical measurements as indicators of future performance
- F. Understanding the role of historical data and its reliability in predicting future performance.

V. WLM Metrics
- A. Service Policies
- B. Goals
    1. Response time
    2. Percentiles
    3. Velocities
- C. Considerations
    1. Importance
    2. Durations
    3. Multiple periods

VI. Forecasting methods
- A. Linear projections
- B. Simple growth model
- C. Analytical queuing analysis
- D. Queuing theory
- E. Simulation models
- F. Understanding simulations and calibration considerations
- G. Benchmark analysis
- H. Measurement and projection

VII. Applications Capacity Planning and Scalability
- A. Applications design considerations
- B. Design considerations for performance
- C. Applications exploitation of architecture
- D. How much exploitation?
- E. Performance metrics
- F. How can we measure applications?
- G. Scalability issues
- H. Architectural considerations of applications development