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Scope of Software Architectures C4 Case Study Analysis

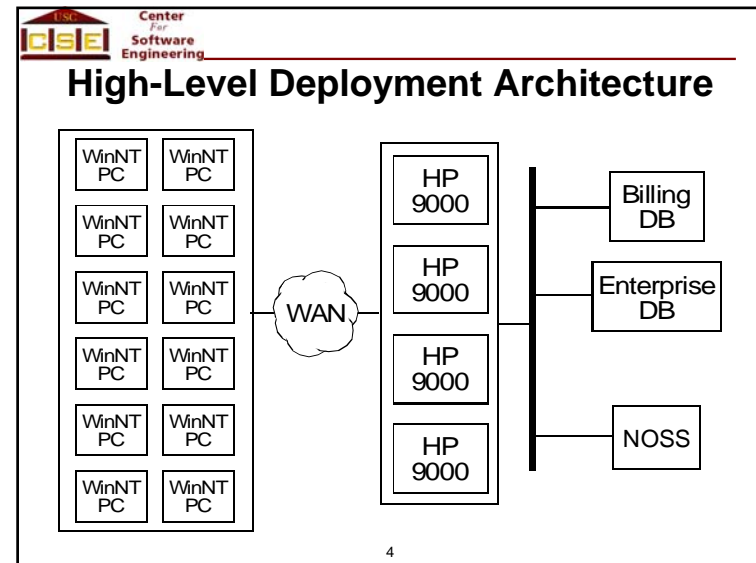
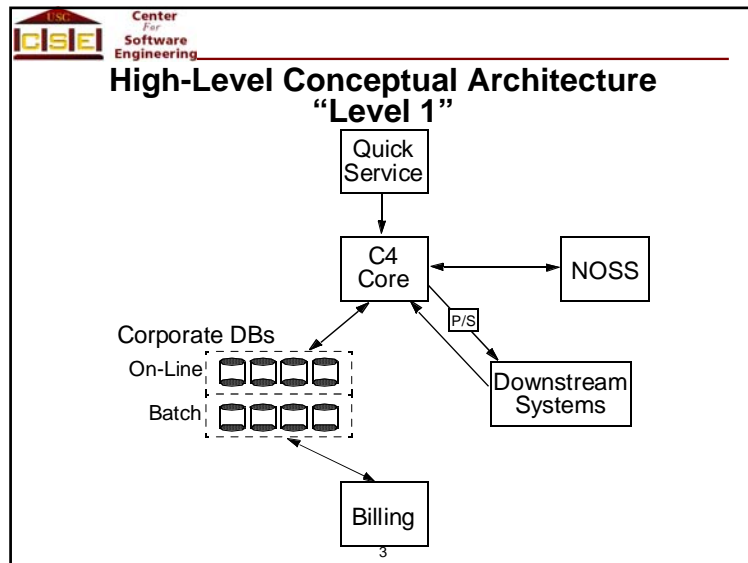
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C4 Requirements & Architectural Challenges

- C4 must support
 - Multiple concurrent tasks
 - Large database (15 million customers)
 - Large number of simultaneous transactions (at least 100)
 - Resource locking
 - Interrupted & long-lasting tasks
 - Resolution of conflicting events initiated by multiple authors
 - Customer data integrity
 - Near-continuous availability
 - Addition, removal, & replacement of services
 - Monitoring & elimination of processing bottlenecks
 - Near real-time response

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Requirements Issues

- Does resource locking scale?
- What is granularity of locking?
- What is performance penalty due to inability to cache data on local servers?
 - Especially during peak hours
- How should software react to hardware crashes to maintain integrity & performance of system?


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Requirements Issues (cont.)

- Document does not give measurable requirements for:
 - Performance
 - Reliability
 - Robustness
- When conflict between C4 and NOSS, which system should take precedence?
- For customer-agent events, what is expected
 - Average frequency?
 - Peak frequency?
 - Duration?


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Architectural Issues

- How to capture following requirements & constraints in architecture?
 - No persistent data caching on agent workstations to limit implications of local failures
 - Near 24x7 application availability
 - Conflicting events from multiple sources
- What are size estimates & resource allocation requirements?
- How will security be handled
 - Especially w.r.t. downstream systems?
- How will architecture support addition of new services into system?

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Architectural Issues (cont.)

- How will expected growth in scale affect architecture?
- How will architecture disambiguate conflicting requests?
- What happens if service request gets lost in request-reply protocol?
- How is consistency maintained between on-line & batch DBs?

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Architectural Issues (cont.)

- ❑ What happens if Transaction Processing Monitor crashes?
- ❑ How will time synchronization be achieved?
- ❑ Client wants 24x7 application availability on Windows NT workstations
 - Model clash between success & product models
- ❑ How can we achieve high availability without using fault tolerant hardware?

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