Materials for Live-Thru Case Histories

Overdue Book Notice Project

Section E: Solutions to exam distributed to the Students

1. What are the first things you, as Amberstone, do to try to solve the problem? (10 points)

Expected student answers
a. Talk to people and ask what happened and what changed.
b. Look at the most recent DTPs in light of the hang.

What Amberstone actually does is to drop all other activities and to consult the SDT and the support staff; he finds that they did not even know that the problem had occurred.

He declares the problem to be Priority 1, and focuses his entire staff on it. The staff runs the previous day's DTP and they find that the DTP ends just before the system hung. What there is of the DTP shows that the system performed normally until the point at which the DTP ended, so Amberstone's staff still has no idea what happened. Because there is no reason to believe that the crash resulted from a software error, Amberstone does not start a frantic debugging effort.

Rather, he dispatches staff to the four online Work Centers to gather more data. He then calls the Operations Manager, reports on the actions taken, and arranges to visit one of the sites of the Service-Request System the next day.

2. What do you, as Amberstone, do when you visit the site? (10 points)

Expected student answer:
You look at transaction data and system CPU profiles. You consult with the users and monitor customer calls.

Amberstone looks over the data collected, reviews status with his people on-site and calls the other two sites to make sure his people are properly deployed. He also checks with his people observing operations at the computer center. He then observes the use of the system by listening to customer phone calls and seeing how the transactions are entered into BU&U's Central Service-Request Computer.

He gets frequent updates on computer CPU utilization and response times.

At about 3PM on the day of your visit the system hangs again.

3a. What is the most logical question for you, as Amberstone, to ask the people at BU&U headquarters and at the Work Centers?

Expected student answers
1. What is so special about your operation at 3PM?
2. What changed in the transaction profile at 3PM?

Amberstone asks, "What is so special about what happens in the work centers at 3PM?"Using the data from the computer center he sees the transactions that were requested just before the hang as his people have now instrumented the computer with special debugging data capture tools.

3b. What answer does Amberstone get, from BU&U staff, to the "most logical question" that he asked.

Expected student answer
1. Traffic peaked at 3PM.
2. There was a bug in the system

The answer is that the Dispatcher at each of the four online Work Centers asked the system for a Service Request Report at almost exactly 3PM. When you ask the Operations Manager why they all happened to request Service Request Reports at about 3PM, she replies that "we need to find out how many technicians will have to stay to do overtime work each night so that we can meet service request due dates. Dispatchers schedule overtime at about 3PM every day so that technicians can call their families to let them know if they'll be home late. The Service Request Report is the only document that tells us how much work we need to do to meet the 48 hour service commitment."

3c. What short term actions do you take?

Expected Student Answers

1. Limit the size of the report
2. Redesign report processing to make it faster.

As a temporary expedient you ask the Operations Manger to stagger the report requests with a system administrator monitoring CPU usage to avoid a hang. You stop putting the other Work Centers online.

4a. Compare this situation to what you learned in the Overdue Book Notice Project.

Expected student's answers:
1. The 3PM triggering of the reports is a hidden requirement
2. The system is very sensitive to the business workflow that causes bursts of certain high resource consuming transaction, such as producing the report.

The 3PM triggering of the reports is a hidden requirement just like the need to keep the Overdue Notice exactly as specified in the Overdue Book Notice Project.

Both systems are very sensitive to the business workflows or scenarios that causes bursts of certain high resource consuming transaction, such as producing the report.

4b. How could you have avoided this crises?

Expected student answers:
1. Get all the stakeholders, that is the VP for Customer Service, the Operations Manager, and the technicians, involved in the requirements definition process.

2. Have your requirements engineers visit the manual operation sites and understand the business scenarios.

Get all the stakeholders, that is the VP for Customer Service, the Operations Manager, and the technicians, involved in the requirements definition process. Make sure the requirements engineers visit the manual operation sites and understand the business scenarios.

5. How would you change the architecture of the system to provide a stable solution and to avoid the hangs while honoring the need for the 3PM running of the Service Request Reports for all Work Centers?

Expected answers from students;
1. Get a faster computer.
2. Put an isolated computer in each operations center with a good automatic call distributing system
3. Upgrade the server to broadcast the status of each service request to all the clients on a transaction-by-transaction basis. Upgrade the client to select and
produce the reports needed by the Dispatcher whenever he needs them.

Upgrade the server to broadcast the status of each service request to all the clients on a transaction-by-transaction basis. Upgrade the client to select and produce the reports needed by the Dispatcher whenever he needs them.