CICS and WMQ

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Agenda

• Angst and Depression
• Revisiting strategic decisions
  • Availability
  • Connection explosions
• Returning to practical solutions
  • Using new capability
  • Miscellaneous Issues
Angst and Depression

- Since the 1980s the mainframe has been “dead or dying”
- Many businesses are choosing to use ‘commodity hardware’ and off the shelf software to solve their problems
- This is the story of many of those situations,
  - And this is why I have hope
Strategy

- About 4.5 years ago, a large production oriented customer made a decision, based on information provided by their IT strategy consultants:
  - z/OS is no longer strategic for our company, we have to modernize
  - Commodity hardware and software are the rule
  - Moving one key application from z/OS to xLinux as the test case
    - The timeline was 18 months, the last 3 months running in parallel
    - The initial estimate was 1.2M for the application conversion
    - The hardware costs were estimated at 175 -250 K
Reality – Measured results

- When finally complete:
  - The project took 3.5 years
  - The project cost over 4.5M in services fees over the 3.5 years.
    - Custom tailoring of the software was more extensive than planned
    - They did not factor in the employee costs, which would have raised the total considerably.
  - The hardware expenditures were over 500K
    - They do not have a fully discrete development, QA and production environments.
Reality – Unexpected results

- The application availability has gone from 99.99% to 97%
  - Or from 1 minute per week to 5 hours per week
- They are experiencing capacity and volume problems
  - Provisioning servers takes more time and costs more than anticipated
- Applying updates and maintenance to many more images is more time consuming than planned
## Availability ‘by the nines’ chart

<table>
<thead>
<tr>
<th>Availability %</th>
<th>Downtime per year</th>
<th>Downtime per month*</th>
<th>Downtime per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>90% (&quot;one nine&quot;)</td>
<td>36.5 days</td>
<td>72 hours</td>
<td>16.8 hours</td>
</tr>
<tr>
<td>95%</td>
<td>18.25 days</td>
<td>36 hours</td>
<td>8.4 hours</td>
</tr>
<tr>
<td>97%</td>
<td>10.96 days</td>
<td>21.6 hours</td>
<td>5.04 hours</td>
</tr>
<tr>
<td>98%</td>
<td>7.30 days</td>
<td>14.4 hours</td>
<td>3.36 hours</td>
</tr>
<tr>
<td>99% (&quot;two nines&quot;)</td>
<td>3.65 days</td>
<td>7.20 hours</td>
<td>1.68 hours</td>
</tr>
<tr>
<td>99.5%</td>
<td>1.83 days</td>
<td>3.60 hours</td>
<td>50.4 minutes</td>
</tr>
<tr>
<td>99.8%</td>
<td>17.52 hours</td>
<td>86.23 minutes</td>
<td>20.16 minutes</td>
</tr>
<tr>
<td>99.9% (&quot;three nines&quot;)</td>
<td>8.76 hours</td>
<td>43.8 minutes</td>
<td>10.1 minutes</td>
</tr>
<tr>
<td>99.95%</td>
<td>4.38 hours</td>
<td>21.56 minutes</td>
<td>5.04 minutes</td>
</tr>
<tr>
<td>99.99% (&quot;four nines&quot;)</td>
<td>52.56 minutes</td>
<td>4.32 minutes</td>
<td>1.01 minutes</td>
</tr>
<tr>
<td>99.999% (&quot;five nines&quot;)</td>
<td>5.26 minutes</td>
<td>25.9 seconds</td>
<td>6.05 seconds</td>
</tr>
<tr>
<td>99.9999% (&quot;six nines&quot;)</td>
<td>31.5 seconds</td>
<td>2.59 seconds</td>
<td>0.605 seconds</td>
</tr>
<tr>
<td>99.99999% (&quot;seven nines&quot;)</td>
<td>3.15 seconds</td>
<td>0.269 seconds</td>
<td>0.0605 seconds</td>
</tr>
</tbody>
</table>
Results

• The suggestion to convert the next key application to distributed was met with
  • ‘We have decided the mainframe is strategic after all’
  • So why have they made this decision?
    • They kept an honest set of books on the project
    • The connectivity explosion is catching up with them
      • *The availability issue is a significant factor*
Results - notes

• By keeping an ‘honest set of books’:
  • The project kept track of every piece of equipment purchased and used
    • The oft-used technique of purchasing one server at a time to keep costs under the radar was not allowed
  • They kept track of all consultancy and contractor fees
    • ‘Split time’ was accounted for correctly
  • Continued costs of running the ‘old fashioned’ systems was included
    • Extended support contracts had been put in place for a couple of components
Hope springs eternal

• With better tools to measure TCO
• With more I/T shops recognizing the value in what they have
• There is an emerging emphasis on practical solutions verses what’s fashionable
A major driver - Connection Explosions

- New devices bring new opportunity
  - Status updates
    - Not talking about social media status
  - Smart devices
    - Device generated payments
  - Smart Meters
  - Location tracking…..
Connection Explosions

• A quote heard on NPR:
  • “People have had cell phones for a while. They used to keep them in their pockets, now they have them out staring at them all the time. “

• Coffee shop tale –
  • Customer was trying to pay with a smart phone app, but could not get the money transferred because a server was not available.
  • Line was extending out the door, people were walking away.
  • Lost business, lost good will, rest of the line was annoyed
Solutions to the connectivity explosion

• The connectivity problem is two fold:
  • Managing the millions of potential concurrent connections from new devices with emerging standards
    • The front end issue
  • Processing the requests
    • Giving people the ability to ask about their account 24/7 leads to demand during traditional outage windows
    • “I do my banking at night”
    • The back end issue
Solution to the connectivity explosion

• Let’s add more servers
  • Wiring
  • Governance
  • Heat
  • Power
  • Real estate
  • DR
Solution to the connectivity explosion

• Truthfully the explosion of connection types and standards if often better met with distributed solutions than by using z/OS

• However,
  • There are tools in the product families that can make this problem much more manageable
  • These tools and new features tie more directly back to the CICS/WMQ for z/OS sweet spots is on the back-end – being able to process all the request reliably
So now that we are strategic again

• How do we cope?
  • Taking advantage of the robust nature of the hardware and software
    • Subsystems and hardware designed around rolling maintenance
    • Subsystems are leading trends … or at least keeping up
      • *While keeping the critical features we know and love*
  
• Use the Sysplex and the ‘plex aware features of the subsystems
  • CICS
    • *CPSM*
    • *RLS*
    • *Other Shared resources*
  • MQ - Queue Sharing
  • DB2 Data Sharing
So we are strategic again

• What can we do to modernize our applications that no one has touched in years?
  • Modernization of CICS applications has been going on for decades
  • Quite often just looking at the code reveals a wealth of opportunity and education
    • DPL enabled – good to go for almost any connection
    • Invoked via WMQ, WebServices, etc.
  • CICS Interdependency Analyzer can help
So we are strategic again....

• Performance monitoring will become more critical
• Response time will be meaningful to more people
Coping with the volume

- Billions of transactions a day?
  - No problem
- Billions of messages a day?
  - No problem
- Billions of database updates a day?
  - No problem
Miscellaneous tales of woe

- In the next few slides there are situations that can be avoided
  - The myth of the free client
  - Unexplained MIPS increases
  - Other horror tales to be shared around the campfire
The myth of the free client

- Project plan was to eliminate the CICS MIPS by moving the application off platform, while giving the same availability
  - Using DB2 connect and WMQ clients
  - MIPS reduction anticipated was 25%
- Result
  - MIPS increase by 40% initially
  - Brought down to an increase of 20% thru significant recoding
Unexplained MIPS increases

• Stealth applications –
  • Applications accessing and using CICS, DB2, and WMQ on z/OS without being budgeted
  • “But the application code is mostly on commodity servers, so it does not cost a thing”
Unexplained MIPS increases

• In this example, a new application was brought onboard, using services already provided by CICS, MQ and DB2
• It was done without any interaction with the system admin staff
• Volume started out as low, and grew….until
Misc Horror Story

- Let’s outsource
  - By Paul Kunert 7th February 2013 17:24
  - Stricken 2e2 threatens data centres: Your money or your lights

- £40k from biggest fish, £4k from minnows, to keep servers running
- The collapse of UK IT contractor 2e2 descended into farce tonight as its largest data centre customers were told to each pay £40,000 just to keep the lights on.
- Clients of debt-crippled 2e2 were told to cough up the cash to keep systems running until they transition to another provider, sources close to the situation have told The Channel.