Exploiting z/OS – Tales From the MVS Survey

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Agenda

• MVS Program Survey
• Top 5 Functions That Provided the Most Benefit
• Some Important Functions That Aren’t Being Implemented Fast Enough
• Major Misconceptions
MVS Survey

• In July 2012, the MVS program decided to conduct an online survey to determine how and whether installations were exploiting the enhancements in each z/OS release.
• The results were surprising, at the very least.
• The purpose of this session to explore those results.
• I’ll be providing my personal recommendations in many cases.
• You can see the full results by going to www.share.org/mvs and signing up to be a member; then look at the Forum for MVS Program Announcements.
1. Which is your next release?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>z/OS 1.13 to z/OS 2.2</td>
<td>11.84%</td>
</tr>
<tr>
<td>z/OS 1.13 to z/OS 2.1</td>
<td>26.32%</td>
</tr>
<tr>
<td>z/OS 1.12 to z/OS 2.2</td>
<td>1.32%</td>
</tr>
<tr>
<td>z/OS 1.12 to z/OS 2.1</td>
<td>9.21%</td>
</tr>
<tr>
<td>z/OS 1.12 to z/OS 1.13</td>
<td>26.32%</td>
</tr>
<tr>
<td>z/OS 1.11 to z/OS 1.13</td>
<td>13.16%</td>
</tr>
<tr>
<td>z/OS 1.11 to z/OS 1.12</td>
<td>2.63%</td>
</tr>
<tr>
<td>z/OS 1.10 to z/OS 1.12</td>
<td>2.63%</td>
</tr>
<tr>
<td>No plans to upgrade</td>
<td>2.63%</td>
</tr>
<tr>
<td>Don't know</td>
<td>3.95%</td>
</tr>
<tr>
<td>*** ***</td>
<td>***</td>
</tr>
<tr>
<td>Total</td>
<td>75.01%</td>
</tr>
</tbody>
</table>
1. Next Release?

• 38% now on z/OS 1.13 planning to upgrade to z/OS 2
• 11% now on z/OS 1.12 planning to upgrade to z/OS 2
• 26% now on z/OS 1.12, planning to upgrade to 1.13
• 25% are on older releases or not planning to upgrade
• 74% plan on upgrade in 2012 or 2013
• Recommendation:
  • If it were me, I wouldn’t be in the 11% going from z/OS 1.12 to z/OS 2
### 2. What z/Architecture Server?

<table>
<thead>
<tr>
<th>z/Architecture Server(s)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>z196</td>
<td>29%</td>
</tr>
<tr>
<td>z114</td>
<td>13%</td>
</tr>
<tr>
<td>z10 EC</td>
<td>18%</td>
</tr>
<tr>
<td>z10 BC</td>
<td>16%</td>
</tr>
<tr>
<td>z9 EC</td>
<td>7%</td>
</tr>
<tr>
<td>z9 BC</td>
<td>6%</td>
</tr>
<tr>
<td>z990</td>
<td>1%</td>
</tr>
<tr>
<td>z890</td>
<td>5%</td>
</tr>
<tr>
<td>z900</td>
<td>1%</td>
</tr>
<tr>
<td>z800</td>
<td>3%</td>
</tr>
<tr>
<td>Other, specify:</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
</tr>
</tbody>
</table>
2. What z/Architecture Server?

- Note that this was before the zEC12
- 14% have machines that won’t run z/OS 2, which requires a z9 or newer machine
51. Which 5 functions provided most benefit?

• 1. Health Checker (21%)
  • 77% have implemented the IBM health checker
  • Primary complaint – too many alerts; too little time
  • Primary misconception – their systems are well run and Health Checker won’t find anything of value

• References -
  • IBM Redpaper REDP-4590-01 – Exploiting the IBM Health Checker for z/OS Infrastructure
  • SHARE SF Session 13118, Marna Walle, Introduction and Getting Started with the IBM Health Checker for z/OS
  • Website – www.ibm.com/systems/z/os/zos/hchecker/
  • SA22-7994-13 – IBM Health Checker User’s Guide
51. Which 5 functions provided most benefit?

• 1. Health Checker (cont.)
  • Benefit -
    • Detect problems early; avoid outages
    • Provide more stable, reliable, and available systems
    • Teaches Best Practices
  • My recommendation -
    • If too many alerts, then maybe you REALLY need HC!
    • Run on test or development system first and work through most of the alerts
    • EVERY site should implement this on all production systems
    • Implement APARs for new checks when they come out – PSP bucket HCHECKER
    • Review checks on a yearly basis in case you’ve bypassed some that should be activated
51. Which 5 functions provided most benefit?

• 2. HyperPAV (21%)
  • 55% have implemented HyperPAV
  • Primary complaint – couldn’t justify cost
  • Primary misconception – non-IBM storage vendors don’t support it (but they do – just ask)
  • References –
    • ATS White Paper [WP101175](#) – DS8000 HyperPAV UCB and Alias Analysis Case Study
    • IBM Redbook [SG24-8886-02](#) - IBM System Storage DS8000 Architecture and Implementation
    • SHARE 2009 Denver session 2178, Anthony Mungal, *On the Importance of I/O Parallelism, I/O Priority Structures and Partitioning in z/OS Environments*
51. Which 5 functions provided most benefit?

• 2. HyperPAV (cont.)
  • Benefits –
    • Reduces number of PAV-aliases needed for each logical subsystem (LSS)
    • Reduces IOSQ time on volumes, especially on extended address volumes (EAVs)
    • Provides automatic configuration when workload changes
  • My recommendation –
    • Ask your IBM rep to run a free HyperPAV study using your SMF 70-78 record
    • Consider sharing cost and justification with zLinux and z/VM LPARs
51. Which 5 functions provided most benefit?

- 3. zIIPs/zAAPs (16%)
  - 76% have zIIPs; 25% have zAAPs; 29% planning on zAAP on zIIP facility
  - Primary reason for no plans – not running DB2 or Java work
  - Primary misconception – zIIPs/zAAPs are ONLY useful for DB2 or Java work
- References –
  - SHARE SF session 12446, Catherine Moxey, *CICS and Java: How the JVM Server Transforms Java in CICS*
51. Which 5 functions provided most benefit?

• 3. zIIPs/zAAPs (cont.)
  • Benefits –
    • Lets work run on cheaper MIPS (e.g. $51/MIPS vs $1000/MIPS)
    • Reduces software costs more than enough to pay for the specialty processors
  • My recommendation –
    • Start running zAAPs on zIIPs; zEC12 last model to support zAAPs; software now lets you use both for evaluation
    • If you don’t have a zIIP now, re-evaluate why not; more applications can let you run on a zIIP (z/OSMF is one)
    • Look into vendor products that exploit zIIPs (e.g. SHARE SF session 12424, Russ Teubner of HostBridge Technologies, CICS Integration & Optimization: Tales from the Trenches)
51. Which 5 functions provided most benefit?

- 4. zFS (12%)
  - 64% have migrated system files from HFS to zFS; 49% have migrated user files from HFS to zFS
  - Primary complaint – performance problems, especially with a large number of entries in directory; vendors still ship HFS; HFS easier to use; can’t migrate without an outage
- References –
  - Redbook **SG24-6580-05**, *z/OS Distributed File Service zSeries File System Implementation z/OS V1R13* (Oct2012)
  - Redpaper **REDP-4328-00**, *HFS to zFS Migration Tool*
  - Redpaper **REDP-4769-00**, *zFS Reorganization Tool*
51. Which 5 functions provided most benefit?

- 4. zFS (cont.)
  - References –
    - SHARE SF sessions:
      - 13023, Scott Marcotte, *Everything You Wanted to Know About zFS Sysplex Sharing*
      - 12730/12731, Scott Marcotte, *zFS Diagnosis 1 & 2*
  - Benefits –
    - HFS will stop being supported at some point in the future
    - Performance, error handling, and administration are greatly improved on z/OS 1.13
    - z/OS 2.1 provides a new file format to support very large directories (but even smaller directories see 33% improvement in directory updates)
51. Which 5 functions provided most benefit?

• 4. zFS (cont.)
  • My recommendation –
    • If you haven’t migrated, wait until z/OS 2.1 to use new zFS file format
    • If you have migrated, be sure that you’re getting the z/OS 1.13 improvements
    • If you have large directories (over 2,000 entries), don’t migrate yet
51. Which 5 functions provided most benefit?

- 5. HiperDispatch (11%)
  - 46% have HiperDispatch turned on
  - Primary complaint – there are too many bugs; management is afraid
  - Primary misconceptions – there are still bugs; it’s not useful for single-book installation (all hogwash!)
51. Which 5 functions provided most benefit?

• 5. HiperDispatch (cont.)
  • References –
    • SHARE SF session 13101, Kathy Walsh, *Configuring LPARs for Performance*
    • Redbook [SG24-7853-00](https://www.ibm.com), *z/OS V1R12 Implementation*
    • SHARE Anaheim session 11609, Horst Sinram, *z/OS WLM Update for z/OS V1.13 and V1.12*
    • ATS White Paper [WP101229](https://www.ibm.com), Kathy Walsh & Steve Grabarits, *z/OS: Planning Considerations for HiperDispatch Mode*
51. Which 5 functions provided most benefit?

- 5. HiperDispatch (cont.)
  - Benefits –
    - Reduction in CPU time and improvement in response time
  - My recommendation –
    - Turn HiperDispatch on unless told to turn it off by IBM (very few examples of this)
    - Why throw away CPU cycles? This is a no-brainer
    - Use the default of HD=YES in z/OS 1.13 on a z196 and newer machines
Very Important Functions

- zPCR
- z/OSMF
- CPU MF
- ITSO Pubs
10. Have you used zPCR?

- 45% have used zPCR
- Primary complaint – don’t have confidence in it
- Primary misconception – it’s only for upgrading to new CECs
- References –
  - SHARE SF session 13097, John Burg, zPCR Capacity Sizing Lab – Part 1 of 2: Introduction and Overview
10. Have you used zPCR?

• Benefits –
  • It’s free and keeps you from making capacity planning or configuration mistakes
  • It’s the ONLY way you can estimate the impact of new hardware or hardware changes, such as the change in your LPAR configuration or use of specialty processors (zIIPs/zAAPs) – don’t use MIPS tables for expectations
  • Can help you improve performance of your configuration

• My recommendation –
  • EVERYBODY needs to install and learn to use this before making any type of configuration change
  • Turn on type 113 records as input to zPCR
23. Have you used z/OSMF?

- 24% have used z/OSMF
- Primary complaint – takes too many resources; and “I have my own way of doing things”
- Primary misconception – it’s only for new sysprogs
- References –
  - z/OSMF website
  - IBM z/OSMF User’s Guide – SA38-0652
23. Have you used z/OSMF?

- References (cont.) –
  - SHARE SF sessions:
    - 13059, Anuja Deedwaniya, *z/OSMF What is it? And why would I want it?*
    - 13040, Doug Henry, Anuja Deedwaniya, Mary Anne Matyaz, *z/OSMF User Experience*
    - 13100, Juergen Baumann, *Manage your Workloads and Performance with z/OSMF*
    - 13082, Greg Daynes, *New z/OSMF Software Management Capabilities*
23. Have you used z/OSMF?

• References (cont.) –
  • SHARE SF sessions:
    • 13052, Toshiba Burns-Johnson, *Engaging Users and Reducing Complexity: z/OSMF Software Deployment Project Usability Discussion*
    • 13061, Anuja Deedwaniya, *z/OSMF Advanced Functionality*
    • 13099, Juergen Baumann, *Capacity Provisioning Update for z/OS*
    • Several labs this week
23. Have you used z/OSMF?

• Benefits –
  • Improves sysprog and performance analyst productivity
  • Provides easier training for new sysprogs
  • Implements “Best Practices”
  • Provides software management, which is a totally new feature unavailable through other techniques
  • Positions you for use of workflow scenarios to decrease the time to implement other features in z/OS 2.1
23. Have you used z/OSMF?

- My recommendation –
  - Install this on your test or development system as soon as possible (caution – it might run as slow as molasses on a small LPAR, but just have patience and see the benefits)
  - For small production LPARs, wait until z/OSMF 2.1 where it’s expected to use the WAS Liberty Profile – potential for smaller footprint, better performance, and easier implementation
23. Have you used z/OSMF?

• My recommendation –
  • Install PTFs for December 2012 enhancements; see WSC Flash10794 – IBM z/OSMF V1.13 Service Updates Available
  • Implement WLM first because it is very easy and very popular;
    • then software management because it’s new information you haven’t had;
    • then configuration assistant for TCP/IP because the download version is going away;
    • then incident log because it implements best practices and reduces sysprog time (even if it takes a little more setup);
    • then ISPF because it’s fun!
40. Have you used CPU Measurement Facility (CPU MF)?

- 34% have used CPU MF
- Primary complaint – haven’t had time
- Primary misconception – don’t see a use
- References –
  - SHARE SF session 13098, John Burg, *CPU MF – 2013 Update and WSC Experiences – Now More Than Ever*
  - SHARE SF session 13097, John Burg, *zPCR Capacity Sizing Lab – Part 1 of 2: Introduction and Overview*
40. Have you used CPU Measurement Facility (CPU MF)?

- Benefits –
  - Provides much better data for determining LSPR workload
  - Helps zPCR provide better capacity estimates
- My recommendation –
  - EVERYBODY needs to turn on the type 113 records
  - See John Burg’s session for volunteering data
7/8 – Have you implemented recommendations from ITSO?

- Two were specifically written to reduce outages and mean time to recovery (MTTR):
  - SG24-7328-00 – z/OS Planned Outage Avoidance
  - SG24-7816-00 – Mean Time to Recovery (MTTR)
- Sadly, less than 50% of responders had tried any of these Best Practices
- Benefit – More reliable and stable systems; less downtime; training in Best Practices
Major Misconceptions

- Misconception means someone had it wrong!
Major Misconceptions

• 11. Common Information Model (CIM)
  • Only a few (< 5%) have implemented it for z/OSMF
  • Misconception – it’s only needed for z/OSMF, but it’s used for RMF, HTTP, Tivoli, and future products

• 12. Common Event Adapter (CEA)
  • Only a few (<12%) have implemented for z/OSMF
  • Most people don’t see a need; but it will be used for many new uses by IBM
Major Misconceptions

13. SMF Logger
   - Less than 20% have implemented it
   - Misconception – it requires a coupling facility, but it can use a DASD-only logger and still provide all of the benefits

14. SMF Record Flooding (z/OS 1.12)
   - Less than 4% have implemented it
   - Misconception – we don’t have a problem with record flooding (my comment – YET!)
Major Misconceptions

19. Using both SYSLOG and OPERLOG
   - 51% have implemented both
   - Misconception – it requires a coupling facility, but it can use a DASD-only logger and still provide all of the benefits
   - OPERLOG keeps recording after JES has shut down
   - zAware requires OPERLOG, but DASD-only is fine

22. BCPii
   - 34% have implemented it
   - Misconception – don’t have a need
   - Sysplex Failure Management (SFM) will exploit BCPii
   - More and more ISVs will be needing this feature
Major Misconceptions

• 44. Using z/OS 1.12 Auto Reply
  • 26% have implemented it
  • Misconception – it’s not needed because auto ops product handles everything
  • This can be used BEFORE auto ops and MPF starts; it’s complementary to the other facilities
  • IBM distributed PARMLIB has AUTOR00, which is used as a default; so you ARE using it on z/OS 1.12 and later
See You in Boston!

Cheryl Watson Walker with partner, husband, and best friend Tom Walker
In Cuba in December
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