TPF Users Group Spring 2007

z/TPF Migration experiences

Name: IBM z/TPF Support Team
Venue: Education session

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Introduction

We have provided guidance to multiple customers regarding the migration to z/TPF. IBM would like to share common experiences, hints, and tips that we have learned in working with customers.

We have conducted two programs with customers:

**z/TPF Migration Readiness Assessment**
- A high level analysis of a customer’s system and ability to migrate to z/TPF.
- Provide basic recommendations for customers to investigate further.

**z/TPF Rough Order of Magnitude (ROM)**
- A more detailed analysis of a customer’s z/TPF migration.
- Forecast specific timelines and resource estimates.
Hardware Compliancy

Most customers we have met with are compliant regarding hardware requirements. Below is a list of hardware that should be certified as z/TPF compliant. Refer to the z/TPF migration guide for specific guidelines.

- **IBM system z™** (z800, z890, z900, z990, z9BC, z9EC)
- DASD
- Tape
- Interconnection devices
- Communication controllers
- Consoles
- Loosely Coupled considerations
Timeline – When to migrate?

It is important to forecast potential dates for a z/TPF migration.
- Many customers have current projects that need to be completed before a z/TPF migration can start.
- Many customers have limited time periods when a z/TPF migration can occur.
- Forecast dates and work backward in understanding what needs to be accomplished and when.

Sample Time sequences
- Applications and testing
- Development environment and Systems

PUT Timeline
The table below shows the product release schedule for the next two years. Beginning in 2008, all product delivery cycles will be aligned to a November GA.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>7-Jun</th>
<th>7-Nov</th>
<th>8-May</th>
<th>8-Nov</th>
<th>9-May</th>
<th>9-Nov</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPF 41</td>
<td>PUT 21</td>
<td>(PUT 22)</td>
<td>(PUT 23)</td>
<td>(PUT 24)</td>
<td></td>
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<tr>
<td>TPF DF</td>
<td>PUT 22</td>
<td>(PUT 23)</td>
<td>(PUT 24)</td>
<td>(PUT 25)</td>
<td></td>
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</tr>
<tr>
<td>z/TPF</td>
<td></td>
<td>PUT 04</td>
<td>PUT 05</td>
<td>PUT 06</td>
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<td>z/TPF DF</td>
<td></td>
<td>PUT 04</td>
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<td>TPF Op Srvr</td>
<td>1.2.05</td>
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<td>1.2.06</td>
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<td>1.2.07</td>
<td></td>
</tr>
</tbody>
</table>
## Sample Time Sequence - Applications and Testing

<table>
<thead>
<tr>
<th>APP</th>
<th>Test</th>
<th>Validate</th>
<th>Unit Testing</th>
<th>Problem resolution and reintegration into new development environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyze code</td>
<td>Run conversion tools against code base (Single Source rules)</td>
<td>Integrate converted code base into new development environment</td>
<td>Validate Program mods</td>
<td></td>
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<tr>
<td>Detailed planning</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Develop test cases and investigate testing tools</td>
<td>Customize test tools</td>
<td>Integrate test tools into procedures and documentation</td>
<td>Use test cases and new testing tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Baseline testing</td>
</tr>
</tbody>
</table>
## Sample Time Sequence - Development Environment and Systems

<table>
<thead>
<tr>
<th>D E V</th>
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<th>D E V</th>
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</thead>
<tbody>
<tr>
<td>Set-up Linux footprint</td>
<td>Set-up HFS environment</td>
<td>Implement Modern Development Environment</td>
<td>Customize Modern Dev Env, Problem resolution tracking</td>
</tr>
<tr>
<td>Upgrade developer desktops</td>
<td>Install TPF Toolkit on developer workstations</td>
<td>Training on Modern Development Environment for all users</td>
<td>Support of users of Modern Dev Env, Problem resolution</td>
</tr>
<tr>
<td>Customize TPF Toolkit, IDE</td>
<td></td>
<td></td>
<td>Modern Dev Env implemented for test and production processes</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<tbody>
<tr>
<td>Detailed planning for user mods, inhouse packages, single source issues, hardware compliancy, etc</td>
<td>Apply user mods to z/TPF</td>
<td>Populate Modern Dev Env with modified code</td>
<td></td>
</tr>
<tr>
<td>Unpack z/TPF, Generate vanilla z/TPF system</td>
<td>Generate z/TPF with user mods applied</td>
<td>Testing of z/TPF, local mods, middleware, and in-house packages. z/TPF problem resolution</td>
<td></td>
</tr>
<tr>
<td>Planning for migration of middleware and other inhouse packages</td>
<td>Run conversion tools against code</td>
<td>Integrate converted code base into new development environment</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Problem resolution and reintegration into modern development environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>z/TPF installed on production system</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Preparations for migration to production</td>
</tr>
</tbody>
</table>
User Modifications

Understand areas of change

Understand the purpose of change
   • Function of change
   • Evaluation of change
     • Is it still needed?
     • Is there a z/TPF function that can be used as a replacement?
     • How much time/effort is needed to accomplish change?
     • Complexity of change?
     • Is change needed before IPL of z/TPF test system?
     • Is change needed in order for applications to begin testing?
     • Can change be a post cutover item?

Experiences
   • Eliminate a number of user modifications
   • Move to new functionality
   • Take advantage of user exits
Changes to Support Structures

**Console Automation**
- Production and Test systems
  - New function (z messages)
  - Changed messages
  - New/changed processes

**Coverage**
- Production and Test
  - New functions. (z messages)
  - New monitoring
  - Changed output messages and codes

**Application**
- New/changed development process
  - Load process
  - Testing/Debug process
  - Problem analysis
Changes to Support Structure (continued)

**Performance**
- Understand current tool set and what is actually utilized
- Investigate new tools
  - TPF Profiles
  - Continuous Data Collection (CDC)
- Post migration tuning
  - Bundling programs for efficiency
  - ECB initialization
  - Program timeout values

**Other items**
- ???
System and Application Impacts

System
- In general, system impacts are easier to manage than application impacts.
  - 64-Bit implications, Dump analysis, z/TPFDF
  - Single Source – Before or during z/TPF migration

Application
- Many customers want to minimize impacts to applications.
- Application development/maintenance usually not controlled by systems group.

Testing – Testing - Testing
- Many customers do not have automated testing tools. Manual testing is still done by application programmers and field agents. Major system and application changes require many hours of testing.
- Provide a testing environment as soon as possible. Testing applications and systems can be done throughout the migration process.
- Think of ways to automate, simplify, minimize testing effort without reducing quality.
  - Testing automation adds value to future development/maintenance testing.
  - Automation adds value future regression testing.
Application considerations

**Basic Assembler Language (BAL) segments**
- Need to be 31 bit compliant
- Global usage
  - Minimize changes by using current global process
  - Investigate switching to new global process (format 2) post cutover
  - Some 24 to 31 bit concerns
- Little to no code changes needed for z/TPF migration
  - Mainly process changes in packaging code (e.g., makefiles, control file attributes)

**C/C++ segments**
- Single source implications
  - Single source rules in TPF Toolkit help identify and automate changes needed.
- GCC compiler implications
  - Stricter compiler, compiler options can be different

**Packaging implications**

**Future direction**
- Define and understand the future usage of applications
  - SOA, OO, Re-design
z/TPF Development Environment

Development Environment
• For most customers this is the most challenging aspect to migrating to z/TPF.
• Change in philosophy from a PDS based development environment to a modern integrated development environment.
• Systems maintenance is Linux based. Linux skills will be needed.
  • MakeTPF
  • Grep, Find, Permissions

Requirements
• Linux for zSeries
  • HLASM for Linux
  • GCC Compiler for z/TPF

Recommended
• TPF Toolkit Integrated Development Environment (IDE)
• Source Control Manager (SCM)

• Integrate/Sync TPF 4.1. code base with modern development environment
Education

Customized z/TPF Migration Planning Workshops can be scheduled in addition to standard z/TPF Education offerings

Pre-Migration Education:

• **Feature, Functions & Benefits of z/TPF** – A one day course presenting an overview of the features and benefits of z/TPF.

• **Web Services and z/TPF** – A two to three day course focusing on application conversion and Web Service opportunities.

• **Single Source Considerations** – A two hour presentation discussing the modifications to TPF4.1 programs that can be applied today to ease migration to z/TPF.

• **z/TPF101** – A two day course providing z/TPF concepts and structures.
Education (Continued)

Migration Education:

• z/TPF Migration – A one week course presenting a detailed overview of z/TPF internals.

• z/TPF Dump Analysis – A three and a half day course to assist customers in acquiring and analyzing z/TPF problem information.

Other z/TPF Courses:

• Coding with z/TPF – A one to two day course covering TPF’s usage of the new z/TPF BAL instruction set.

• z/TPF File systems - A two to three day course covering the new file system capabilities of z/TPF.

• z/TPF Toolkit – A one week course focusing on the installation and customization of the z/TPF Toolkit.
Education (continued)

Other z/TPF Courses (continued):

• **TPF/AR Workshop** – A two day hands on workshop introducing the TPF Application Requester which is the TPF interface to DB2.

• **z/TPF TOS For System Administrators** – A two day course introducing the concepts, functions, installation and customization of the TPF Operations Server (TOS) to z/TPF systems.

• **z/TPF TOS for Operators** – A half day course introducing concepts of the TPF Operations Server (TOS) console automation environment to z/TPF operations personnel with emphasis on the client console.

• **z/TPF Assembler Programming Features and Enhancements** – A three day course detailing architecture used by z/TPF. Techniques for more efficient programming based on the new features are compared to older methods of TPF application programming.
General Recommendations

Get Started Today!
• There are many things that can be done before ordering the z/TPF product.

Forecast Dates for z/TPF migration

Single Source APAR’s
• Apply today? Apply at cutover? What are the impacts?

Testing Tools
• Invest in tools that will minimize testing effort.

Set up a Linux for zSeries footprint
• Investigate using an IFL
• Install/Configure Linux distribution
• Decide to run Linux ‘Native’ or ‘under VM’

Decide on Development Environment and related components
• Source Control Manager
• Integrated Development Environment
Betting on z/TPF

Can we help validate technical and business commitments to z/TPF?

• Migration planning…Migration Assistance…z/TPF Education

• Technical/Business value of z/TPF varies for each shop:
  • Modernize - newer technology path via SOA. Additional memory provided by z/TPF is key
  • Programmer Productivity – z/TPF Development Environment
  • Customer User Modifications – many installed in z/TPF
  • 100% Availability – Norm State Pool Reallocation will help
  • z/TPF new pricing methodology (WLC)
  • Greater Security
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Notes

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