

IBM zPDT System **z** **P**ersonal **D**evelopment **T**ool **z on Your Thinkpad!**

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Agenda

Part I:

- § The technology that is the IBM System z[®] Personal Development Tool (zPDT)
 - What is it all about?
 - How does it work?
 - What offerings are available in the market?

Part II:

- § Some advanced topics about the IBM System z[®] Personal Development Tool (zPDT)
 - Features & Functions
 - Hints & Tips
 - Live Demo

The IBM System z Personal Development Tool (zPDT)

Look at application development for IBM System z in a new way

- § **The IBM System z Personal Development Tool (zPDT) is the technology behind several new application development tools from IBM.**

- § **The zPDT technology can enable a virtual System z architecture environment that allows certain mainframe operating systems, middleware and software to run unaltered on Intel® and Intel-compatible platforms**
 - Such as, Lenovo Thinkpad® W Series or IBM System x® 3500 or 3650 server, or systems otherwise approved by IBM

- § **Develop applications for System z without the System z hardware.**



The IBM System z Personal Development Tool (zPDT)

Externally available since October 30, 2009

§ The zPDT technology consists of hardware and software

- **zPDT software enables System z architecture**
 - Runs on a Linux for x86 environment
- **zPDT hardware (1090-L01, -L02, -L03, USB hardware key) is a security key that authenticates the zPDT software**
 - Plugs into the USB port (looks like a 'memory stick')
 - The key expires annually and must be re-certified annually
 - The zPDT software will not run without the 1090 USB key installed
 - The 1090 can enable an environment with 1, 2, or 3 virtual engines



§ A working zPDT-based application development system consists of many pieces:

- Thinkpad or System x (or equivalent) ... and ...
- 64-bit Red Hat or SUSE Linux on the Thinkpad or System x ... and ...
- zPDT hardware (1090 – in USB port) ... and ...
- zPDT software ... and ...
- System z operating system(s) / middleware / tools



zPDT functions (Page 1 of 3)

§ System z operating system support:

- Full 64-bit System z operation with both uniprocessor and multiprocessor configurations
- Support for z/OS®, z/VM®, z/VSE™, and Linux® for System z

§ Up to three virtual engines enabled by the IBM 1090 USB hardware key:

- The zPDT comes in three system sizes: one, two, or three virtual engines. The size of the virtual system is defined by the model of the 1090 USB hardware key (product number 1090-L01, 1090-L02, or 1090-L03, where the model number corresponds to the number of virtual engines).
- Virtual engines can be configured as:
 - System z general purpose processors (CP)
 - System z Integrated Information Processor (zIIP)
 - System z Application Assist Processor (zAAP)
 - System z Integrated Facility for Linux (IFL)
- Not more than ONE operating system instance per virtual engine, for example:
 - zPDT with three virtual engines can be configured as:
 - A single instance with three engines
 - Three instances with a single engine each
 - Two instances, one with two engines and the other with one engine
 - The z/VM operating system can be used to virtualize these configurations even further and create any number of engines and engine types within an instance (where terms & conditions allow).

zPDT functions (Page 2 of 3)

§ Memory:

- Greater than 2 GB of System z memory

§ Networking:

- Simulated OSA-Express2 adapter, in either QDIO or non-QDIO. This functionality is provided using ordinary Ethernet adapters on the host PC.

§ Disk devices:

- Simulated CKD disk
 - 3390 disk volumes, including variable sizes, and large EAV (Extended Address Volume) volumes
 - 3380 disk volumes
 - A CKD versioning function that allows a 3390 (or 3380) volume to be quickly restored to a specified point in time.
- Simulated FBA disk (as used by z/VM and z/VSE)
 - 9336, any model, > 2 GB
- Sharing of simulated CKD and FBA across operating system instances

zPDT functions (Page 3 of 3)

§ Tape devices:

- Simulated 3420, 3422, 3480, 3490, 3490E, and 3590 devices
- Selected SCSI-attached tape drives may be used directly by zPDT or via Linux staging functions. SCSI tape drives tested by IBM include:
 - IBM 3580 Ultrium (LTO)
 - IBM 3592 E05.
 - IBM TS1120
 - Fujitsu M2488E
- Data Compression can be manually enabled for simulated tape devices or manually enabled for SCSI tape drives if the drive hardware supports compression
- 3422 OMA simulated tape device can read TDF format

§ Other System z devices (simulated):

- Card reader (2540) with functions to process both EBCDIC and ASCII data
- 1403-N1 or 3211 printer, including FCB emulation for 3211 functions
- Local 3270 (via an emulated 3274) connections. Extended data stream is supported if the 3270 client supports it.
- 3270 terminals
- 3215 console, including several System z console interface functions
- A 1090 device manager that allows Linux commands to be issued to the underlying Linux operating system from the System z operating system.

Updates with zPDT V1.2

Available since June 11, 2010

§ **Emulated IBM System z Crypto Express2 (IBM 4764 PCI-X Crypto Coprocessor)**

- Perform AES, DES, TDES, RSA, and SHA-1 cryptographic processes
- Note 1 – No physical security as the function is emulated with no HW component.
- Note 2 – The accelerator function of a crypto adapter is not available.

§ **Emulated IBM 3088 CTC device**

§ **z/OS Data migration utility**

- Allows easy migration of 3380 and 3390 volumes to the zPDT-based system
 - Clone a 'big z/OS system' to the zPDT-based system
- Consists of a client / server application
 - Linux client program "hckd2ckd" loaded on any supported Linux system
 - z/OS server program "zosserv" loaded on z/OS system and given authorization to access full volumes
- Operation
 - Once the z/OS server program is installed and running, the Linux client can perform full volume copies of any 3380 or 3390 volume the server can access. Ensure the system is stable, with z/OS not writing to the disk.
 - After successful transfer, the output file is a valid zPDT CKD volume ready for use.

Updates with zPDT V1.2.1

Available since Dec 15, 2010 

§ **Emulated Coupling Facility** - write applications that leverage Parallel Sysplex

- z/OS Coupling Facility function is only available under z/VM
 - Each CF and z/OS is a z/VM guest
- No support for physical or emulated coupling links
 - Multiple zPDT systems cannot be clustered
- Coupling Facility “startup” configuration (z/OS V1.12 as a guest of z/VM) available on request, additional T&Cs apply
 - The corresponding redbook discusses z/OS 1.11, however the differences are very minor

§ **z/VM Data migration utility**

- Allows easy migration of 3380, 3390, and FBA volumes to the zPDT-based system
 - Clone a 'big z/VM system' to the zPDT-based system
- Consists of a client / server application
 - Linux client program “hckd2ckd” loaded on any supported Linux system
 - Server program “zvm serv” loaded on z/VM system and given authorization to access full volumes
- Operation
 - Once the z/VM server program is installed and running, the Linux client can perform full volume copies of any 3380, 3390 or FBA volume the server can access. Ensure the system is stable, with z/VM not writing to the disk.
 - After successful transfer, the output file is a valid zPDT CKD or FBA volume ready for use.

 **Note:** Function in zPDT V1.2.1 is available to System zDD program members only.

zPDT limitations

§ The zPDT environment does NOT support all System z function, such as:

- Physical Parallel, ESCON[®], FCP, FICON[®] and High Performance FICON channels
- Physical Coupling Links
- External Time Reference (ETR)
- Server Time Protocol (STP)
- IBM zEnterprise System function, e.g.
 - Inbound Workload Queuing
 - z/OS FICON Discover
 - Auto Configuration
- List-directed IPL
- MIDAWs
- Logical channel subsystems
- HiperSockets[™]
- Multiple I/O paths per device
- Not all CHSC functions are supported

§ zPDT does not produce an environment equal to a larger System z.

- Some aspects of a larger system are unlikely to be met in any very small environment.
 - Inability to verify and enhance the scalability of a program
 - Inability to run application programs that require hundreds of MIPS.
- A zPDT system is not recommended for very fine-level performance tuning that is sensitive to memory location, cache functions, and pipeline optimization.
- In addition, the zPDT platform does not nearly have the same quality of service as does a mainframe in terms of availability and connectivity.

§ Anyone needing any of the function outlined above should consider a traditional System z server.

zPDT technology tested on hardware and software

§ The zPDT technology has been tested with the following configurations:

64-bit Intel Linux tested:					
- openSUSE levels tested :	10.3	11.1	11.2		
- RHEL levels tested :	5.2	5.3	5.4		
Intel-based Hardware Systems tested					
- Laptops :	Lenovo T61P	Lenovo W500 Dual Core	Lenovo W700 Dual Core	Lenovo W700 Quad Core	
- Servers:	IBM System X 3850	IBM System x 3500 M1	IBM System x 3650 M1	IBM System x 3500 M2	IBM System x 3650 M2
- Additional minimum requirements:					
Cores:	One (or more) more core than number of zPDT virtual engines				
Memory:	1 GB for 64 bit Linux and 2 GB (or more) for the System z OSes				
Disk space	z/OS ADCCD – 80 GB,	z/VM – 20 GB,	z/VSE – 10 GB,	Linux for System z – 10 GB	
SCSI Tape Drives tested:					
	Fujitsu M2488E	IBM 3580 (LTO)	IBM 3592E05		
z/OS Levels tested:					
	1.9	1.10	1.11		
z/VM Levels tested :					
	5.3	5.4	6.1		
z/VSE Levels tested :					
	4.1	4.2	4.3		
Linux on System z lvls tested :					
	SLES 10	SLES 11	RHEL 5.2	RHEL 5.4	

§ If you choose to build your own zPDT system, test your hardware first!

- Validate hardware configuration is meeting minimum system requirements (tool provided)
- Test hardware and Linux distribution to ensure appropriate drivers and functions work (Ethernet, wireless, USB, etc)

zPDT documentation

SG24-7721



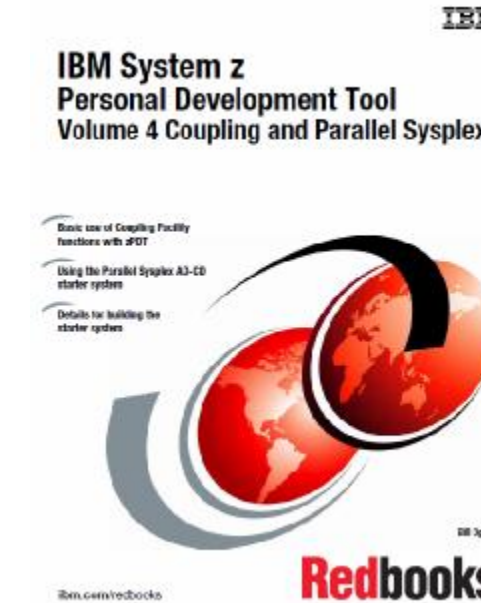
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Who can use zPDT technology? - Overview

§ **IBMers** - to provide education and demonstration of IBM products and services.

- Go to BluePedia, look up zPDT on how to order, and build your own system

§ **Independent Software Vendors (ISVs)** who develop, test, support, and demonstrate commercially available applications on and for the z/OS, z/VM, z/VSE, and Linux for System z platforms.

- zPDT as part of IBM System z Developer Discount (zDD) Program
- Full application development lifecycle

The following slides will discuss zPDT for ISVs

§ **Anybody** - Announced June 7, 2010! Commercial customers, service providers, contractors, business partners, ISVs, and more who currently develop or plan to develop applications or services for z/OS and who have access to a production z/OS system.

- zPDT as part of Rational Developer for System z Unit Test solution (RDz UT)
- Pre-production z/OS sandbox environments only

§ **Universities** - Academic Initiative for System z Pilot Program

- Students, professors, academic employees, teachers, etc.
- For demo, education & training, application development, etc. – not for production use
- Pilot program with selected schools currently under way

ISVs - How can you get zPDT technology?

Independent Software Vendors (ISVs) are eligible to get zPDT technology if they

- develop,
- test,
- support, and/or
- demonstrate

commercially available applications on and for the

- z/OS,
- z/VM,
- z/VSE, or
- Linux for System z

platforms.

§ zPDT technology for ISVs requires the ISV to be

- member of IBM PartnerWorld, and
- approved for the IBM System z Developer Discount (zDD) Program.

§ ISVs can obtain zPDT technology worldwide as

- Build your own - Order zPDT technology from ITC (Information Technology Company, LLC)
- A complete solution - Complete working system from ITC (or qualified ITC Business Partner)

ISVs – Get a complete working system: uPDT



§ The Ultimate Personal Development Tool (a zPDT-based system) is available worldwide through Information Technology Company, LLC (ITC)

- www.p390.com
- Vendor with over 30 years of experience with mainframe hardware, software, and services
- Headquartered in Falls Church, Virginia
- Branch offices around the world

Benefits:

- § Get started quickly, the uPDT comes fully built and configured
 - Tested hardware
 - Loaded with (Intel) Linux, zPDT SW, and ADCD SW stack(s)
 - zPDT product support
 - Education, installation, customization, networking, and data management
 - Additional services available on request.
- § Flexible zPDT licensing
 - Available as 1-, 2-, and 3-way, capable of supporting many images, configurations
 - Run z/OS, z/VM, z/VSE, and Linux for System z environments (ADCD)
 - Order additional IBM software
 - Unlimited number of users
 - Used for ISV product development, demonstration, education, and support
 - Available worldwide

System
uPDT

ISVs - Ordering uPDT



§ **Be an IBM PartnerWorld member**

§ **Join the IBM System z Developer Discount Program**

- Information = ibm.com/partnerworld/pwhome.nsf/weblook/zpdt_zdd.html
- Request form = ibm.com/partnerworld/pwhome.nsf/weblook/zpdt_webform.html

§ **Contact ITC or ITC authorized reseller for Ultimate Personal Development Tool**

Worldwide	Information Technology Co. LLC PO BOX 688 Falls Church, VA 22040 www.p390.com	(800) 994-9441 (703) 237-7370 John Cotte: sales@p390.com
Germany	SVA System Vertrieb Alexander GmbH Borsigstrasse 14 65205 Wiesbaden, Germany www.sva.de	Phone +49-6122-536-0 John Cassidy: John.Cassidy@sva.de Jonny Stein: Jonny.Stein@sva.de

How to order zPDT, see: (PartnerWorld membership required)
ibm.com/partnerworld/pwhome.nsf/weblook/pat_sas_zpdt_order.html

ISVs – Build your own zPDT system



§ Purchase parts and build your own zPDT-based system

- The IBM zPDT consists of software which enables System z architecture, and hardware (USB security key 1090-L01, -L02, -L03) which authenticates the zPDT SW
- Parts are available worldwide from **ITC** (so-called “ala carte” zPDT offering), along with limited services and support

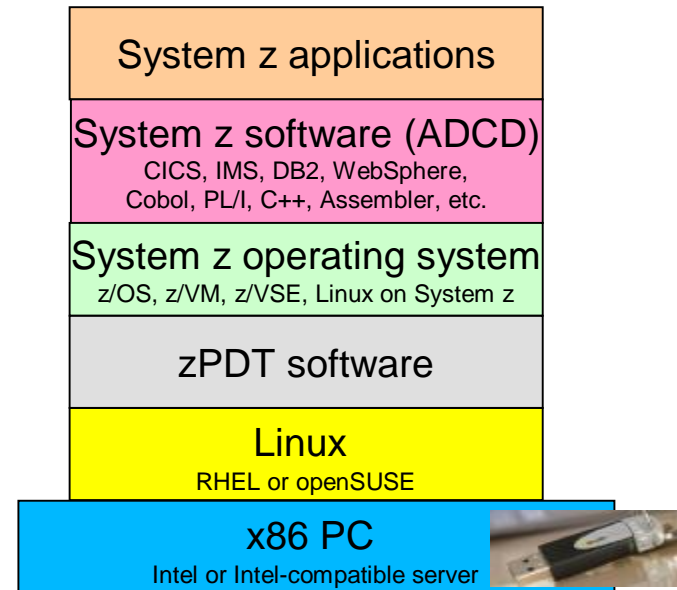
Benefits:

§ Flexible zPDT licensing

- Available as 1-, 2-, and 3-way, capable of supporting many images, configurations
- Run z/OS, z/VM, z/VSE, and Linux for System z environments (ADCD)
- Order additional IBM software
- Unlimited number of users
- Used for ISV product development, demonstration, education, and support
- Available worldwide

§ Price

§ Freedom to build your own system



BUT, many pieces must come together for a working zPDT-based system!

ISVs - Ordering zPDT technology



§ Be an IBM PartnerWorld member

§ Join the IBM System z Developer Discount Program

- Information = ibm.com/partnerworld/pwhome.nsf/weblook/zpdt_zdd.html
- Request form = ibm.com/partnerworld/pwhome.nsf/weblook/zpdt_webform.html

§ Order IBM zPDT technology (software and USB key)

Worldwide	Information Technology Co. LLC PO BOX 688 Falls Church, VA 22040 www.p390.com	(800) 994-9441 (703) 237-7370 John Cotte: sales@p390.com
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§ Order IBM software for z/OS, z/VM, and/or z/VSE ADCD stacks

- Signed ADCD license agreement, contact syszdd@us.ibm.com
- ADCD information, see <http://198.81.193.6/adcd.html>
- ADCD billed from IBM Innovation Center, Dallas

§ Acquire Linux distribution and test your hardware system

- ibm.com/partnerworld/pwhome.nsf/weblook/pat_sas_zpdt_requirements.html

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- Pre-production z/OS sandbox environments only

The following slides will discuss RDz UT for z/OS

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The original System z development environment for z/OS

ISPF has provided consistent tooling for decades ... but it is limiting

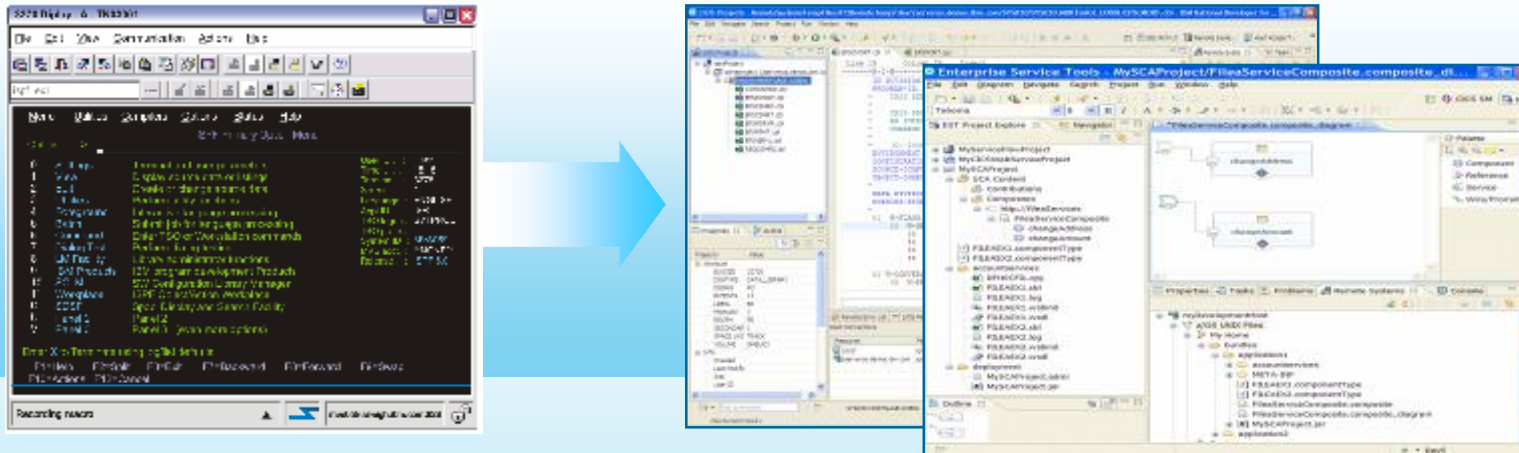


Challenges:

- Constant connection to mainframe is required
- Development shares processor with production use, gets lower priority
- Inability to create cross platform components
- ISPF green screen UI is unappealing to and can be difficult for new hires to learn
- MIPS usage for development vs. production usage

Rational Developer for System z (RDz)

Eclipse-based tools to develop and maintain enterprise applications spanning multiple platforms and languages



- ü 50%-80%¹ reduction in host CPU usage with workstation syntax checking
- ü 15% or more improvement in developer productivity¹
- ü Tools with which to attract new talent

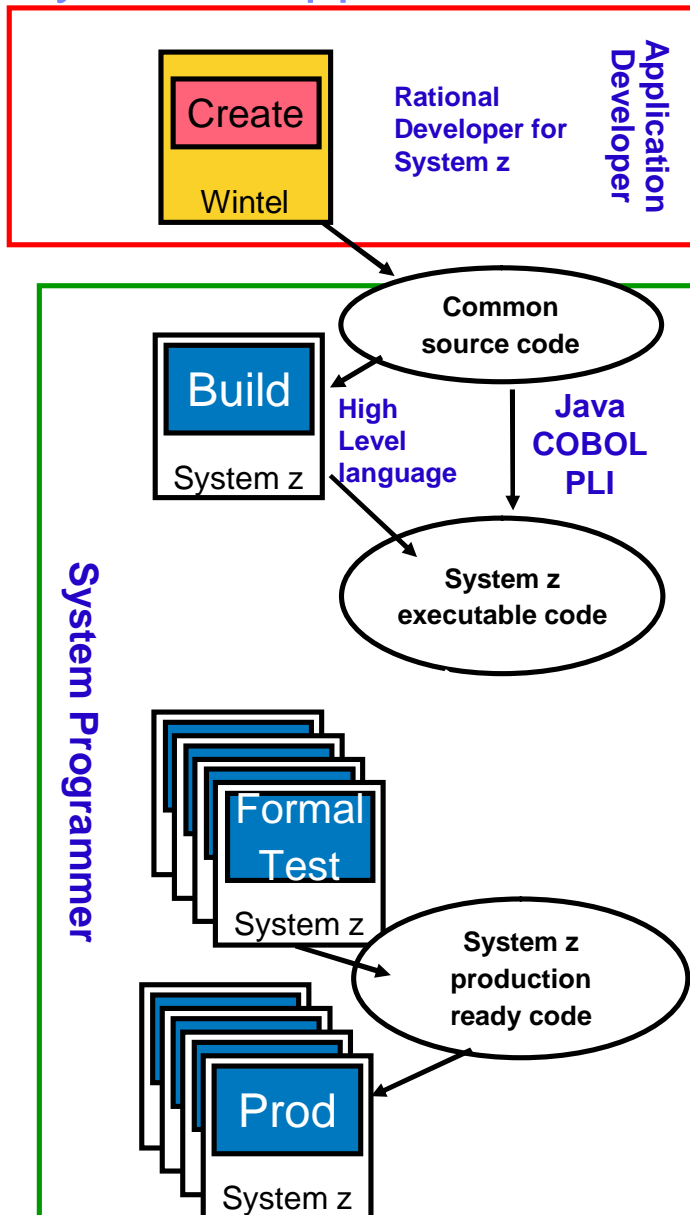
§ Rational Developer for System z

“RDz offers a uniform, open programming environment for both J2EE and PL/I developers. RDz accelerates PL/I development with its local syntax checker and debugging tool.”

- [Dr. Axel Lömker, KfW Bankengruppe](#)



Today's RDz application development cycle



Using tooling like RDz definitely has benefits and still some challenges, especially with testing....

§ System programming challenges

- Gap between the developers and IT operations staff
 - § Lack of available system programming skills or delays in getting requests completed

§ Cross platform application development

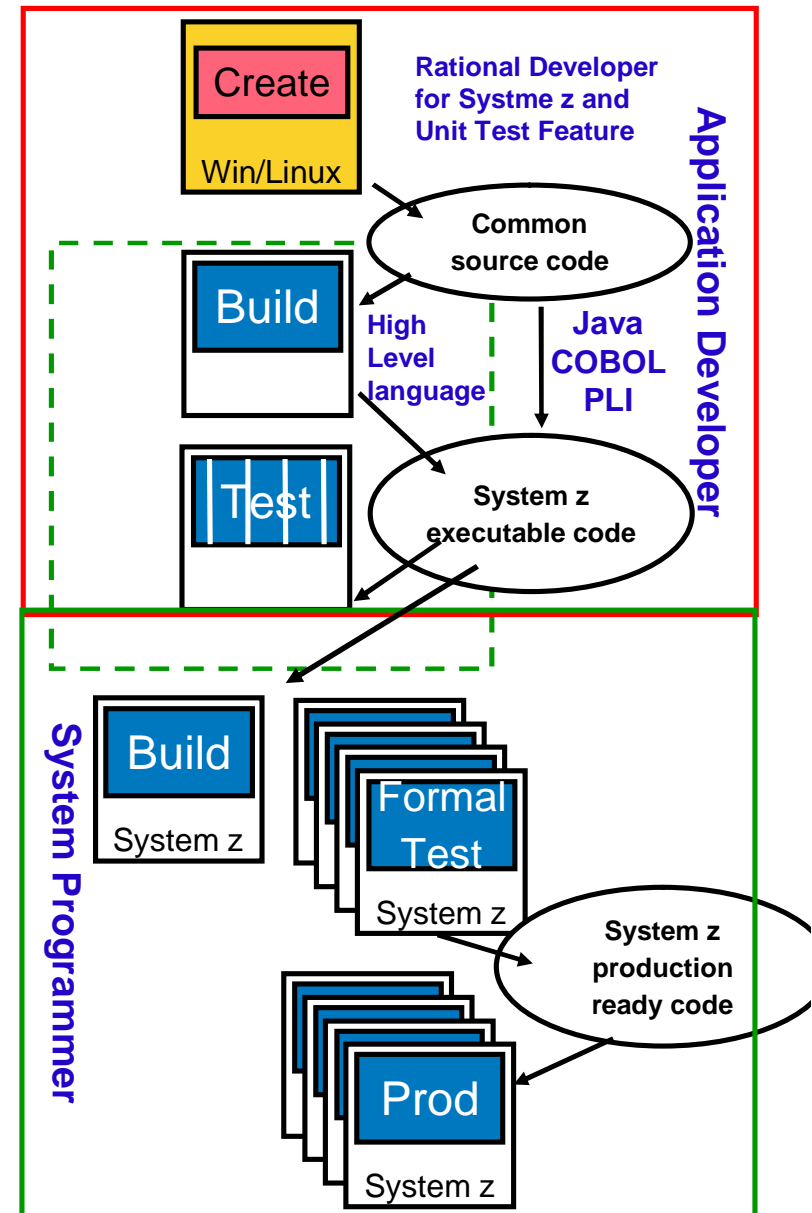
- Developers don't have control of non-Intel systems
 - § The ability to easily configure and deploy an application to the target runtime for testing can be a very time-consuming task.

§ The mainframe development environment is perceived as being more expensive on System z than on other platforms

- § Actually, there is no differentiation of MIPS costs between development MIPS vs test MIPS vs production MIPS.

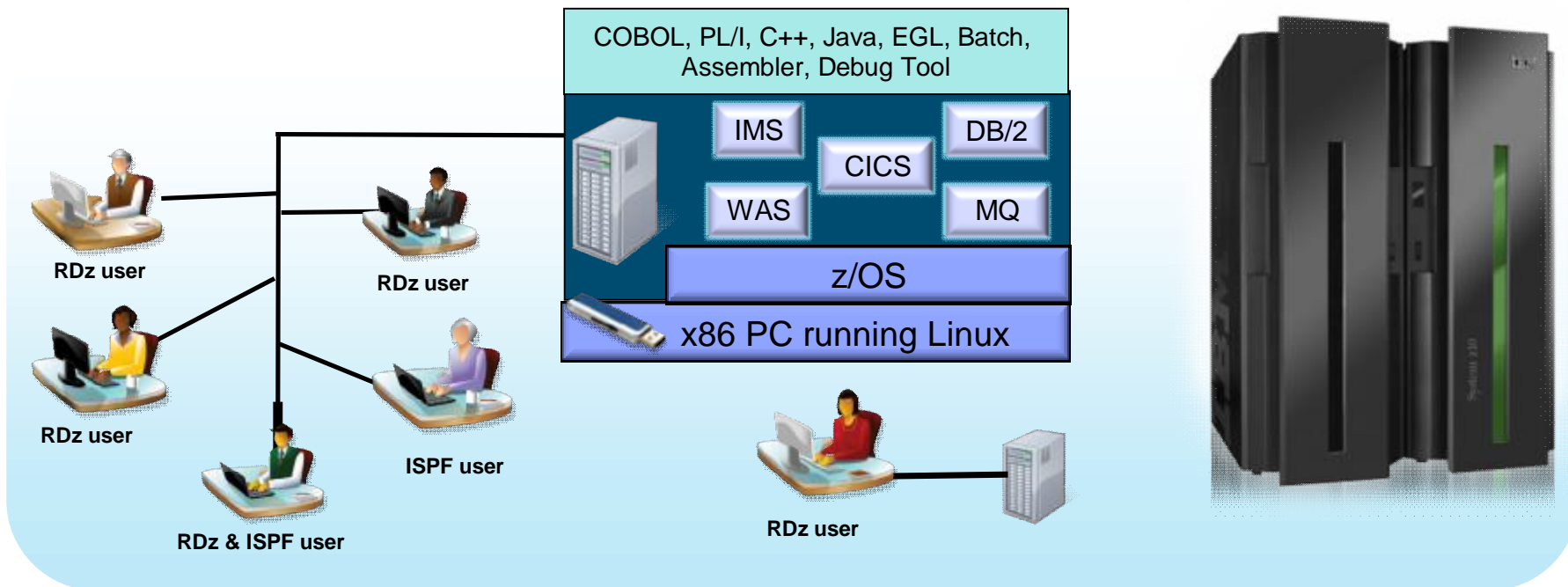
Introducing the RDz Unit Test (RDz UT) feature

- § Provides a local test environment for unit testing System z applications
 - Unit test processing on Linux versus mainframe
- § Can enable companies obtain lower cost for development and unit testing
 - Gives flexibility to developers / teams to accomplish unit tests on the mainframe or off
 - Provides a local System z development / unit test environment to simplify development investments
 - Frees up more mainframe capacity to production workload usage
- § Strengthens development processes through using actual compilers and runtimes in RDz UT
 - Use compilers for “true” syntax check/compile using Enterprise COBOL / PLI
 - Use co-processors for CICS / DB2 / Custom to cut down on re-implementation efforts on local platform
- § Provides flexibility for system programming staff and development
 - System programmers can define common test images for development teams for some centralization of control, but still provide developers with ability to make changes



The RDz Unit Test feature

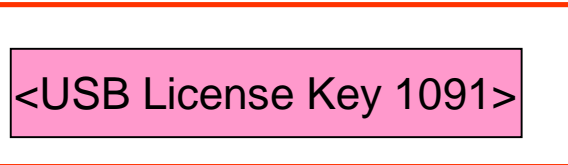
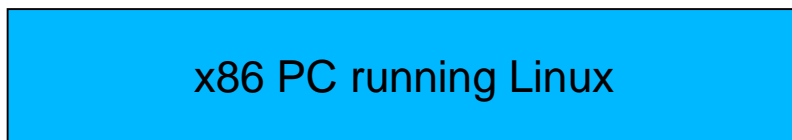
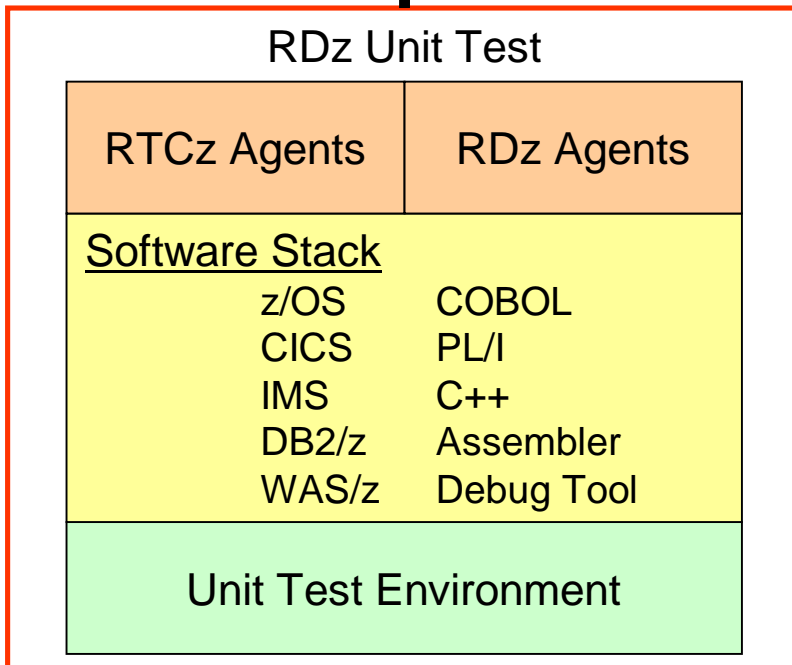
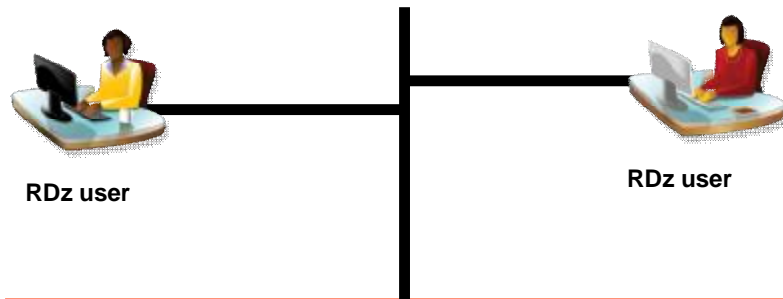
System z environment for testing on x86 Linux systems



- § Liberate developers to rapidly prototype new applications.
- § Develop and test System z applications anywhere, anytime.
- § Free up mainframe development MIPS for production capacity.
- § Eliminate costly delays by reducing dependencies on operations staff.

Note: This Program is licensed only for development and test of applications that run on IBM z/OS. The Program may not be used to run production workloads of any kind, nor more robust development workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.

RDz UT - Details



The RDz Unit Test feature is made up of the following:

- § The Unit Test environment runs on an underlying Linux system based on an Intel processor.
 - Can provide a System z development platform on a PC and is capable of running current System z operating systems.
 - Note: For RDz UT, it is to be used only as a development system and may not be utilized for, nor is it designed as a production workload system.
 - Provides great flexibility to run a customized environment.
- § The included software stack provides an IBM middleware test environment
 - Actual middleware software (including z/OS)
 - Actual Enterprise compilers
 - No API simulation
- § RDz and RTCz agents
 - Packaged for simplification
 - Still need RTC client license to activate

RDz UT – z/OS software stack for “as-is” usage

Rational. software

z/OS MLC Products

- § IMS V10.1 Database Manager
- § IMS V10.1 Transaction Manager
- § DB2 for z/OS V9.1
- § WS MQ Base for z/OS V7.0
- § Enterprise COBOL V4.2
- § Enterprise PL/I z/OS V3.9
- § CICS TS for z/OS V4.1
- § CICS TS for z/OS V3.2
- § z/OS V1.11 Base
 - z/OS V1.11 C/C++ without Debug
 - z/OS V1.11 DFSMS dss
 - z/OS V1.11 DFSMS rmm
 - z/OS V1.11 DFSORT
 - z/OS V1.11 RMF
 - z/OS V1.11 SDSF
 - z/OS V1.11 Security Server
 - z/OS V1.11 ISPF
 - ... (all sub features)
- § z/OS V1.10 Base
 - ... (all sub features)

z/OS OTC Products

- § WebSphere for z/OS 7.0
- § DB2 Utilities Suite V9
- § WebSphere Portal Enable z/OS
- § Debug Tool

Other Tools pre-installed

- § RTCz file/build agents
- § RDz RSE and Job Monitor

RDz UT – Licensing information



The Rational Developer for System z Unit Test environment is sold in two levels to offer flexibility of workload and configuration:

§ **Standard:** enables a single virtual unit test engine environment

- A single test engine environment is appropriate for small machines, such as a developer laptop.
- One engine will facilitate most types of traditional System z application testing such as Batch, CICS, IMS, DB2, COBOL, PL/I, and Assembler.

§ **Specialty:** enables a three virtual unit test engine environment

- A three test engine environment is appropriate for server machines supporting a team of developers or specialty workload.
- The three engines can be configured to test applicability of application code to zAAP or zIIP processors in addition to normal development and unit testing.
- Three engines will allow a wider range of testing options including all the options of the Standard configuration, but also facilitating testing of Java, WebSphere, and more data processing options in DB2.

Note: In a multi user configuration all users must be licensed to the same IBM Rational Developer for System z Unit Test level.

RDz UT - Hardware and software prerequisites

Hardware requirements

For best results, the underlying system should have the following characteristics:

§ Processor

- For operation, the base machine should have one more Intel-compatible processor (core) than the number of virtual engines configured.
- Unit Test Standard (one virtual engine) is best used with a machine that has at least two processors (cores).
- Unit Test Specialty (three virtual engines) is best used with a machine that has at least four processors (cores).

§ Memory

- The base machine must have at least 3 GB of real memory.
- 1 GB is required for the 64-bit RedHat or openSUSE Linux.
- 1-2 GB is required for the System z operating system, depending on the size of the development system.

§ Disk space

- The base machine must have available a minimum of 80 GB free disk space for the System z operating system.

§ Other hardware

- At least one Ethernet adapter is required for OSA operation.
- Base machine requires the IBM Rational Developer for z Unit Test 1091 USB hardware key (1091 token) in order to operate. A USB port must be available for the 1091 token whenever IBM Rational Developer for System z Unit Test environment is operating.
- The 1091 token can be moved between different machines to support different hardware and/ or software configurations, but only the IBM Rational Developer for System z Unit Test software in the machine with the 1091 USB hardware key will operate.
- The 1091 token contains a mechanism to defeat time cheating. Assure the clocks are set reasonably close to avoid problems when moving the token between systems.

IBM Rational Developer For System z Unit Test has been tested on the following hardware:

- Lenovo ThinkPad W Series
- IBM System x 3500 M1, 3500 M2, 3650 M1, or 3650 M2

Software requirements.

§ Operating systems

- The following operating systems are supported for this product:
 - Red Hat Enterprise Linux 5.3 (RHEL 5.3)
 - openSUSE 10.3, 11.0, and 11.1.
- Note: Developer for System z language support is dependent on the previously listed operating systems having the base language support.

Everybody can get RDz UT

Rational. software

– **Benefits:**

- Simple sandbox environment for z/OS (Note: Plans for z/VSE are being discussed.)
- Available worldwide
- Includes:
 - zPDT technology (and defect zPDT support)
 - Rational Developer for System z tool suite
 - Subset of z/OS ADCD (Application Development Controlled Distribution)
- Does not require IBM System z Developer Discount Program

– **BUT**

- Available as 1- and 3-way, BUT only ONE z/OS image
- Capable of supporting multiple users, BUT priced and licensed per user
- For z/OS ONLY, subset of z/OS ADCD, NOT licensed for additional IBM SW
- May not be used for production workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.

Ordering RDz UT



§ To build your own system, contact IBM Passport Advantage

- <http://www-01.ibm.com/software/howtobuy/passportadvantage/index.html>
- Physical media only (DVD and IBM 1091 security key)

§ For a complete working system, contact IBM Sales for an authorized reseller

Worldwide	Nick Losole Rational Enterprise Modernization Sales Executive	Phone: 1-602-248-7555 E-mail: losole@us.ibm.com
US	Andy Sykes Rational Software Sales Leader, US and Canada	Phone: 1-781-929-0756 E-mail: amsykes@us.ibm.com

§ Order RDz UT from selected business partners (software and USB key)

Worldwide	Information Technology Co. LLC PO BOX 688 Falls Church, VA 22040 www.p390.com	(800) 994-9441 (703) 237-7370 John Cotte: sales@p390.com
US	ClearBlade, LLC 2006 Indian Trail Austin TX 78703 http://www.clearblade.com/	Eric Simone Phone: 1-512-686-3037
EMEA	QGroup http://qgrp.com/index.php	Contact info: http://qgrp.com/index.php?show=kontakt

RDz UT for customers vs zPDT for ISVs – Support

§ **RDz UT for commercial customers:**

- RDz UT (IBM number 5724-T07) is licensed under the IBM International Program License Agreement (IPLA)
- Problems should be reported through IBM's standard problem reporting channels, or the **RDz Unit Test forum**. <http://www-949.ibm.com/software/rational/cafe/community/cobol/rdzut>
 - The forum is intended for discussions about the Unit Test environment itself and basic z/OS ADCD questions.
 - IBM makes no warranties that problems submitted to the RDz UT forum will be addressed or resolved.

§ **zPDT for ISVs:**

- zPDT software is non-warranted
- Problems should not be reported through IBM's standard problem reporting channels, but can be reported to the **zPDT forum**. <http://groups.yahoo.com/group/z1090>
 - The forum is intended for discussions about zPDT itself and basic ADCD questions.
 - IBM makes no warranties that problems submitted to the zPDT forum will be addressed or resolved.

§ **ITC Ultimate Personal Development Tool (uPDT) is supported by ITC.**

RDz UT for customers vs zPDT for ISVs – Pricing

§ RDz UT for commercial customers:

1. License includes:
 - zPDT technology (and defect zPDT support)
 - Rational Developer for System z tool suite
 - Subset of z/OS ADCD
2. Licensed per year, **per user**
 - 1-way RDz Unit Test Standard edition is US \$4,780* per year per user **
 - 3-way RDz Unit Test Specialty edition is US \$5,720* per year per user **
3. System z SW provided by a subset of the z/OS ADCD
 - Annual subscription fee included in RDz UT license
 - Unsupported, use ‘as is’
4. zPDT defect support is included
5. Additional support and services available through authorized partners.

** Fixed term license. Additional pricing options are available (e.g. perpetual license). See IBM or an authorized reseller for details.

§ zPDT for ISVs:

1. License includes: The zPDT software, which is licensed per year for **unlimited users**
 - The 1090 USB hardware key (1090, -L01, -L02, -L03) is US \$299* OTC
 - 1-way zPDT SW defined by a 1090-L01 is US \$3,750* per year
 - 2-way zPDT SW defined by a 1090-L02 is US \$7,500* per year
 - 3-way zPDT SW defined by a 1090-L03 is US \$11,250* per year
2. System z SW provided by z/OS, z/VM, or z/VSE ADCD
 - \$900* annual subscription fee
 - Unsupported, use ‘as is’
3. Additional support and services available through ITC.

* **NOTE:** Prices are suggested for US only. Prices for other countries and regions will vary. The above reflects the current IBM pricing. IBM reserves the right in its sole discretion to, among other things, change one or more of the foregoing without notice.

Summary of zPDT based offerings

Offer	zPDT as part of [ISV] System z Developer Discount Program	RDz UT (IBM number 5724-T07)
Availability	WW, may not be available in some countries	WW, may not be available in some countries
Configuration	1, 2, or 3 CPs - available as piece parts - build-it-yourself - Turnkey - multiple options - Can be used on a laptop or server	1 or 3 CPs - available as piece parts - build-it-yourself - Turnkey - multiple options - Can be used on a laptop or server
Usage restrictions	No production workloads. Complete development/test cycles. Can also be used for product support, demo, and internal education.	No production workloads. Development through UT. Production level compiles cannot be done on RDz UT, must have access to a production z/OS system with compiler. Future plan: Can also be used for demo and internal education.
SW availability	z/OS, z/VM, and z/VSE ADCD stacks. Can also get additional z SW.	z/OS ADCD stack (subset). Cannot get additional z SW. Future plan: z/VSE ADCD stack (subset)
License	Annual. Licensed per MACHINE (1090). Must be renewed annually.	Annual. Licensed per USER. Must be renewed annually.
Support	HW token warranted for 1 year. zPDT SW unwarranted. z SW provided on ADCD stack is unwarranted. Various levels of support provided on forums and through BPs (w/ charge)	HW token warranted for 1 year. Additional years can be purchased. zPDT SW warranted for 1 year. Additional years can be purchased. z SW provided on ADCD stack is unwarranted. Various levels of support provided on forums and through BPs (w/ charge)
Fulfillment	ITC (Information Technology Company), worldwide SVA as ITC Business Partner in Germany	PPA, self service in some countries Rational authorized resellers available.

More information

§ zPDT home (IBM PartnerWorld membership required)

- http://www.ibm.com/partnerworld/pwhome.nsf/weblook/pat_sas_zpdt.html
- Information on: IBM System z Developer Discount program, zPDT features and functions, zPDT system requirements, zPDT support options, zPDT how to order

§ ITC uPDT

- <http://www.p390.com/pdf/uPDTOverview.pdf>

§ Forum for zPDT users

- <http://groups.yahoo.com/group/z1090>

§ Forum for Rational Developer for System z Unit Test users

- <http://www-949.ibm.com/software/rational/cafe/community/cobol/rdzut>

§ Additional zPDT documentation

- The following are available at <http://www.redbooks.ibm.com>
 - System z Personal Development Tool Volume 1: Introduction and Reference SG24-7721
 - System z Personal Development Tool Volume 2: Installation and Basic Use SG24-7722
 - System z Personal Development Tool Volume 3: Additional Topics SG24-7723
- The following are available in the Resource Link Library: www.ibm.com/servers/resourcelink
 - System z Personal Development Tool 1090 User's Guide G229-1101
 - System z Personal Development Tool Statement of Limited Warranty SC27-2604

Thank You





Backup

Upgrading IBM zPDT technology

§ If purchased from ITC, you can “upgrade” zPDT technology :

1. Wait until your current zPDT license expires within the year and then purchase a larger (L02 or L03) license.

- ITC will send you new code and token and issue an ‘MES’ that will upgrade your license and agreement.
- It is important to time the new license with the expiration of the old license, no credits are issued for unused time on licenses.

2. Purchase an additional zPDT license from ITC (and get additional token) for the additional capacity you need.

§ Example: In going from an 'L01 to an L02' you would purchase an additional L01 and use the two tokens in the same machine at the same time.

§ There is no performance nor pricing benefit of a single L02 versus two L01s.

§ With multiple tokens you have the advantage of running them together for a larger system, or separately for smaller systems. Due to performance reasons, the number of virtual zPDT engines is not to exceed 3 (an L03).

§ Note: A disadvantage is that you have to manage multiple tokens with separate expirations.

§ There are no downgrades

RDz UT - Important notes



- § IBM Rational Developer for System z Unit Test (RDz UT) does not produce an environment equal to a larger System z for all testing scenarios. Some aspects of a larger system are unlikely to be met in any small environment. These include the ability to verify and enhance the scalability of a program under development, run application programs that require a large number of MIPS, or to use unique hardware requirements only found on a mainframe. A larger System z is needed for these areas of development. Likewise, an IBM Rational Developer for System z Unit Test system is not recommended for very fine-level performance tuning that is sensitive to memory location, cache functions, and pipeline optimization. Larger System z machines have different characteristics than the IBM Rational Developer for System z Unit Test environment at this level.

- § In addition, the IBM Rational Developer for System z Unit Test platform does not nearly have the same quality of service as does a mainframe in terms of availability and connectivity. For these and other reasons, the IBM Rational Developer for System z Unit Test environment is not intended as a replacement for a larger system. IBM recommends the final testing of software be done in an environment as close as possible to what would be run in production. This requires a stress test environment that can only be satisfied with the capabilities delivered by a System z server.

- § IBM Rational Developer for System z Unit Test may not be used for production workloads of any kind, nor robust development workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.