

z Business Resiliency Stress Test (zBuRST)

—
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Testing for Resilience

Developer Testing

Unit Test Function Test
Component Integration Test
System Test

Acceptance Testing

Recovery/Chaos Simulation
Quality Assurance
Performance Testing

Load and Stress Testing At Scale

Load Test:

Determine performance of workload
under normal working conditions

Stress Test:

Maximum load capacity of the system,
to identify unexpected breakpoints

zBuRST

Why should you consider zBuRST?

- Does your business experience problems in production that are related to system size and scale?
- Can your business respond and scale reliably to Black Friday, Cyber Monday, Chinese New Year peak demands?
- Is your business currently testing with constrained resources that prohibit adequate testing, therefore adding workload resiliency risk?
- Is it too difficult to arrange adequate resources for large scale volume or integration tests?
- Is your business afraid to change or modify legacy applications for fear of disrupting production stability?
- Do elongated production outages come at an excessive cost to your business?

Problem Statement

- Many business outages and/or disruptions are caused by hardware and software defects, poor application design, and other inhibitors related to size and scale
- Every client environment is different, comprised of many different ISV products, applications and other components that have not been fully tested together
- To improve business resilience clients, need the capability to test at scale
 - *Most client test environments are 10-20% the size of their production environment and not representative of production environments*

Providing load and stress testing capabilities at production scale can be cost prohibitive

What is zBuRST?

Provides an **affordable** solution that enables IBM Z clients to perform **load and stress testing at scale** to uncover defects and other scalability inhibitors to increase the resiliency of critical production systems.

Don't wait until production to discover scale-related issues

Enables you to use spare IBM Z physical resources/assets to load/stress test changes at production scale for the purpose of validating production changes to ensure the resiliency of their critical business services running on Z

Expand your DevTest Environment

Can be used in DevTest to increase the available capacity of your Quality Assurance (QA) Testing to support load/stress testing activities at production scale

Add discounted capacity for Load/Stress testing at greater scale

zBuRST Tokens can be purchased pre-paid to add temporary capacity up to 150% of production for load/stress testing for up to 15 days, using non-production resources

Test at Scale with your DR Environment

Exploits your DR assets to conduct load/stress testing at production scale using a mirror-image copy of your production environment (Sysplex, LPARs, CFs, subsystems, and data).

Business value brought by use of zBuRST

- ✓ Increased business resiliency, client satisfaction, operational efficiency
- ✓ Faster delivery of new business features and functions at reduced risk
- ✓ Enables your staff to test changes, at scale, outside your production environment to identify problems or anomalies that only occur at scale
- ✓ Higher return on investment on your DR assets (when running zBuRST on DR systems)
- ✓ Increased testing capabilities at a lower cost compared to standard On/Off Capacity on Demand and Software MLC costs

zBuRST Options

Expand your DevTest environment

- Use zBuRST in DevTest to increase the available capacity of your QA/Test environment to support load/stress testing activities at up to 150% production scale.
 - Processor must have sufficient resources to support scaling – (*GCP, zIIPs, Memory, etc*)

Test at scale with your DR environment

- As an extension to DevTest use on your DR or standalone test machines
- zBuRST enables you to exploit your DR assets to conduct load/stress testing up to 150% of production scale using a mirror-image copy of your production environment.

Leverage test-enablement products

- Set up accelerated (transaction) workloads

zBuRST Solution Overview

- Extension of IBM Z Application Development & Test (DevTest) Solution
 - zBuRST capacity cannot be used to support production workloads
 - Available on z14 and later generation machines
- Purchase a minimum of 50% up to 150% of the additional capacity needed to scale to production size
- Currently limited to clients with 10K active MIPS, with all MIPS in the same country
- Requires purchase of pre-paid zBuRST Tokens (pre-paid On/Off CoD LIC Records)
 - 80% discount for zBuRST Tokens, MLC software ... IPLA/OTC software considerations
 - Supports load/stress testing for up to 15 days (in any sequence)
- Only one On/Off CoD record can be active at a time
- Only available on owned hardware; not available to service providers/outsourcers
- Clients will need to negotiate terms with their ISV vendors

zBuRST Solution Overview ...

- Log onto IBM Resource Link using pre-agreed offering numbers
- When extending the DevTest or QA test environment, need to ensure production cannot use zBuRST capacity
 - Absolute MSU Capping must be enabled to limit production to the MIPS/MSUs available prior to zBuRST activation
 - Create WLM Group Capacity and set it to the number of MSUs for productions
 - Enable ABSMSUCAPPING=YES in IEAOPTxx
 - When zBuRST deactivated, change ABSMSUCAPPING=NO and delete the WLM group
- When driving zBuRST on DR machines with disk replication between sites, there must be at least one active engine on the DR machine(s) for each engine type being activated (GCP, zIIP, ICF)
- Copy Services Manager or GDPS can manage the copy environment, create point in time copies for testing
 - Use FlashCopy to create PIT consistent copy of production data on tertiary disks
 - If High I/O rates during load/stress testing impacts the DR replication, causing RPO increase, use Global Mirror to replicate data for test
- Collect SMF 98 Subtype 1 (aka, 98.1) records on all IBM Z systems running z/OS V2R2 and above
- SCRT reporting must be in place

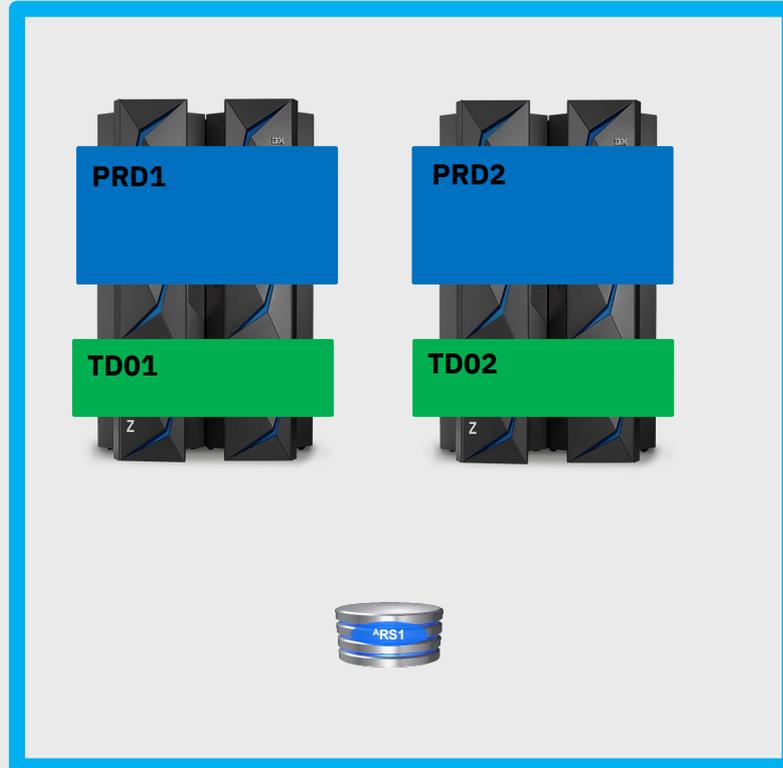
zBuRST - Expand DevTest

Production Data Center

Production MIPS - 10,000

DevTest MIPS - 5,000

- Increase up to 10K MIPS with zBuRST.
(add 5K MIPS using zBuRST Tokens)



Activate zBuRST

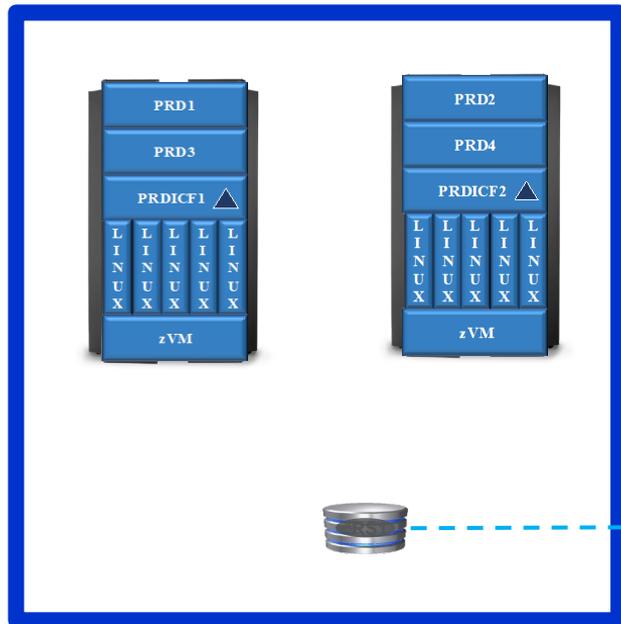
- Increase DevTest capacity using On/Off Capacity on Demand
- Enable Absolute MSU Capping for production

Deactivate zBuRST

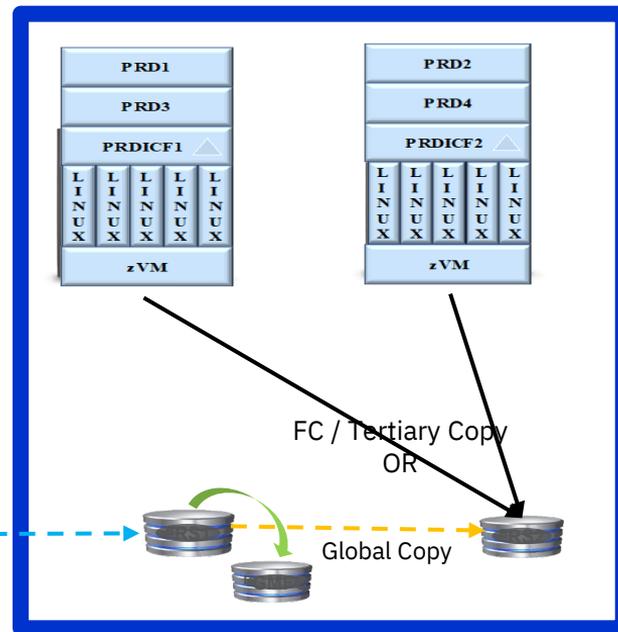
- Decrease DevTest capacity using On/Off Capacity on Demand
- Disable Absolute MSU Capping

zBuRST: Exploit DR assets

Production Data Center



DR Data Center



GDPS can bring on / remove the zBuRST capacity via CAPACITY ACTIVATE / UNDO statement in a script / workflow; and the Test Copy Manager in GDPS 4-site can be used to create a consistent copy of data for stress testing

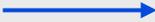
Complimentary offerings

IBM Rational Test for zBuRST

- Rational Test Workbench
- Rational Performance Tester Virtual Tester Packs
- Rational Test Virtualization Server
- Rational Test Automation & Virtualization Servers

IBM Rational DevOps Test & Virtualization Accelerators

Available with Rational Test Workbench

See next chart 

IBM Consulting: Ignite + zBuRST

+ Rational Bundling

+ IBM Z Workload Interaction Correlator / Navigator Bundling

Rational Test Workbench

- Rational Performance Tester
- Rational Functional Tester
- Rational Integration Tester

Rational Test Automation Server

Cloud Native, Kubernetes Continuous Testing Platform

Rational Test Virtualization Server

Service Virtualization for Mainframes and Distributed systems

Rational Test Realtime

Component Testing, Code coverage, Memory Leak detection, performance profiling for embedded(mobile devices, medical devices, handheld GPS, real-time (aerospace, automotive or telecom systems)



DevOps Testing and Virtualization Accelerators

Dynamic Data Generator

- Generate fabricated data dynamically
- Easy to use web-based application
- Export data for testing and virtualization
- Review synthetic data before creation
- User maintainable reference data
- Web-based on-prem or cloud



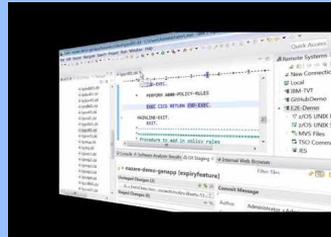
Test Asset Catalog System

- Easily share and consume test,
- Search test assets by protocol, transports, data
- View test assets data payloads
- Start projects from scratch and populate with catalog assets
- Web-based on-prem or cloud



Database Performance Tester

- Perform load and stress tests against targeted databases
- Run performance tests on multiple databases
- Server / Agent application model
- Agents scale horizontally and vertically
- Web-based on-prem or cloud



JCL Batch Test Automation

- Automate JCL Batch jobs
- Drive load against batch jobs
- Server / Agent application model
- Agents scale horizontally and vertically
- Web-based on-prem or cloud



Application Log File Extractor Transformer

- Extract valuable data from application log files
- Transform log data into test data for test scripts or virtual services
- Supports MQ, HTTP, CICS, IMS
- User friendly data mapper



References

zBuRST FAQ: <https://www.ibm.com/downloads/cas/WXYJEAJ4>

zBuRST Configuration Guide (Available in Seismic, Bob Abrams)

Technical contacts:

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Marc Coq, mhc@us.ibm.com

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Thank you!

zBuRST: Ordering process

The ordering process for zBurst On/Off CoD records is modified and requires involvement by IBM until ResourceLink can be updated:

- Customer must have Feature Codes 9900 and 9896 added to the target machine(s)
- All zBuRST contacts must be sent through Glauci Bentes
- Upon completion of the contract, Glauci will work with the ResourceLink team to identify:
 1. Maximum number of engines that the customer is authorized to use zBuRST on
 2. Provide pricing information
 3. Determine if the customer will pay for zBuRST upon download, or if they will be pre-billed
- After working with Glauci, the ResourceLink team will:
 1. Verify that the Customer Initiated Upgrade (CIU) profile has been created and flag the CIU profile as participating in zBuRST
 2. Modify (if necessary) the activation limits on the profile to exceed the standard 100%
 3. If the customer is paying for the zBuRST record on download: Verify that the correct pre-paid On/Off CoD pricing has been set for the customer
 4. If the sales team is pre-billing the customer: Verify that there are no prices set in the pre-paid On/Off CoD price table.
- At this stage, the profile is ready for the customer to order their zBuRST record



zBuRST: An introduction – The need for Load & Stress Testing

While testing at scale is essential to delivering a satisfactory experience, the challenges of doing so can be daunting

Demand to make changes

Customers are very unforgiving if firms come up short on delivering a great experience, regardless of the nature of disruption or outage. (Forrester)

Fear of change

Many organizations are afraid to change systems for fear of disrupting critical business systems due to loss of corporate knowledge, system complexity or lack of sufficient testing facilities.

Impact of disruptions

Testing resource constraints lead to disruptions that can result in lost revenue, damaged brand reputation, regulatory penalties, dissatisfied customers, etc.



Many test environments are 10-20% the size of their production environments due to cost constraints

You need a way to test at scale while minimizing these costs, complexities and risks.