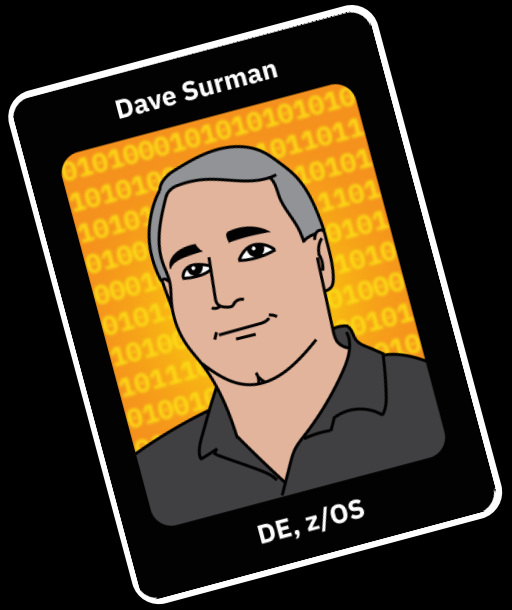

System Recovery Boost

Unleash your capacity to maximize your availability!

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Instant Recovery: Leading the industry in IT resiliency

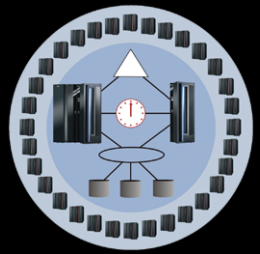
Avoid downtime cost
Maintain user productivity

Ensure access to critical applications
Remain open to clients 24/7

IBM Z®

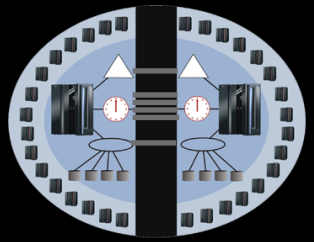
MTBF measured in decades. Enhanced with IBM System Recovery Boost.

Parallel Sysplex®



Run a cluster of systems as one for high availability and scalability.

GDPS®



An industry-leading solution for continuous availability and disaster recovery.

Storage synergy

Integrated by design to maximize technology advantages.

IBM z15 solutions are designed to deliver 99.99999% availability[1]

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1: Disclaimer: IBM Internal data based on measurements and projections was used in calculating the expected value. The z15 servers must be configured in a parallel sysplex using z/OS 2.3 or above; GDPS management of data and middleware recovery across Metro distance systems and storage, including GDPS Metro Multi-site Workload and GDPS Continuous Availability; and DS888X with IBM HyperSwap. Necessary resiliency technology must be enabled, such as System Managed CF Structure Duplexing, Sysplex failure management and Capacity Provisioning Manager. Other configurations may provide different availability characteristics.

IBM System Recovery Boost

Unleash your capacity to maximize your availability

Restore service and recover workloads substantially faster than on previous IBM Z generations, built into IBM z15 with ***zero increase in IBM software licensing costs.***

Faster image shutdown and startup

Accelerate the shutdown, restart and recovery of images, middleware environments and client workloads to accelerate return to pre-shutdown SLAs.[1]

Faster sysplex recovery activities

Accelerate Parallel Sysplex recovery processes to minimize disruption and expedite return to steady-state operations.[2]

Faster GDPS automation actions

Drive faster and more efficient GDPS automation actions to rapidly reconfigure and recover your environment

Faster elimination of backlogs

Utilize additional capacity for a fixed period during recovery, so you can work through your backlogs faster after planned or unplanned downtime.

1. Accelerated shutdown applies only to planned shutdown of z/OS images
2. Sysplex recovery functionality available September 15th, 2020

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System Recovery Boost Base Functionality

Unleash additional processing capacity

using your already-entitled general-purpose processors (GPs) and zIIPs, during a fixed-duration performance increase known as the "boost period."

- ✓ Faster image shutdown[1] and image startup.
- ✓ Faster middleware and workload restart
- ✓ Faster system recovery and workload execution
- ✓ Faster Parallel Sysplex recovery activities
- ✓ Faster and more parallelized GDPS reconfiguration and orchestration actions.

What's included:

- 30-minute boost for image shutdown
- 60-minute boost for image startup (IPL)
- Up to 30 minutes aggregate per LPAR of recovery process boosts for sysplex recovery, per consecutive 24-hour period[2]

1. Accelerated shutdown applies only to planned shutdown of z/OS images
2. Each recovery process boost lasts less than 5 minutes

1 Speed Boost

Enables general-purpose processors on sub-capacity machine models to run at full-capacity speed in the boosting image(s).

Supported by z/OS®, z/TPF, z/VM®, z/VSE & SADMP

2 zIIP Boost

Provides additional capacity and parallelism by enabling general-purpose workloads to run on zIIP processors that are available to the boosting image(s).

Supported by z/OS. Requires defined zIIPs

3 GDPS enhancements

Increases the speed at which GDPS drives hardware actions, along with the speed of the underlying hardware services.

Supported by z/OS

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System Recovery Boost Upgrade

Maximize performance and parallelism during the boost period

Build upon the SRB base functionality with System Recovery Boost Upgrade, an optional capacity-on-demand offering that lets you **unlock additional zIIP capacity to be used in conjunction with the zIIP boost capability.**[1]

Benefits

- ✓ Unlock up to 20 additional zIIP processors for up to 6 hours per activation
- ✓ Additional physical zIIP capacity is shared across LPARs on the machine
- ✓ Use to augment the “base functionality” zIIP boost in one or more images, while the physical capacity remains active on a machine
- ✓ Multi-year subscription of up to five years
  - 30 activations available upon purchase, with the option for automatic replenishment
- ✓ 90-day free trial period available

1. System Recovery Boost Upgrade is only available on z15 T01

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System Recovery Boost Upgrade
How to order

To use System Recovery Boost Upgrade, you must **purchase a set of IBM z15 hardware feature codes:**

FC 9930:
SRB Upgrade Authorization
Drives the necessary contracts to use the SRB Upgrade Record (6802) and is required to enable the ordering of SRB Upgrade Record, as well as the 90-day free trial.

FC 6802:
SRB Upgrade Record
Enables temporary activation of additional physical zIIP processors to be used in conjunction with the base functionality.

FC 6799:
SRB Upgrade Years Ordered
Records how many subscription years you purchase for SRB Upgrade, with each feature code purchase equating to a one-year subscription.

These feature codes can be ordered using the Customer Initiated tool on IBM Resource Link®, or by IBM sales and IBM business partners. Note that you must have one or more entitled zIIPs available in your CPC.

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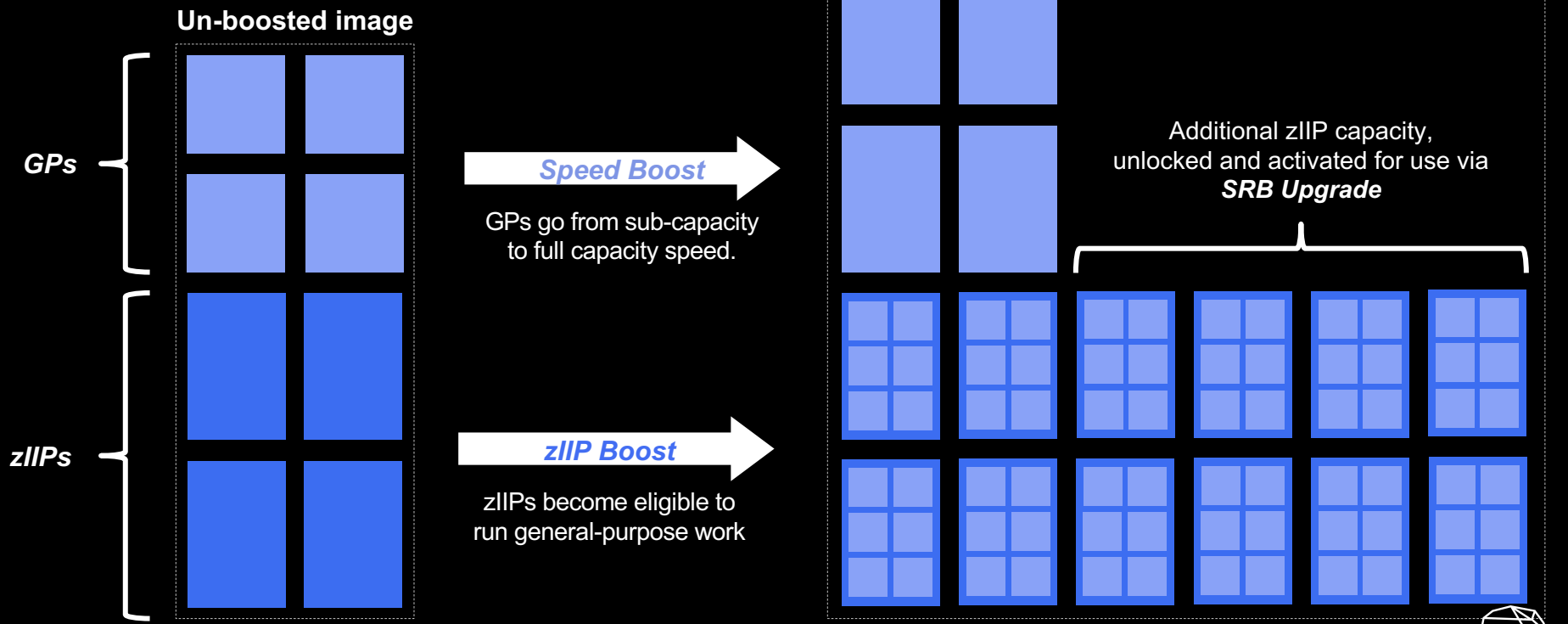
Visualized

Base functionality + System Recovery Boost Upgrade



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System Recovery Boost: Beyond the IPL

Sysplex Recovery Process Boosts

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System Recovery Boost: Beyond the IPL
It all starts with Parallel Sysplex

IBM Parallel Sysplex technology enables superior scalability, performance, and near-continuous availability by allowing concurrent access to all critical applications and data across multiple z/OS systems.

Parallel Sysplex provides redundancy throughout your environment, so when an outage or disruption occurs, ***your workloads can continue running***.

But… sysplexes still need to recover from failures

When part of a sysplex fails, your workload is still running, but the execution of workload may be delayed while the sysplex is working harder than usual to recover from the failure.

Now, you have a new way to accelerate sysplex recovery with System Recovery Boost

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System Recovery Boost: Beyond the IPL
Expedite Parallel Sysplex recovery with new capabilities

System Recovery Boost: Not just for IPLs

Leverage a new class of boost to accelerate sysplex recovery with ***zero increase in IBM software licensing costs***.

Reduce disruption

Expedite return to steady-state operations

Catch-up faster on workload backlog

Recovery Process Boosts

- New short-duration boosts (less than 5 minutes each)
- Use up to 30 minutes (in aggregate) of recovery process boosts per day (per LPAR)
- Can utilize both GP Speed Boost and zIIP Boost capabilities

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System Recovery Boost: Beyond the IPL
Sysplex recovery processes explained

Sysplex recovery processes can cause transient workload disruptions…

Sysplex Partitioning

CF structure recovery

CF datasharing member recovery

HyperSwap®

Accelerate processing to recover quickly

Mitigate the effects of extra recovery work for the relevant systems in the Sysplex

Faster processing of backlog for expedited return to steady-state operations

Accelerate sysplex recovery to minimize disruption!

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Summary of Requirements

Hardware

- z15 T01 or T02

Firmware

- Base z15 MCL levels – for IPL and Shutdown boosts
- LPAR MCL P46602.005 for z15 Driver 41C (Bundle S29) or higher – for Sysplex Recovery Process boosts

Software

- z/OS 2.4 or 2.3 with PTFs

All APARs for System Recovery Boost are included in the FIXCAT for IBM.Function.SystemRecoveryBoost

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Setup and exploitation
Base Functionality – Setup

Includes Speed Boost, zIIP Boost and GDPS enhancements

- No z15 HW Feature Codes need to be activated
- Ensure that the BOOST= system parameter is set appropriately for all images (z/OS enables by default)
- Modify shutdown automation to invoke IEASDBS PROC to trigger the shutdown boost process
- Consider adjusting the level of parallelism present in startup and shutdown automation scripts
- If applicable, combine and modify GDPS SYSPLEX script verbs acting against multiple images to exploit GDPS enhancements

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Setup and exploitation
System Recovery Boost Upgrade – Setup

Same steps involved as the base functionality, PLUS:

- z15 HW Feature Codes for SRB Upgrade:
  - 9930 – SRB Upgrade Authorization, 6802 – SRB Upgrade Record, 6799 – SRB Upgrade Years Ordered
- Define additional reserved logical zIIPs to be brought online for images that will use the additional recovery capacity.
- Consider updating your automation to drive activation/deactivation of the System Recovery Boost Record around shutdown/IPL windows.
- Consider automating changing zIIP weights while System Recovery Boost Record is active to ensure that recovering systems have access to the additional capacity.
- Consider using the zPCR tool to determine how many physical zIIPs you want to add to your CPC.

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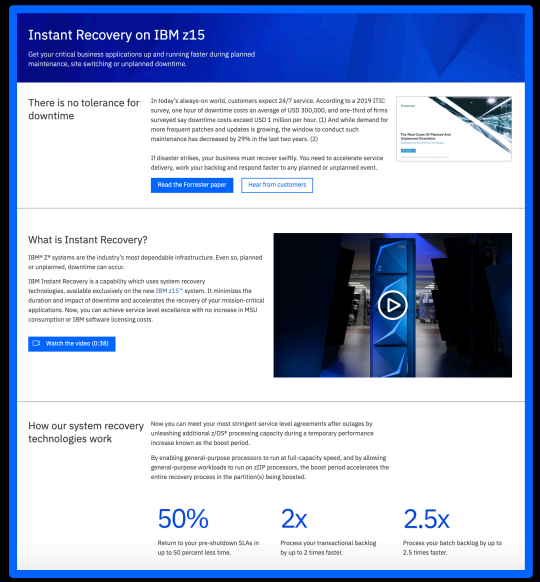
Learn more about System Recovery Boost

Check out the website



See the content solution

Browse the FAQ

Contact your sales rep to discover how you can achieve service level excellence with System Recovery Boost

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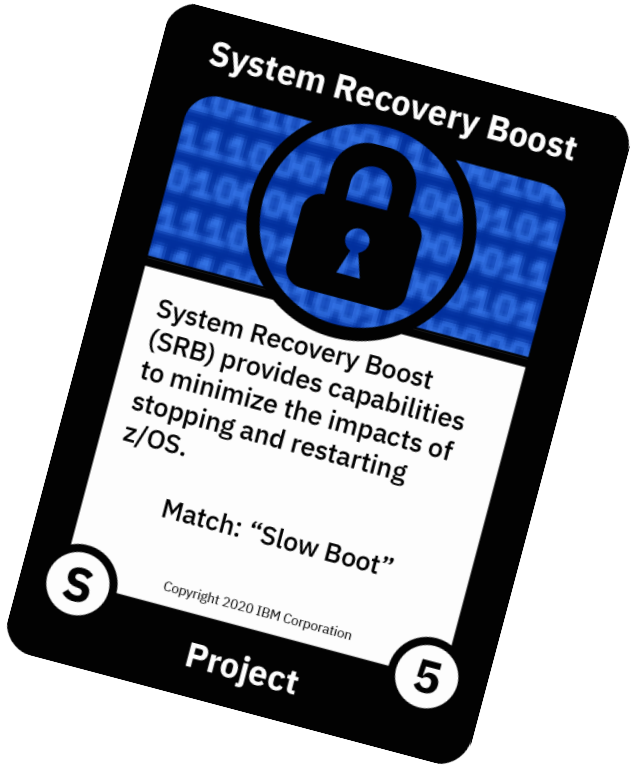
“Collectible Cards”



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Thank You!

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Additional Information

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Technical deep dive
Speed Boost

Enables general-purpose processors on sub-capacity machine models to temporarily run at full-capacity speed in the boosting image(s).

- 60-min IPL boost
- 30-min shutdown boost (IEASDBS PROC)
- Recovery Process boosts

Note that info regarding parmlibs, ENF, SMF apply only to z/OS and are not applicable to other OS's.

Controlled by a z/OS system parameter

– IEASYSxx BOOST=SYSTEM | ZIIP | SPEED | NONE

HMC/SE and z/OS displays show images that are opted-in for the Boost

Applicable ONLY to images running on sub-capacity models

While in Boost period, LPAR and CEC millicode will work together to dispatch GP processors so that *they will run at full-cap speed, for the Boosted images only … while GP processors for other un-boosted images continue to run at sub-capacity speed*

z/OS images configured to exploit speed boost will opt-in at IPL time and opt-out at the end of their Boost period

– IEASDBS PROC starts shutdown boost

– Start and End of Boost period starts new SMF interval

While in the Boost period, SMF records used for pricing purposes will contain information about *un-boosted* GP capacity

While in the Boost period, boosted GP capacity is ignored for all forms of LPAR and OS image and group capping – the GPs appear as if they are *un-boosted*

While in the Boost period, some system performance and capacity indicators show the GP capacity associated with *sub-capacity processors* … parts of the OS that need to understand "true" capacity will understand that the GPs are running with full-cap capacity and speed

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Technical deep dive
zIIP Boost

Provides additional capacity and parallelism by enabling general-purpose workloads to run on zIIP processors that are available to the boosting image(s).

- 60-min IPL boost
- 30-min shutdown boost (IEASDBS PROC)
- Recovery Process boosts

Note that info regarding parmlibs, ENF, SMF apply only to z/OS and are not applicable to other OS's.

HMC/SE and z/OS displays show images that are opted-in for Boost

z/OS images configured to exploit this capability will automatically opt-in at IPL time and opt-out at the end of their Boost period

While in Boost period, each z/OS image sets up its dispatching so that *general-purpose workload is eligible to be dispatched on zIIPs*, *effectively "blurring" available GP and zIIP capacity together…*

- "Entitled" GPs plus
- "Entitled" zIIPs plus
- Any additional zIIPs provided by the SRB Upgrade temporary capacity record, *if activated*

Controlled by a z/OS system parameter

- IEASYSxx BOOST=SYSTEM | ZIIP | SPEED | NONE

While in the Boost period, boosted zIIP capacity is *ignored* for all forms of image and group capping

If reserved logical zIIPs are available and backed by active physical zIIP processor capacity, images will automatically bring additional logical zIIP processors online to make use of the available physical zIIP capacity during the Boost period

- These additional logical processors are also automatically taken offline at the end of the Boost period

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Technical deep dive
GDPS enhancements

Increases the speed at which GDPS drives hardware actions, along with the speed of the underlying hardware services.

Note that info regarding parmlibs, ENF, SMF apply only to z/OS and are not applicable to other OS's.

GDPS drives BCPii HW APIs for orchestrating activities such as CBU capacity activations, image activations, resets, and IPLs, for one or more images, in many planned and unplanned DR site-switch scenarios

- There is value in improving both the performance of, and the usage parallelism of, these HW services, in those scenarios

z15 Firmware changes support greater parallelism and performance improvements in the HW API services themselves

Exploitation/usage changes in GDPS software will take greater advantage of the available parallelism in the underlying services

- Implement additional multitasking to drive HW actions in parallel, taking advantage of available cross-CEC parallelism (limited intra-CEC parallelism)
- Avoid redundant per-action or per-system activities in the automation engine
- *Client GDPS scripting changes are required to take full advantage of these enhancements!*

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Technical deep dive
GDPS enhancements

GDPS scripting enhancements

Address multiple systems in a single parallel script command:

SYSPLEX <BCPII_Command > <System_Criterias> Command_Options

- **<BCPII_Command>** can be:
  ACTIVATE, DEACTIVATE, RESET, LOAD, STOP, PSWRESTART

  <System_Criterias> can be:
  - List of systems with or without generic names:
    SYSTEM (TSYS1, TSYS2, PS*, VM*)
  - Logical Group of systems:
    GROUP(SITE1), GROUP(ALL), GROUP(ZOS), etc.
  - Customize group of systems using SYSTEM type, site parms:
    GROUP(Type=YV,Site=*) or GROUP(Type=*, Site=*) or GROUP(Type=N,Site=1), etc.
  - Note: A KP, KX, KG, or KR System will never be addressed by a Group criteria

Examples:

- SYSPLEX ACTIVATE GROUP(SITE1)
- SYSPLEX LOAD GROUP (Type=YN,Site=*)
- SYSPLEX RESET SYSTEM(G0C1,G0P*,SVM*)

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Technical deep dive
Operating system support

System Recovery Boost is supported by:

z/OS 2.4, z/OS 2.3, z/TPF, z/VM 7.1, z/VSE®, and SADMP

Requires a z15 CPC with installation of required PTFs.

z/OS	z/TPF	z/VM	z/VSE	SADMP
Supports: • Speed Boost • zIIP Boost • GDPS enhancements. • Sysplex recovery process boosts **Boost period:** • 30’ for shutdown • 60’ for startup	**Supports:** • Speed Boost **Boost period:** • 30’ for shutdown • 60’ for startup* **No more than 20’ spent in catch-up phase after system has restarted completely.*	**Supports:** • Speed Boost **Boost period:** • 30’ for shutdown • 60’ for startup z/TPF and z/VSE guests can inherit SRB benefits from the first-level VM system.	**Supports:** • Speed Boost • Standalone Dump Boost **Boost period:** • 30’ for shutdown • 60’ for startup	**Supports:** • Speed Boost **Boost period:** • Duration of the dump, or up to 60’

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