

Unlocking a New Era of z/OS Storage with Cloud Object Integration

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21CS

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Salon 15

Living in a Data-Centric World

- Global data volume continues to surge every second
- Worldwide data was expected to reach ~ 181 zettabytes by 2025 *
- 1 ZB = 250 billion DVDs
- In 2010, the world stored only 2 ZB, showing how we dramatically grew since then
- Mainframes remain major contributors with high-volume, always-on processing



*From Exploding Topics Blog

Where are We Going to Store All This Information?

Traditional storage methods:

- Hard Drives
- SSD's
- Virtual Tape / Physical Tape
- Flash Drives



Enterprises have a need for a **cost-efficient solution!!!**

- Cloud Object Storage

Emergence of Cloud Object Storage

Cloud Object Storage can be anywhere in the world*

- Available on-prem or in public cloud, supporting hybrid models
- Data stored as flexible “objects” instead of device specific files
 - No need to pre-allocate a space
- Mainstream option due to scalability and durability
- Corporate mandates to use object storage
- Lower cost for large-scale and long-term data retention
- Immutability

How Does this relate to Mainframes?

- Mainframes handle extremely high transaction volumes
- Store a large share of the world's critical data
- Long-term data retention, often 10–20 years, is common
- z/OS storage relies on DASD, virtual tape, and physical tape systems
- Strict disaster recovery frameworks are required



Benefits of Cloud Object Storage for z/OS

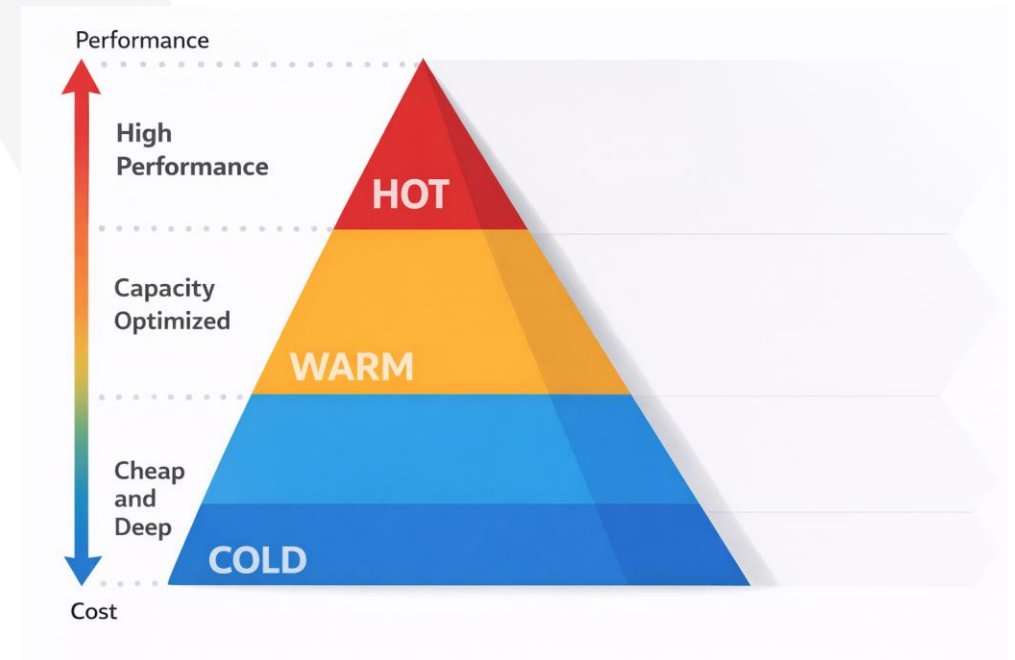
- Another storage tier for z/OS
 - Lower cost storage tier
- Can assist with reducing traditional storage method footprints
- Helps break down silos
- A storage platform that New to Z understands
- Provides an additional DR plan for copies of backups



Cloud object storage is here to **enhance** z/OS while keeping traditional storage methods for transactional work

What You Shouldn't Do with Cloud Object Storage

- “Ditch and dump”
- Move mission critical data off disk/tape
 - This may be data that is recalled often or used for each batch cycle
- Use cloud object storage for transactional “hot” data
- Lose the ability to bring data **back** to z/OS platform



The Journey is just beginning

- Multi-phased approach
- Start small and move cold data to cloud object storage
 - Non-mission critical data
- Send a static data set to cloud storage and bring it back to the platform

It will open the door to other questions:

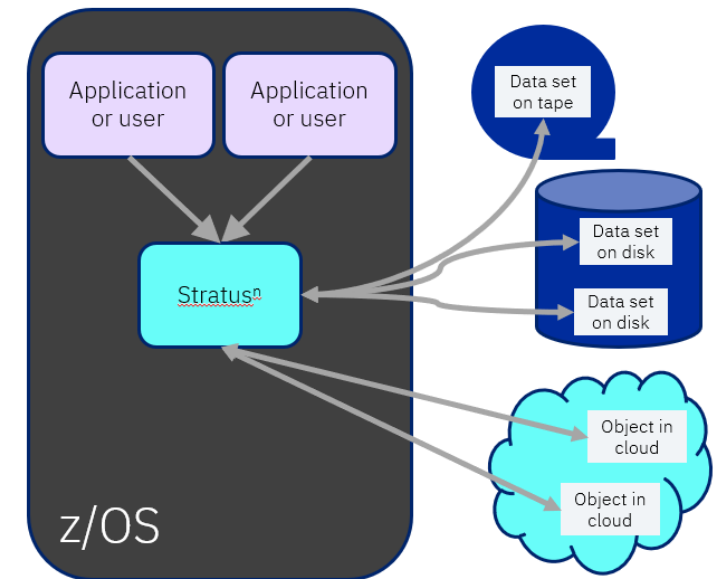
- How will we scale this?
- How are you going to identify what data can be transferred?



STRATUSn: Unlocking a New Era of Storage

Native z/OS software to help transfer z/OS data to and from cloud object storage at scale

- Use any S3 compatible cloud object storage
 - On-prem or public cloud
- Safety and security built in
- Flexible transfer methods
 - Code page conversion
- Meta-data stored for each data set

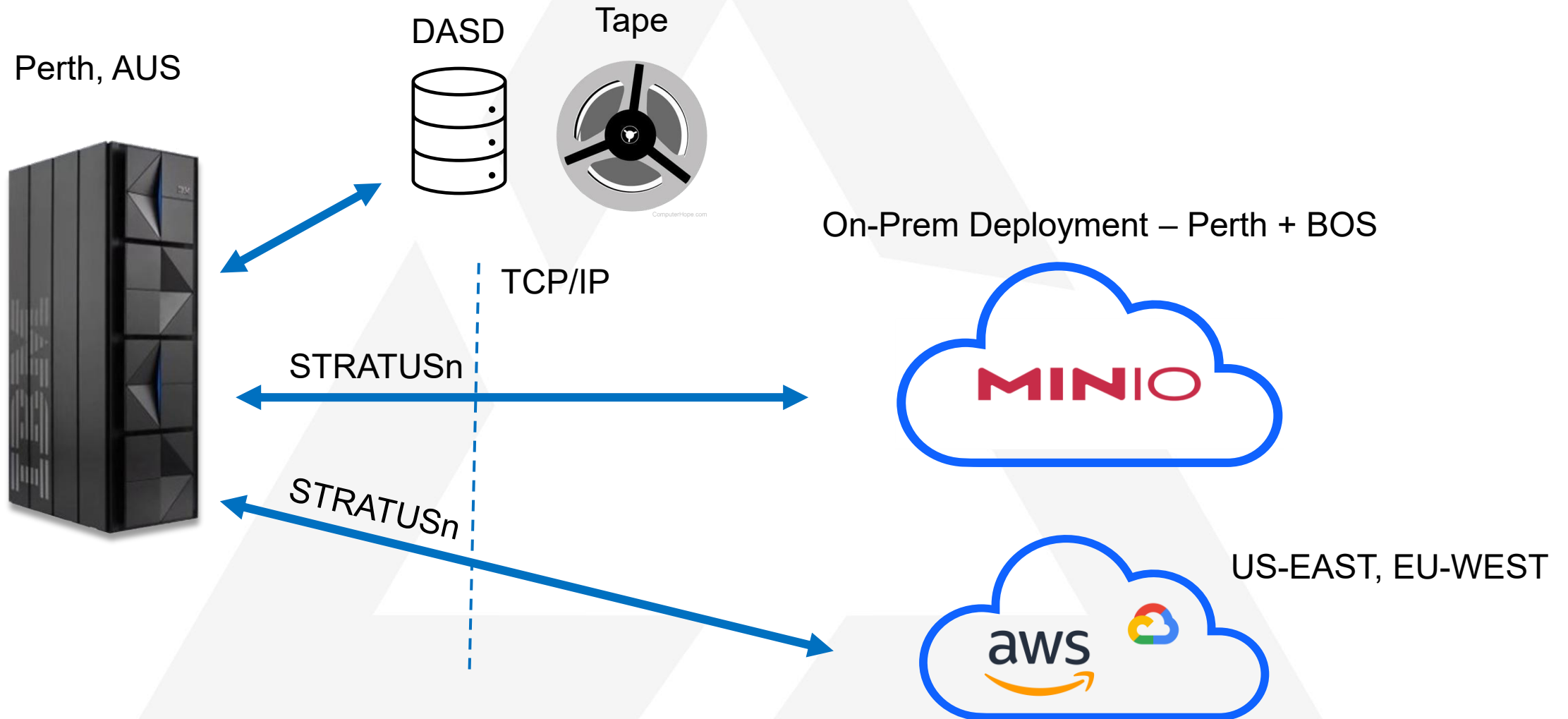


What Use Cases Can We Target?

- Long term tape / cold data retention
- Replacement for legacy transfer methods
- Promote data through sysplexes (Test -> Development -> Production)
- Share static data with hybrid cloud applications
 - Bring non-z/OS data to the platform
- Store copies of backup data in a 3rd or 4th site for DR
 - Immutability
- Bring AI models back on z/OS

How it's used in our Environment

Our Demo Environment



Migrating Cold Data sets from ML2 to MLC

COE1 21CS STRATUSn

Option ==>

SMF ID : COE1

Version : 1.2.0

26/02/14 04:24:16

STRATUSn - DFSMSHsm MLx -> MLC Menu

- | | | |
|---|-----------|---|
| 1 | Summary | Generate/display summary report of migrated data sets |
| 2 | Simulate | Create a job to simulate a cloud migration |
| 3 | Migrate | Create a cloud migration job from a simulated group |
| 4 | Monitor | Monitor active STRATUSn migration jobs |
| 5 | Display | Display cloud simulate/migrate logs |
| C | Configure | Configure control data set and session options |
| H | Help | Message help |

COE1 Generate/Display Summary Report of Migrated Data Sets

Option ==> _____

Migration Summary Report for STRATUSn Configuration

- 1 **Submit** Submit batch job to generate report
- 2 **View** View most recently generated report

COE1 Migrated Data Sets Summary Statistics

Command ==>

Summary for STRATUSn Configuration CONFIG00

```

Total number of data sets migrated to ML2 . . . : 57
Total amount of data migrated to ML2 . . . . : 155 MB
Average age of data sets migrated to ML2 . . . : 1.13 Years
Oldest ML2 data set . . . . . : 2024/08/14
ML2 data sets never recalled . . . . . : 0
Percent ML2 never recalled . . . . . : 0%
Total number of ML2 volumes . . . . . : 1
Total number of cloud objects . . . . . : 216

Date above statistics calculated . . . . . : 2026/02/13
  
```

COE1

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C0E1 Create a Job to Simulate a Cloud Migration

Command ==>

More: +

Name of migration group to simulate GROUP15

Choose ONE method of selection (A, B, or C):

 A) Select ML2 volumes less than or equal to . . ____ percent full
 Maximum number of ML2 volumes (optional) . . ____

B) Select data sets migrated to ML2 after . . . 2023/01/01 (YYYY/MM/DD)
 and/or data sets migrated before ____ (YYYY/MM/DD)
 Resume from last simulated DSN? N (Yes/No)
 Filter by DSN? (F6 to show/edit list) . . . N (Yes/No)

C) Select data sets migrated to ML2 at least . ____ days ago
 and/or data sets migrated no more than . . ____ days ago
 Resume from last simulated DSN? ____ (Yes/No)
 Filter by DSN? (F6 to show/edit list) . . . ____ (Yes/No)

Optional for all selection methods:

Maximum number of migrated data sets ____

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COE1

Display Cloud Simulate/Migrate Logs

Row 1 to 13 of 13

Command ==>

Scroll ==> CSR



Group	Simulate Date/Time	Migrate Date/Time	Process Complete	Number DSNs	Number ML2 vols
GROUP01	2025/09/03 02:13	--N/A--	N/A	37	1
GROUP02	2025/09/03 02:15	--N/A--	N/A	37	1
GROUP03	2025/09/03 02:28	--N/A--	N/A	4	1
GROUP04	2025/09/03 03:19	2025/09/03 03:21	Yes	1	1
GROUP05	2025/09/08 23:20	--N/A--	N/A	67	2
GROUP06	2025/09/04 22:55	2025/09/05 05:23	Yes	1	1
GROUP07	2025/09/08 23:40	2025/09/08 23:42	Yes	9	1
GROUP09	2025/09/11 23:20	--N/A--	N/A	10	1
GROUP10	2025/09/11 23:52	--N/A--	N/A	10	1
GROUP11	2025/09/11 23:58	2025/09/12 00:00	Yes	10	1
GROUP12	2025/11/06 23:39	--N/A--	N/A	0	0
GROUP13	2025/11/07 07:04	--N/A--	N/A	0	0
GROUP15	2026/02/14 04:29	--N/A--	N/A	57	1

***** Bottom of data *****

COE1

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COE1 Create a Cloud Migration Job from a Simulated Group

Command ==>

```

Name of migration group . . . . . GROUP15

Migrate to specific cloud named . . . . . MINI002TECHSALES
OR
Migrate using assigned management class NO (Yes/No)

-- Parameters to create migration job --
Time of day to stop recall processing . . _____ (hh:mm:ss)
Maximum amount of time to recall . . . . . _____ (hh:mm)

-- DFSMSHsm recall pacing parameters --
Number of data sets in recall batch . . . _____
Seconds to wait between data sets . . . . . _____
Minutes:seconds between batches . . . . . _____ (mm:ss)
Percent STORGRP full before remigrate . . _____

Active STRATUSn Configuration . . . . . : CONFIG00

```

Moving Any Static Data to Cloud Object Storage

C0E1 21CS STRATUSn Enter menu item number
Option ==> _____

SMF ID : C0E1

Version : 1.2.0
26/02/14 04:10:44

STRATUSn - Hybrid Cloud Data Management

- 1 STRSEND Send data sets or UNIX files from z/OS to cloud storage
- 2 STRRET Retrieve z/OS data sets or UNIX files from cloud storage
- 3 STRQUERY Query cloud request status
- 4 STRMOD Modify a STRATUSn request
- 5 STRLIST Display list of cloud objects
- 6 STRDEL Delete a cloud object
- C Configure Configure session options
- H Help Message help

STRATUSn started task ID . . JSSTR1 (default LBQ1)

COE1 Send z/OS Data Sets/UNIX File to a Cloud

Command ==>

```

z/OS data set or mask . . . JOSHUAS.DEMO.DATAV1
z/OS UNIX file name . . . _____ +

Cloud name . . . . . TECHS3
Container name . . . . . coe1-demo +
Mask to create object . . . &DSN-SHAREV1 +

Priority . . . . . _____ (1-100)
Stop or continue if an upload fails . . . . . CONTINUE (Stop|Continue)
Delete z/OS data set/UNIX file after upload? . . . . . NO (Yes|No)
Wait for STRATUSn to complete request? . . . . . NO (Yes|No)
Convert from EBCDIC to UTF-8? . . . . . NO (Yes|No)
Perform only a syntax check and resolve masks? . . . . . NO (Yes|No)
  
```

COE1

21CS STRATUSn

Enter menu item number

Option ==> _____

SMF ID : COE1

Version : 1.2.0

26/02/14 04:10:44

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STRATUSn started task ID . . JSSTR1 (default LBQ1)

COE1

Metadata Saved for a Cloud Object



Command ==>

More: + f 5

C
C
C
C
C
F

```

Cloud name . . . . . : TECHS3
Container name . . . . . : coe1-demo
Object name . . . . . : JOSHUAS.DEMO.DATAV1-SHAREV1
Is a data set . . . . . : true
z/OS data set/file name . : JOSHUAS.DEMO.DATAV1

```

```

+ SR
+
+

```

```

z/OS record format . . . . . : FB
z/OS block size . . . . . : 27920
z/OS record length . . . . . : 80
z/OS data set organization . . . . . : PS
z/OS space allocated . . . . . : 1
z/OS space used . . . . . : 1
z/OS space units . . . . . : Cylinders
z/OS number of volumes . . . . . : 1
z/OS multivolume primary allocation . . . . . : N/A
z/OS multivolume secondary allocation . . . . . : N/A
SMS data class . . . . . : **None**
SMS management class . . . . . : PRIMARY
SMS storage class . . . . . : PRIMARY
z/OS creation date . . . . . : 2025-09-03

```

← Object Browser 🔍 Start typing to filter objects in the bucket ⚙️ ⓘ ✨

coe1-demo

Created on: Thu, Feb 13 2025 09:00:15 (EST) Access: PRIVATE 53.9 MiB - 5 Objects

⏮️ Rewind

🔄 Refresh

📤 Upload

< coe1-demo
📄
Create new path ↗️

	Name	Last Modified	Size
<input type="checkbox"/>	📁 JOSHUAS.DEMO.DATAV1	Wed, Feb 11 2026 20:17 (EST)	1.2 KiB
<input type="checkbox"/>	📁 JOSHUAS.DEMO.DATAV1-SHAREV1	Today, 15:18	1.2 KiB
<input type="checkbox"/>	📁 JOSHUAS.FUN.TESTCOPY-20251122-02301959-DEMO	Fri, Nov 21 2025 13:30 (EST)	320.0 B
<input type="checkbox"/>	📁 JOSHUAS.REPORT-20251202	Mon, Dec 01 2025 13:48 (EST)	1.2 KiB
<input type="checkbox"/>	📁 JOSHUAS.SMFDUMP.EXTRACT	Sat, Feb 07 2026 14:09 (EST)	53.8 MiB

C0E1 21CS STRATUSn Enter menu item number
Option ==> _____

SMF ID : C0E1

Version : 1.2.0
26/02/14 04:10:44

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COE1 Retrieve z/OS Data Set/UNIX File from a Cloud Object

Command ==>

```

Cloud name . . . . . TECHS3
Container name . . . . . coe1-demo
Object name . . . . . JOSHUAS.DEMO.DATAV1-SHAREV1
    
```

```

Priority . . . . . _____ (1-100)
Replace an existing z/OS data set/UNIX file? . . . NO (Yes|No)
Characters to append to existing DSN . . . . . .NEWS1
Wait for STRATUSn to complete request? . . . . . NO (Yes|No)
Convert from UTF-8 to EBCDIC? . . . . . NO (Yes|No)
Perform only a syntax check and resolve masks? . . NO (Yes|No)
    
```

Rename during download if original DSN matches a mask:

```

Old DSN mask to match . . _____
Mask to form new DSN . . . _____
    
```

```

Menu Options View Utilities Compilers Help
-----
COE1 T - Data Sets Matching JOSHUAS.DEMO.DATA*                               Row 1 of 2
Command ==> _____ Scroll ==> CSR

Command - Enter "/" to select action                                     Message                               Volume
-----
      JOSHUAS.DEMO.DATAV1                                               E$US04
      JOSHUAS.DEMO.DATAV1.NEWS1                                         E$US05
***** End of Data Set list *****

```

COE1

21CS STRATUSn

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Option ==> _____

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26/02/14 04:10:44

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COE1

Delete Cloud Object

Command ==>

```

Cloud name . . . . . TECHS3
Container name . . . . . coe1-demo +
Object name . . . . . JOSHUAS.DEMO.DATAV1-SHAREV1 +

Wait for STRATUSn to complete request? . . . . . NO (Yes|No)
    
```

```

COE1                               List of Objects in a Container           Row 1 to 4 of 4
Command ==> _____          Scroll ==> CSR

Cloud name . . . . . : TECHS3
Container name . . . . : coe1-demo
Filtering by prefix . . :

  Object names
_ JOSHUAS.DEMO.DATAV1
_ JOSHUAS.FUN.TESTCOPY-20251122-02301959-DEMO
_ JOSHUAS.REPORT-20251202
_ JOSHUAS.SMFDUMP.EXTRACT
***** Bottom of data *****

```

```

COE1          JOSHUAS.STR.CNTL(LBQSEND) - 01.03          Columns 00001 00080
Command ==> _____ Scroll ==> CSR
000040 *//STEPLIB DD DSN=STRATUS.V120.SLBQLLIB,DISP=SHR
000041 //STEPLIB DD DSN=JOSHUAS.STR.V120.SLBQLLIB,DISP=SHR
000042 //SYSPRINT DD SYSOUT=*
000043 //SYSTSPRT DD SYSOUT=*
000044 //SYSABEND DD SYSOUT=*
000045 *//SYSEXEC DD DSN=STRATUS.V120.SLBQELIB,DISP=SHR
000046 //SYSEXEC DD DSN=JOSHUAS.STR.V120.SLBQELIB,DISP=SHR
000047 //SYSTSIN DD *
000048 %STRSEND +
000049 ZOSUNIX(/u/joshuas/gdk/providers/TECHS3.json) +
000050 CLOUD(TECHS3) +
000051 CONTAINER(test-techsales) +
000052 OBJECT(&ZOSUNIX) +
000053 STCID(JSSTR1) +
000054 CHECK(no) +
000055 DELETE(no) +
000056 WAIT(yes)+
000057 DEBUG(yes)
000058 /*
000059 /**

```

SHARE Sessions With 21CS

Can't make a session? Visit **booth 218** to connect and learn more about our products.

Time	Salon #	Session Name
Mon. 02/23	_____	_____
10:30 AM	23	Neuro-Diversity - React or Respond
Tues. 02/24	_____	_____
8:00 AM	23	Women in IT: Multi-Tenured Perspectives
9:15 AM	15	Integrating Cloud Objects in Batch Processing
10:30 AM	24	Stronger, Smarter Operations: How a Large Italian Bank Reinvented Data Resiliency Management with IZBR
1:15 PM	17	Confident Change Management: Real-Time Visibility, Protection, and Compliance with SENTINEL ⁿ
2:30 PM	15	Unlocking a New Era of z/OS Storage with Cloud Object Integration
Wed. 02/25	_____	_____
9:15 AM	18	Unlocking the Power of JCL

Panels Featuring 21CS

Thank you!

Your feedback is important!

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-or-

www.share.org/evaluation

