Mainframe Customer Forum

z/OS V2.1 Overview

California
DEPARTMENT OF TECHNOLOGY
Office of Technology Services

Tuesday, May 12, 2015

Paul Vincent, Mainframe Services Branch

Agenda

- Current environment
- SCMS
- z/OS Policies (Release, Service, Coexistence)
- What's new in z/OS V2.R1 (the highlights)
- Elements and Functions Withdrawn from z/OS 2.1
- Popular (no-charge) products
- Education Assistance and Vendors
- Target Installation Dates
- z/OS Connect
- z/OS UI features
- Monitors, Dashboards and Analytics

- **For more information send an email to the Mainframe team at:**

OTech_Mainframe_Services@state.ca.gov

Current environment

- z/OS V1R13 in all environments
  - Service expiration date is September 2016

Vacaville CPUs

(S1S1, TEST)
2817-507 (z196) w/2 zIIPs

(S2S2, TST)
2817-506 (z196) w/2 zIIPs

ELSVC1
2827-720 (EC12)
Enterprise Linux

IDAA

Gold Camp CPUs

(SY2, SY3, SY6, SY8, SOC, SCT2)
2817-505 (z196) w/5 zIIPs

(SOCP, SCT1)
2827-503 (EC12) w/2 zIIPs

(SY4, SY9)
2817-409 (z196) w/5 zIIPs

(SY5, SY7, SY0)
2827-506 (z196) w/2 zIIPs

ELSGC1
2827-720 (EC12)
Enterprise Linux

Current environment

- z/OS V1R13 in all environments
  - Service expiration date is September 2016

Gold Camp CPUs

, SCT2)
zIIPs

281

zIIPs

281

zIIPs

zIIPs

Enterprise Linux

Current environment

Did he just say it has its own, self-contained, water cooling system!??

Engineered for 5 nines (99.999%) availability. *not just uptime – because a system can be up but not available (that's 5.26 minutes downtime a year)

5.5GHz, 120 cores (for use or dynamic spares)

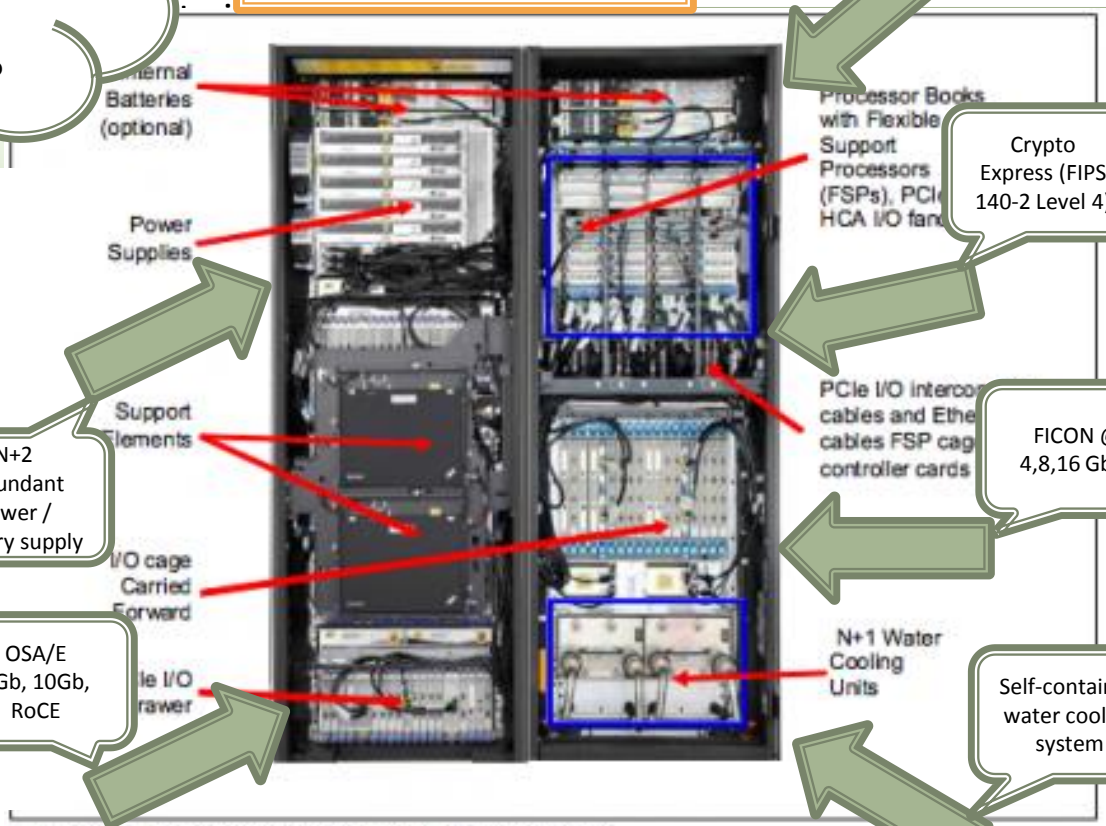


Figure 2-3 zEC12 internal front view: water-cooled CPC

Crypto Express (FIPS 140-2 Level 4)

FICON @ 4,8,16 Gbps

N+2 redundant power / battery supply

OSA/E 1Gb, 10Gb, RoCE

Self-contained water cooling system

CT2)

Ps

zIIPs

S

S

Enterprise Linux

Current environment

Query results ran up to 1908 times faster!
IDUG IDAA Beta

from hours to seconds!

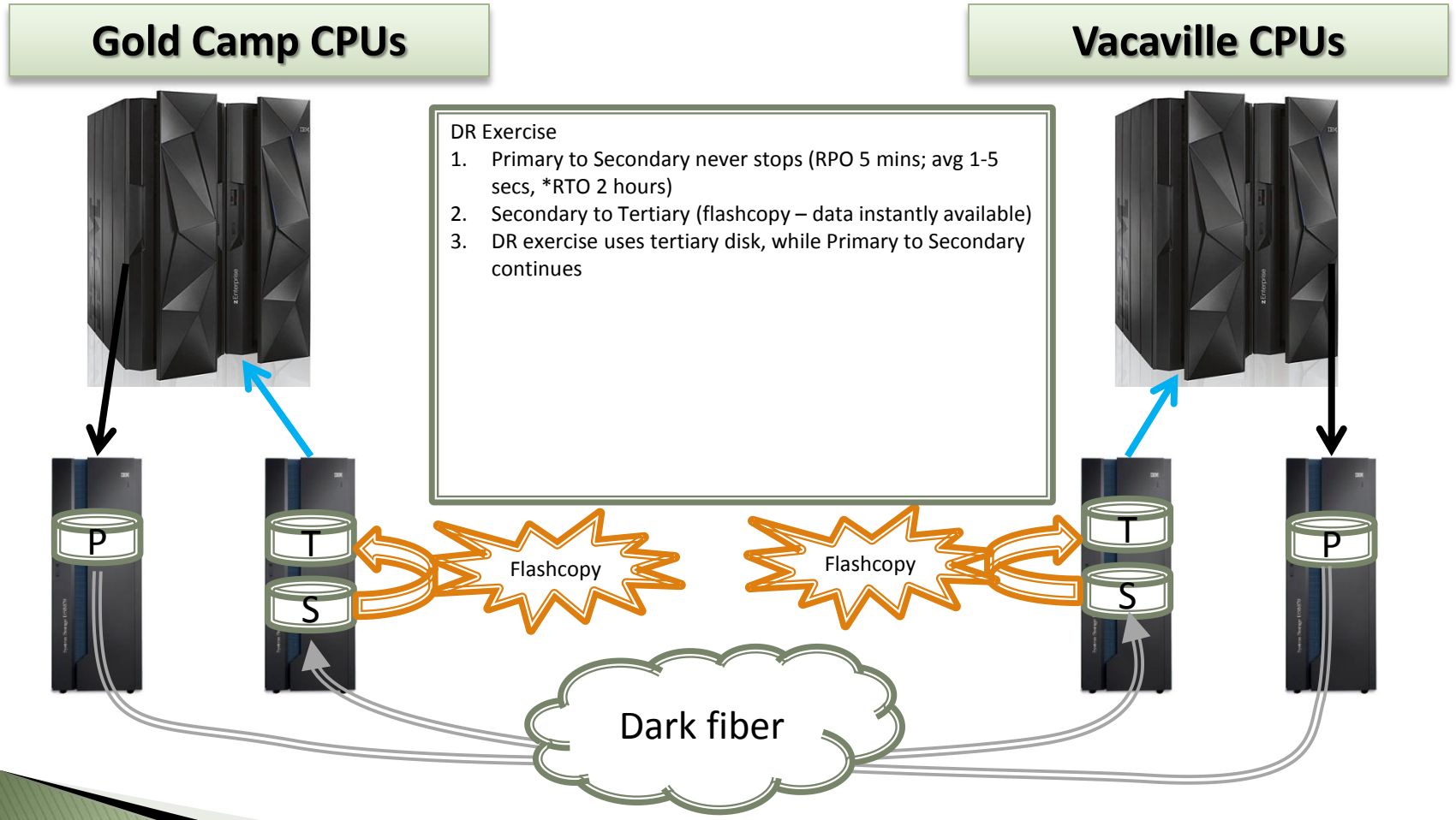
			DB2 Only		DB2 with IDAA		Times Faster
Query	Total Rows Reviewed	Total Rows Returned	Hours	Sec(s)	Hours	Sec(s)	
Query 1	2,813,571	853,320	2:39	9,540	0.0	5	1,908
Query 2	2,813,571	585,780	2:16	8,220	0.0	5	1,644
Query 3	8,260,214	274	1:16	4,560	0.0	6	760
Query 4	2,813,571	601,197	1:08	4,080	0.0	5	816
Query 5	3,422,765	508	0:57	4,080	0.0	70	58
Query 6	4,290,648	165	0:53	3,180	0.0	6	530
Query 7	361,521	58,236	0:51	3,120	0.0	4	780
Query 8	3,425.29	724	0:44	2,640	0.0	2	1,320
Query 9	4,130,107	137	0:42	2,520	0.1	193	13

IDAA

IBM DB2 Analytic Accelerator for z/OS

- Appliance that integrates IBM Netezza and zEnterprise technologies
- Delivers extremely fast results for complex and data-intensive DB2 queries on data warehousing, business intelligence and analytic workloads

Statewide Disaster Recovery Service Continuity Mainframe Service (SCMS)



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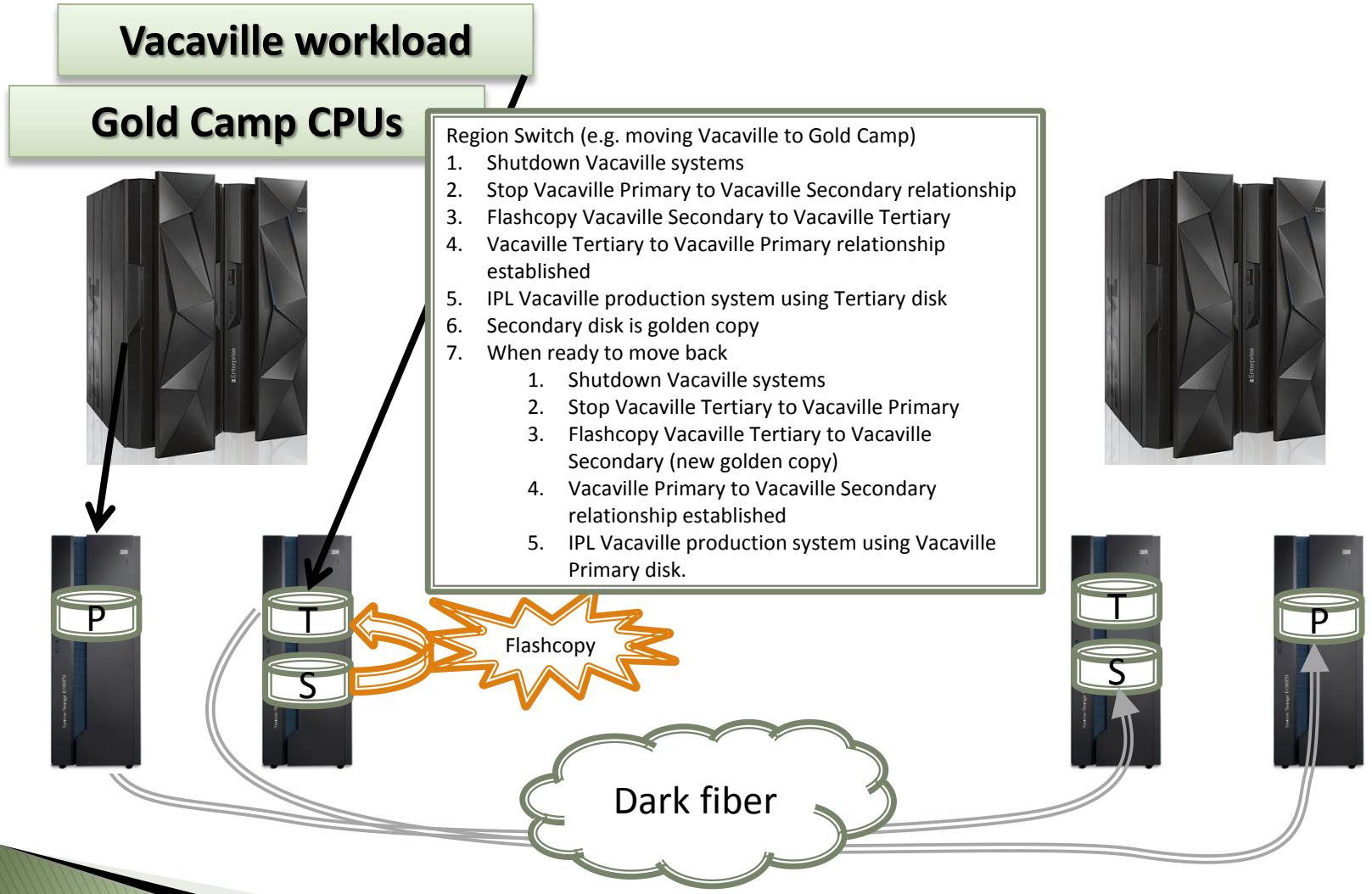

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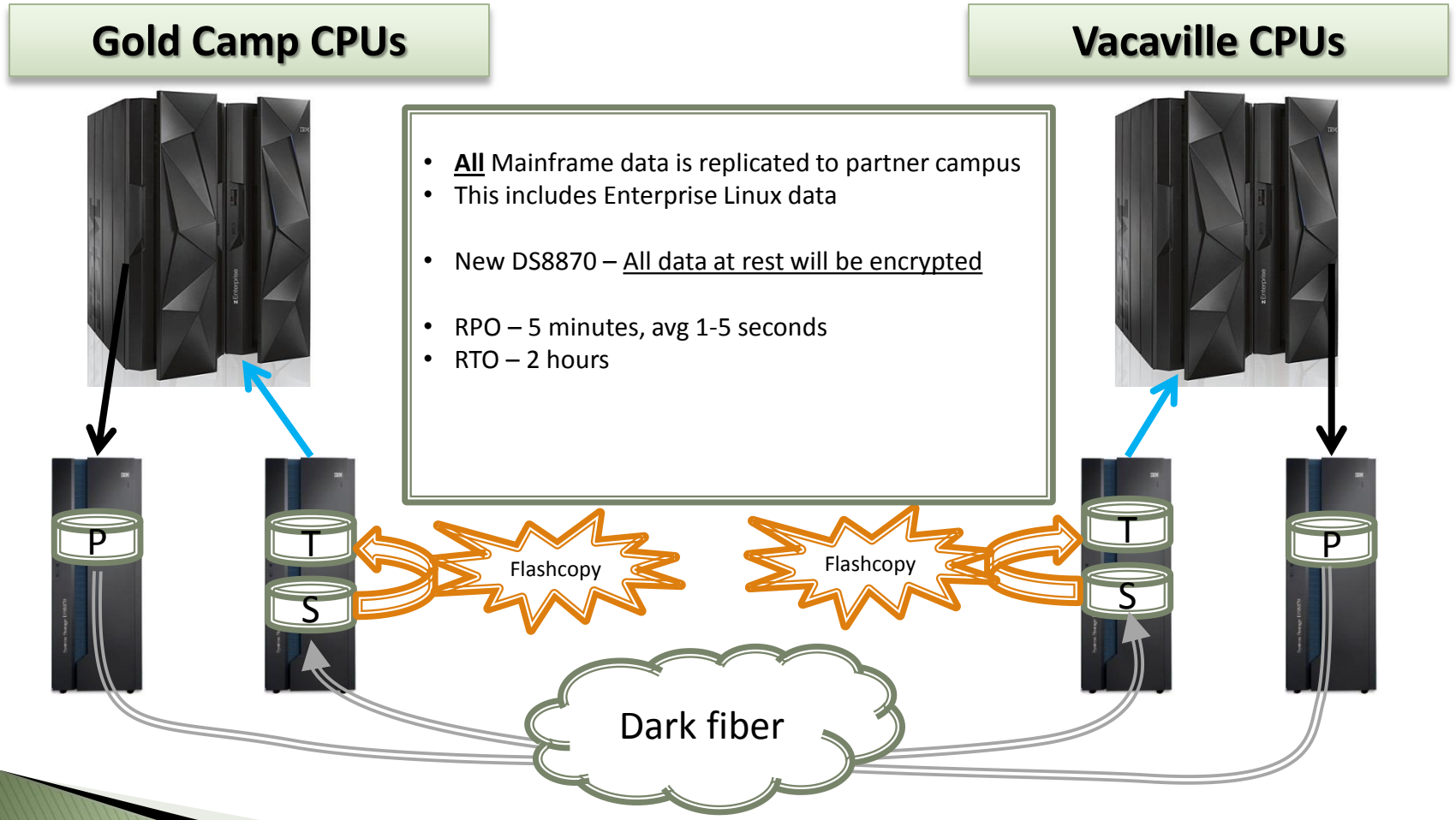
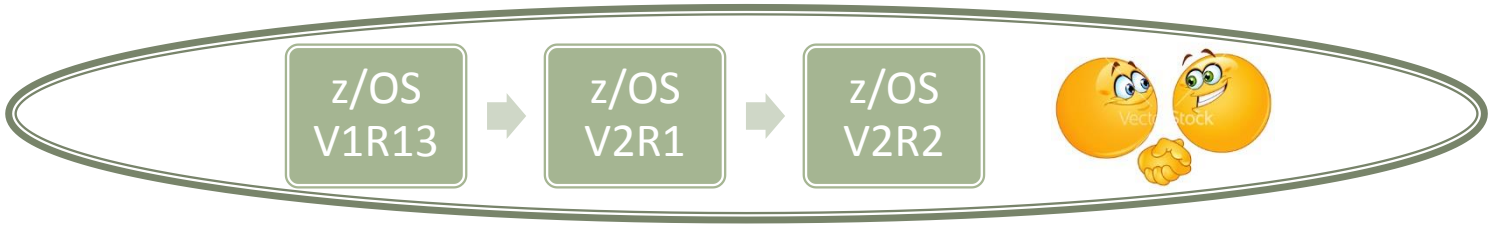


z/OS Policies (Release, Service, Coexistence)

- **z/OS Two-Year Release Frequency**
  - New z/OS releases available approximately every two years
    - IBM released z/OS V1R13 September 2011
    - IBM released z/OS V2R1 September 2013
    - IBM planned z/OS V2.2 for September 2015
- **z/OS Service Policy**
  - IBM plans to provide 5 years of z/OS support, with 3 years of optional extended service (5+3)
- **z/OS Coexistence, Migration and Fallback**
  - With two year release frequency, three consecutive releases for coexistence, migration and fallback remains



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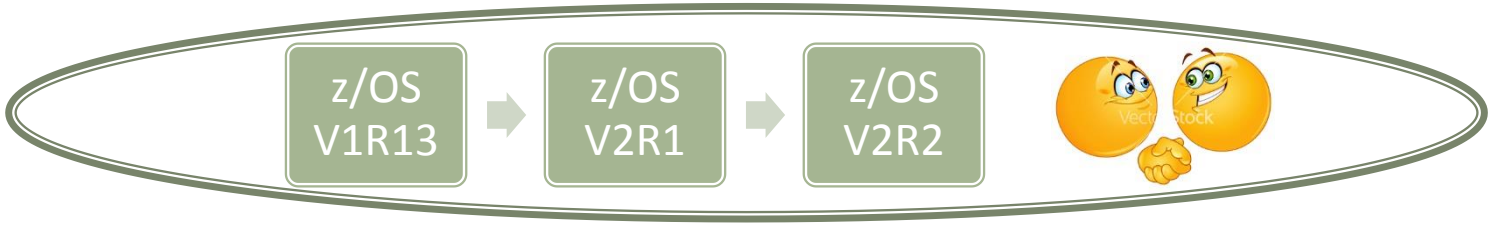

z/OS Policies (

Migration definition: the installation of a new version or release of a program to replace an earlier version or release.

Exploitation definition: usage of a new enhancements available in the new release. This come after migration.

After a successful migration, the applications and resources on the new system function the same way they did on the old system, if possible.

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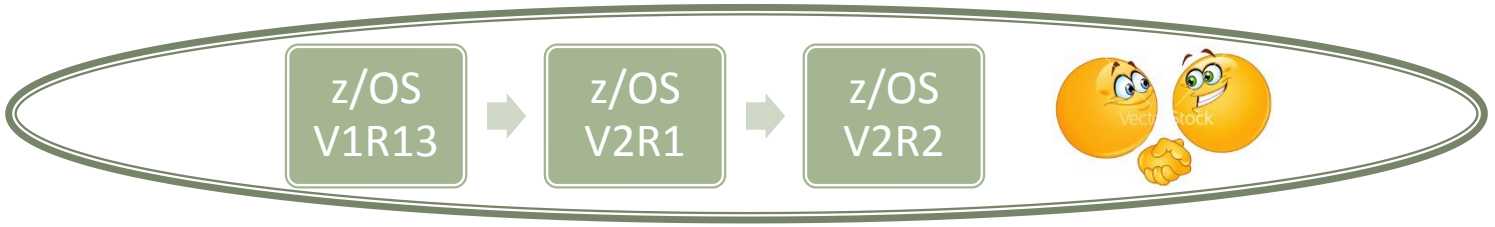


What's new in z/OS V2.R1 (the highlights)

- z/OS Client Web Enablement Toolkit
  - Applications running in traditional z/OS environments can choose to play the client role of a RESTful web application and initiate a request to a web server that resides on z/OS or any other platform that supports web applications. The new z/OS Client Web Enablement toolkit enables these applications to more easily participate in this client/server space by providing a built-in:
    - v z/OS JSON parser to parse JSON text that is coming from any source and the ability to build new JSON text or add to existing JSON text.
    - v z/OS HTTP/HTTPS protocol enabler that uses interfaces similar in nature to other industry-standard APIs.
  - The intention of the toolkit is to enable traditional z/OS programs apart from a Java virtual machine (JVM) environment to have easy access to these types of services. Programs running as a batch job, as a started procedure or running in almost any address space on a z/OS system now have APIs that they can use in a similar manner to any standard z/OS APIs provided by the operating system. Furthermore, programs can invoke these APIs in the programming language of their choice. C/C++, COBOL, PL/I, and assembly languages are fully supported
- JCL statement: DSENQSHR
  - System level downgrading from exclusive DISP=NEW control to shared control DISP=SHR after exclusive control is no longer needed for the dataset. This allows other jobs which attempt to allocate the data set to have access earlier than the legacy behavior. This parallelism will reduce the IEF099I/IEF861I/IEF863I messages which indicate that a particular jobs is waiting for a dataset.
- Default OMVS segments for the length of user session no longer supported. Unique, permanent OMVS segments (UID & GID) will be automatically assigned.

What's new in z/OS V2.R1 (the highlights)

- Transport Layer Security protocol version 1.2 - TLSv1.2
  - TLSv1.2 adds support for exploiters to use higher strength cryptographic ciphers.
- PKI Services: Enterprise PKCS#11 secure key support
  - PKI Services can now create secure keys in TKDS during certificate creation and return a PKCS#12 package containing the secure key to the requester.
- Support for PDSE generation data sets (GDS)
  - Removes the restriction against defining an SMS-managed partitioned data set extended (PDSE) as a generation data set (GDS).
- Support to specify the order of GDG datasets (FIFO, LIFO)
  - You can now specify the order in which the generation data set list is to be returned for data set allocation when the generation data group (GDG) name is supplied on the DD statement. GDG entries can now be returned in either FIFO (oldest GDS defined to the newest GDS) or LIFO (newest GDS defined to the oldest GDS) order for concatenation.
- IDCAMS support for REPRO and PRINT on data sets with block size larger than 32K

What's new in z/OS V2.R1 (the highlights)

- Simplify FTP transfer of data sets between z/OS V2.1+ systems (MVSPut, MVSGet)
  - New FTP subcommands, MVSPut and MVSGet. Transfer an MVS data set from/to a z/OS system without the client user or Server needing to know the attributes of the client data set. FTP extracts the attributes of the source data set, and applies them to the target host FTP configuration before the transfer.
    - For a physical sequential data set, MVSGet works like a combination of the LOCSite and Get subcommands. For a partitioned data set, MVSGet works like a combination of the LOCSite, LMkir (like <remote directory>, and MGet * subcommands. All the data set members are transferred. Regardless of the type of data set that is transferred, FTP reconfigures the client to allocate the local data set with the same attributes as the remote data set. The REAllocate parm, causes the MVS data set on your local MVS host to be deleted and reallocated with the attributes of the remote MVSdata set, if the local MVS data set is an existing data set. If the MVS data set already exists and you do not use the REAllocate parameter, the existing data set is not deleted and reallocated, the MVSGet subcommand fails, and a message is displayed.
    - For a physical sequential data set, MVSPut works like a combination of the Site and PUt subcommands. For a partitioned data set, MVSPut works like a combination of the SIte, MKdir (like <local directory>, and MPut *. subcommands. Regardless of the type of data set that is transferred, FTP reconfigures the server to allocate the remote data set with the same attributes as the local data set. The REAllocate parm, Causes the MVS data set on your remote MVS host to be deleted and reallocated with the attributes of the local MVS data set, if the value is an existing MVS data set. If the MVS data set already exists and you do not use the REAllocate parameter, the existing data set is not deleted and reallocated, the MVSPut subcommand fails, and a message is displayed.
- IEBCOPY Enhancements (COPYGROUP and wild card characters in the specification of member names)
  - A new COPYGROUP statement that provides the same function as the COPYGRP statement, and expands it to support group copies (member and all of its aliases) when both the input and output data sets are PDSs.
  - IEBCOPY's SELECT statement has been enhanced to allow wild card characters in the specification of member names, when used with the COPYGROUP statement. Member name filter pattern masking, using the asterisk (*) and percent(%) characters, allows a wide range of similar member names. EXCLUDE statement is also supported.

What's new in z/OS V2.R1 (the highlights)

- HSM support of Level 0 (L0) Storage tiers
  - HSM is enhanced to move data from one class of devices to another within the L0 hierarchy

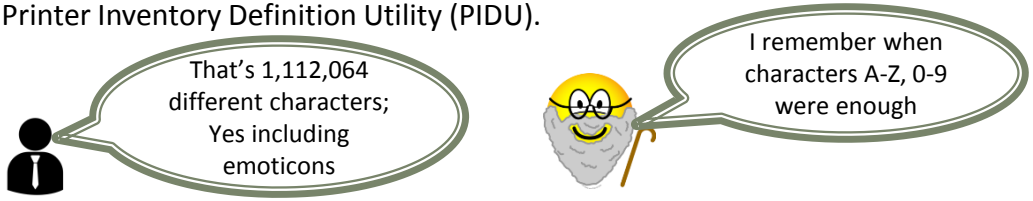
- RMM operational enhancements – tape dataset expiration via SMS Management Class
  - You can now set the expiration date in DFSMSrmm for a tape data set with a DFSMS Management Class (MC). When you enable use of MC attributes by DFSMSrmm, the MC expiration attributes (except the MC Expiration attribute Retention limit) are retrieved by DFSMSrmm during OPEN for output and used to set the expiration date for the tape data set, and also to set the LASTREF extra days in the tape data set record on retention method EXPDT managed volumes.
- PDSE enhancements (version 2)
  - New PDSE version. z/OS V2R1 introduces a new version of PDSE data sets that can provide for improved performance, reduced path lengths, and improved index searches. New data sets can be allocated as belonging to the new version (version 2) by specifying a new positional parameter in the DSNTYPE keyword of the DD statement or TSO/E ALLOCATE command, or by specifying a new PARMLIB option (PDSE_VERSION) in IGDSMS*nn* members. Unless version 2 is specified, new allocations continue to create the current version 1 PDSE data sets. Externally, version 1 and version 2 PDSEs look the same, and both versions can be open for input/output with no changes for the users. For more information about the new PDSE version and how to specify it, see the topic "PDSE Version" in *z/OS DFSMS Using Data Sets*.
  - Honor any value for DSNTYPE that specifies that a PDSE is to be allocated, regardless of weather directory blocks have been requested.

What's new in z/OS V2.R1 (the highlights)

- DFSORT 64-bit support
- DFSORT Performance and resource usage improvements
  - DFSORT has been enhanced to improve use of central storage in relation to system activity
  - DFSORT has been enhanced to allocate storage in smaller increments and then check resource availability before each additional increment is reserved.
  - DFSORT's dynamic allocation of work data sets will be adjusted to reduce the likelihood of failure when a sort application is unable to obtain all of the expected central storage and must then use more disk work space than expected.
  - A new TUNE installation default allows specification as to whether DFSORT should allocate storage in increments with addition disk work space to minimize the risk of failure, or to allocate all storage at initialization so disk work space allocation can be reduced.
  - New UC, LC, MC, UN, LN and MN keywords (similar to the previously available NUM keyword) now allow you to test a field for various combinations of alphanumeric character or non-alphanumeric characters using binary (BI) format.
  - You can now use up to 1000 parsed fields with the PARSE function (was 100)
- DFS / ZFS Enhancements
  - ZFS sets the dataset backup change flag. Allows backup programs to only perform backups for changed aggregates.
  - DFS SMB support for Microsoft Windows Server 2008 acting as a domain controller for pass-through authentication.
- z/OS Font collection – new base element
  - Now all fonts are in the z/OS base, includes:
    - AFP Font collection for s/390, IBM Infoprint Fonts for z/OS, PSF compatibility font feature, selected objects fonts (Pi and Special, Math and Science, World type fonts. Any reference to SYS1.FONTOLN data set, should be changed to SYS1.SFNTILIB data set.

What's new in z/OS V2.R1 (the highlights)

- Infoprint Server dynamic configuration
  - You can now configure Inforprint Server dynamically while infoprint Server is running. You can use a new Infoprint Server ISPF panel or the Printer Inventory Definition Utility (PIDU).



- ISPF enhancements
  - Unicode (UTF-8)support
  - New option on Edit/View entry panels available to tell editor when data encoding is ASCII or UTF-8; editor converts data from UTF-8 to CCSID of terminal for display purposes.
  - For z/OS Unix files Unicode edit function automatically invoked for files tagged with CCSID 1208 (UTF-8)
  - New z/OS UNIX Directory line and primary commands EU (Edit Unicode) and VU (View Unicode) for files containing Unicode data but without a CCSID tag of 1208.
  - New UTF-8 parameter supported by the EDIT and VIEW services
  - External Data Commands – ASCII and Unicode support
    - New EBCDIC, ASCII and UTF8 keywords for the CREATE, REPLACE, COPY, MOVE and CUT edit primary commands. Supports the situation where the external file uses a different data encoding to that of the file being edited.
    - PASTE command detects the encoding of the data in the clipboard and performs a conversion of the data copied into the edited file; New ASIS keyword can be used to prevent the PASTE command performing the conversion
    - SUBMIT command will always convert a file designated as ASCII or UTF-8 to the terminal CCSID (EBCDIC) before writing the data to the internal reader.

What's new in z/OS V2.R1 (the highlights)

- The ISPF editor FIND and CHANGE commands have been enhanced to support regular expressions.
  - Regular expression is specified as a quoted string preceded or followed by the letter "R"
  - FIND r'l[ai]ne' word = will find the words lane and line; note the replacement string for the CHANGE command cannot be specified as a regular expression.
  - Special symbols for regular expressions:
  - . (period) – matches any one character e.g. 'd.g'r matches "dig" "dug" "dog" but not "dg"
  - * (asterisk) – matches zero or more instances of the previous character e.g. r'he*ath' matches "hath" and "heath"
  - + (plus) – matches one or more instances of the previous character e.g. 'south+ern'r matches "southern" not "soutern"
  - [string] – matches any one of the characters in string e.g. 'd[iu]g'r matches "dig", "dug" not "dog"
  - [ch1-ch2] – matches any of the characters in the range between ch1 and ch2 e.g. 'm[a-z]p'r matches "map", "mop" not "m9p"
  - [^string] = matches any character other than those in string e.g. r'd[^iu]g matches "dog", not "dig", "dug"
- Display z/OS UNIX Directory List (option 3.4)
  - Entering a valid path name in the Dsname Level field will result in the display of a z/OS UNIX Directory List
- Support for global or pattern-matching characters in path name for z/OS Unix Directory List display
  - ? – match any single character
  - * - match multiple characters
  - [- open a set of single characters
  -] – close the set of single characters. Each character in the set can match a single character at the position specified.
  - e.g. /u/[il]*/[c]???????.[cdh]* - list from the sub-directories in /u all entries that have a first character of I or l, all files with an 8 character name starting with c and an extension beginning with c, d, or h
- Support for FILTER, SRCHFOR in the z/OS Unix Directory List display. Support for ASCII search strings
- Support for Block Line Commands in the z/OS Unix Directory List display. Start and end command with '//'

What's new in z/OS V2.R1 (the highlights)

- Expandable Command Field for Edit display panels
  - The EXPAND command is used to display a pop-up window with the command input field expanded to a length of 255 characters
- The edit HILITE command is changed to display in reverse video lower case character invalidly used in JCL
- Support of member counts in a PDS from 99,999 to 9,999,999
- Scroll amounts greater than 9999; now 9,999,999
- SWAPBAR display can be customized. A panel with customization options is displayed when the SWAPBAR / command is entered.
- Multiple Screen at ISPF invocation – user can define a set of logical screen that are automatically created when ISPF is invoked. ISPF profile variable is used to define a series of commands to start ISPF logical screens
- =XALL Command; provided to help terminate all logical screen with one command.
- The F (free) line command of the Data Set List Utility can now be used against a multi-volume data set to free unused space.
- ISPF Services to support JSON API.
- PDSE Version 2 Member Generations – provides the ability to work with previous generations of a member. More can be found on IBM TechDocs: http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102465
  - You can have multiple levels (generations) of a PDSE V2 member. Nice for saving archives of members, or recovering a member when needed.
  - Indicate on allocation you want to use member generations
  - Save, delete, recall,.. The member generation you want.
  - Having generations mean you need more space in the PDSE.
  - Deleting a member from ISPF, means deleting all its generations
  - IEBCOPY and IDCAMS REPO only copy primary generation (no other generations) DFSMSdss DUMP, RESTORE, COPY and HSM backups will keep all member generations.

What's new in z/OS V2.R1 (the highlights)

- JES2 New functions
  - Support 8-character job class names
  - Support JCL and system symbols
  - Support for in-stream data sets in PROC and INCLUDE statements
  - Support 64-bit storage
  - Supports new SYSTEM and SYSAFF keywords on the JOB JCL statement
- JES3 New functions
  - Support for 8-character job class name on the JOB JCL statement. (support use to be on JES3 JECL statements only - e.g. //*MAIN)
  - Support JCL and system symbols
  - Support for in-stream data sets in PROC and INCLUDE statements
  - Support 64-bit storage
  - Supports new SYSTEM and SYSAFF keywords on the JOB JCL statement (use to be on JES3 JECL statements only - e.g. //*MAIN)
  - Support to allow a user to logon to multiple systems within a Syplex using the same TSO/E user ID.
- Language Environment functions
  - Added support for exposing memory overlays that cause heap damage; new HEAPZONES runtime option
  - COBOL V5.1 support
  - OS/VS COBOL programs running under z/OS V2R1 LE are supported
    - There are no current plans to remove the OS/VS COBOL program support from z/OS LE
    - OS/VS COBOL programs cannot call or be called by COBOL V5 programs
    - For OS/VS COBOL programs running on z/OS V2R1 LE, you will receive a warning message to help identify programs that are executed
    - For main programs (like EXEC PGM= in JCL), IGZ0268W An invocation was made of OS/VS COBOL program "program-name"
    - When an OS/VS COBOL program is called as a subroutine of another program: IGZ0269W "program-lang" version "program-version" program "program-name" made a call to OS/VS COBOL program "program-name"

Elements and Functions Withdrawn from z/OS 2.1

- zFS multi-file system aggregate
- zFS cloning support
  - Discontinue using zFS clone functions, such as zfsadm clone and zfsadm clonesys commands.
- BIND 9.2.0 function as a caching-only name server
  - Use the RESOLVER function
- BookManager books – instead use Knowledge Center or PDFs
  - Knowledge Center for z/OS V2R1:
    http://www-01.ibm.com/support/knowledgecenter/SSLTBW_2.1.0/com.ibm.zos.v2r1/en/homepage.html
  - z/OS V2R1 Elements and Features PDF downloads: http://www.ibm.com/systems/z/os/zos/bkserv/v2r1pdf/
- IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V1R5
- IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V1R5

Popular (no-charge) products

- IBM Ported Tools for z/OS
  - OpenSSH and Xvfb. Updated to open source code version 6.4p1
  - IBM HTTP Server powered by Apache v8.5.5
- XML Toolkit for z/OS
- IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V6
- IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V6
- IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V6.0.1
- IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V6.0.1
- IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V7
- IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V7
- IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V7.1
- IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V7.1
- IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V8
- IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V8

Education Assistance and Vendors

- IBM Education Assistance Portal
  - http://www-01.ibm.com/support/knowledgecenter/ssw_iea/ssw_iea_welcome.html
    - IBM Education Assistant for IBM Operating Systems is a collection of multimedia educational modules designed to help you gain a better understanding of IBM software products and use them more effectively to meet your business requirements. IBM has highly secure, scalable, high-performance enterprise operating systems on which to build and deploy Internet and Java-enabled applications for enterprises deploying the latest e-business solutions.
  - Site contents includes, among other:
    - IBM Operation Systems
    - IBM System Software
    - IBM servers (Overview, Systems, Cloud, Big Data, Mobile, Software Defined Infrastructure)
    - z/OS Product Information
    - z/OS Internet Library
    - IBM Electronic Support tools and resources
- IBM Authorized Education Partners
  - Global Knowledge - http://www.globalknowledge.com/
  - AVNET - http://www.globalknowledge.com/
  - Arrow ECS Education - ecsedu.arrow.com/ibm/us/
  - Ingram Micro Training - https://ingrammicro.csod.com/default.aspx?c=ussrg
  - LearnQuest - http://www.learnquest.com/
- OTech Mainframe University
  - Open to customers; customizable classes available

Target Installation Dates

- CWS
  - **CWSTEST** **TBD**
  - **SCT2** **Saturday, July 11, 2015**
    - TBD – but may be during the day
  - **SCT1** **Saturday, July 25, 2015**
    - TBD – but may be during the day
  - **SOC** **Saturday, September 19, 2015**
    - TBD – but may be during the day
  - **SOCP** **Sunday, September 27, 2015**
    - 03.00 – 04.00: IPL SOCP (SOCP unavailable during this time-frame)
    - 04.00 - 04.30: Initial check-out by OTech z/OS-Mainframe OS Support Unit
    - 04.30 – 05.30: Check-out by OTech Mainframe Units
    - 05:30 – 07:00: Available for SOCP customers to begin their testing/validation of z/OS v2.1
  - **SOCPDR/SCT1DR** **Wednesday, July 1- July 8, 2015**

Target Installation Dates

- SCO
  - **SY0 / SY9** **TBD**
  - **SCO (SY3)** **Saturday October 3, 2015**
    - 16.00 – 17.00: IPL SY3 (SY3 unavailable during this time-frame)
    - 17.00 - 17.30: Initial check-out by OTech z/OS-Mainframe OS Support Unit
    - 17.30 – 18.00: Check-out by OTech Mainframe Units
    - 18.00 - * : Available for SCO customers to begin their testing/validation of z/OS v2.1
  - **SY3DR, SY4DR, SY5DR, SY8DR** **TBD**

Target Installation Dates

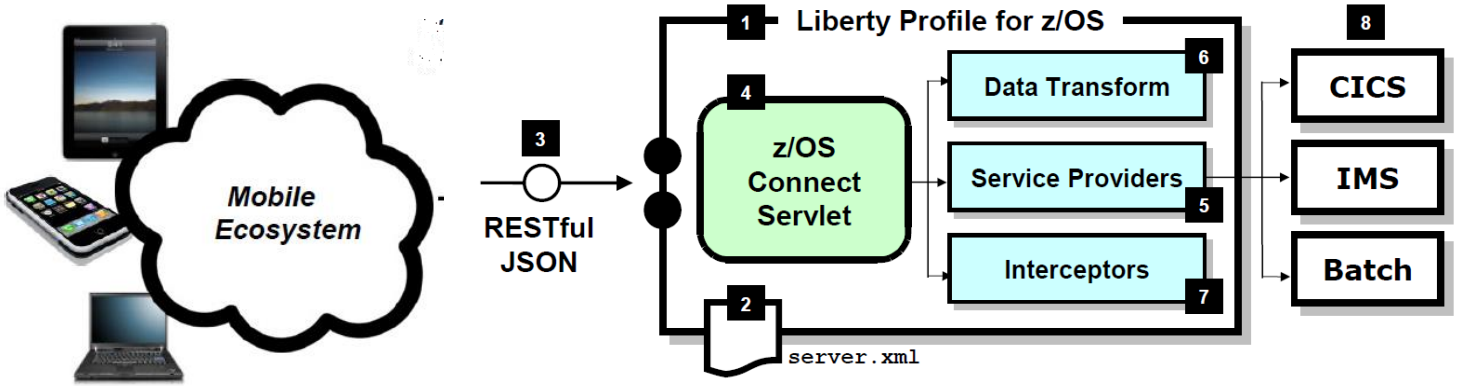
- Gold Camp
  - **SY0 / SY9** **TBD**
  - **CMC (SY8)** **Sunday, August 30, 2015**
  - **Duplex (SY2/SY7)** **Sunday, September 13, 2015**
    - 05.00 – 06.00: IPL Duplex (Duplex unavailable during this time-frame)
    - 06.00 - 06.30: Initial check-out by OTech z/OS-Mainframe OS Support Unit
    - 06.30 – 07:30: Check-out by OTech Mainframe Units
    - 07:30 - * : Available for Duplex customers to begin their testing/validation of z/OS v2.1
  - **Triplex (SY4/SY5/SY6)** **Sunday, September 27, 2015**
    - 05.00 – 06.00: IPL Triplex (Triplex unavailable during this time-frame)
    - 06.00 - 06.30: Initial check-out by OTech z/OS-Mainframe OS Support Unit
    - 06.30 – 07:30: Check-out by OTech Mainframe Units
    - 07:30 - * : Available for Triplex customers to begin their testing/validation of z/OS v2.1
  - **SY3DR, SY4DR, SY5DR, SY8DR** **TBD**

Target Installation Dates

- Vacaville
  - **HWDR** **TBD**
  - **TST2** **Monday, October 12, 2015**
  - **TEST** **Monday, October 26, 2015**
  - **S1S1** **Saturday, November 7, 2015**
    - 12.01 – 01.00: IPL (S1S1 unavailable during this time-frame)
    - 01.00 - 01.30: Initial check-out by OTech z/OS-Mainframe OS Support Unit
    - 01.30 – 02.00: Check-out by OTech Mainframe Units
    - 02.00 -* : Available for S1S1 customers to begin their testing/validation of z/OS v2.1
  - **S2S2** **Saturday, November 21, 2015**
    - 12.01 – 01.00: IPL (S2S2 unavailable during this time-frame)
    - 01.00 - 01.30: Initial check-out by OTech z/OS-Mainframe OS Support Unit
    - 01.30 – 02.00: Check-out by OTech Mainframe Units
    - 02.00 -* : Available for S2S2 customers to begin their testing/validation of z/OS v2.1
  - **S1S1DR/S2S2DR** **TBD**

z/OS Connect: Opening up z/OS assets to the Cloud and Mobile Worlds

- z/OS Connect is about getting REST and JSON into your environment in a way that enables you to best take advantage of the assets that exist there:



REST – Representation State Transfer… the use of HTTP URLs that map to a 'service' such as 'query account' or update data'.

JSON – JavaScript Object Notation… a standard of representing data as a set of name/value pairs. This is passed back and forth along with REST request/responses

1. z/OS Connect is software function that runs in Liberty Profile for z/OS
2. z/OS Connect is described and configured in the Liberty server.xml file
3. z/OS Connect is designed to accept RESTful URIs with JSON data payloads
4. One part of z/OS Connect is a servlet that runs in Liberty Profile z/OS
5. A 'Service Provider' is software that provides the connectivity to the backend system
6. z/OS Connect provides the ability to transform JSON to the layout required by backend 'interceptors'.
7. 'Interceptors' are callout points where software can be invoked to do things such as SAF and SMF activity
8. Initially the backend systems supported will be CICS, IMS, and Batch

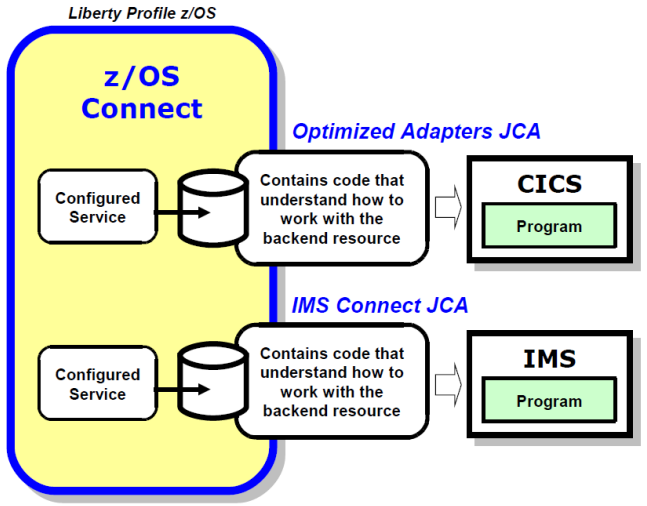
z/OS Connect: Opening up z/OS assets to the Cloud and Mobile Worlds

- We already have ways of exposing z/OS resources through REST APIs and using JSON … most notably:
- Roll Your Own
  - REST is essentially HTTP, and JSON can be handled by WebSphere Application Server or Liberty … so you could write your own handler to take in REST/JSON and connect to backend resources
- CICS
  - CICS and the Mobile Feature Pack provides a mechanism for a CICS region to consume REST/JSON and provide access to CICS programs
- IBM Worklight
  - A comprehensive Mobile Enterprise Application Platform (MEAP) … but Worklight is not supported on z/OS (is supported on Enterprise Linux)

- What z/OS Connect provides is a common and consistent REST/JSON interface to the Mainframe.

z/OS Connect: Opening up z/OS assets to the Cloud and Mobile Worlds

- Why z/OS Connect?
- This represents another component to configure and maintain in your environment. So what value does it bring?
  - Provides a common and consistent entry point for mobile access to one or many backend systems
  - Java, so runs on specialty engines
  - Shields backend systems from requiring awareness of RESTful URIs and JSON data formatting
  - Provides point for authorization of user to invoke backend service
  - Provides point for capturing usage information using SMF
  - Simplifies front-end functions by allowing them to pass RESTful and JSON rather than be aware of or involved in data transformation
  - A discovery function is provided to allow developers to query for a list of configured services, and drill down for details on a given configured service
  - z/OS Connect accepts JSON data, but then needs to convert that to the data format required by the backend program. Data conversion provides that
  - The interceptor framework provides a way to call code to do pre-invoke work and then again to do post-invoke work
  - You provide definitions for each service you wish to expose using z/OS Connect



To connect to a backend CICS region, for example, you need to specify which CICS region and what mechanism is to be used to connect

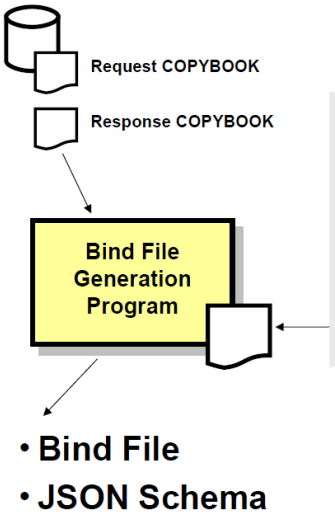
A 'service provider' definition provides that information to z/OS Connect

Configured services are tied to service provider definitions to complete the circuit

Multiple service providers are supported, as illustrated here

z/OS Connect: Opening up z/OS assets to the Cloud and Mobile Worlds

- Why z/OS Connect?
  - Bind files are generated with a supplied utility. Bind files provide z/OS Connect with knowledge of how JSON maps to the target data structure




```
//JOB ...
//INPUT.SYSUT1 DD *
PDSLIB=ZCONNECT.CNTL
REQMEM=REQDATA
RESPMEM=RESPDATA
STRUCTURE=(requestData,responseData)
JSON-SCHEMA-REQUEST=/u/user1/schema/GETCUSTC_request.json
JSON-SCHEMA-RESPONSE=/u/user1/schema/GETCUSTC_response.json
PGMINT=COMMAREA
PGMNAME=GETCUSTC
WSBIND=/u/user1/bindfiles/GETCUSTC.bnd
/*
```

The bind file provides the JSON-to-COPYBOOK mapping; the JSON schema files are used for the `getRequestSchema` and `getResponseSchema` methods

- You *could* enable Mobile access without z/OS Connect

z/OS Connect simplifies and makes the environment more consistent and manageable

For more information (PDF, and Videos):
http://www-01.ibm.com/support/docview.wss?uid=tss1wp102439

z/OS UI features

Check out some of the User Interface features and products available for z Systems

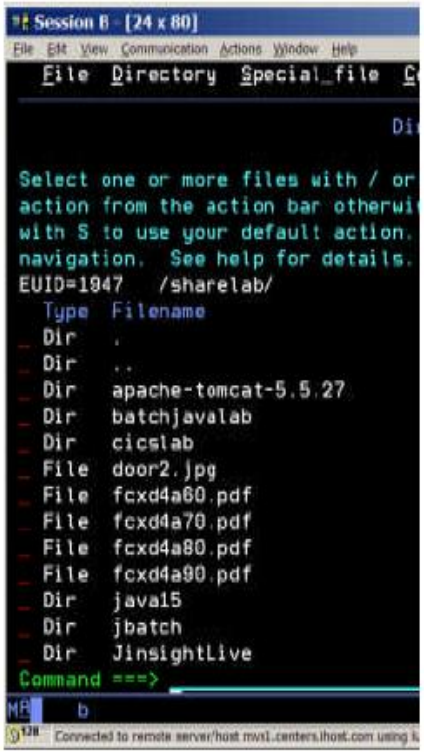
- Explorer products for z Systems
  - z/OS Explorer http://www-01.ibm.com/software/htp/cics/ibmexplforzos/
  - CICS Explorer http://www-03.ibm.com/software/products/en/cics-explorer
  - WebSphere MQ Explorer http://www-01.ibm.com/software/integration/wmq/explorer/
- Problem Determination Tools Studio http://www-01.ibm.com/software/awdtools/deployment/pdtplugins/
  - Application Performance Analyzer
  - Debug Tool
  - Fault Analyzer
  - File Manager
  - Workload Simulator
- ZOSMF - z/OS management

z/OS UI features

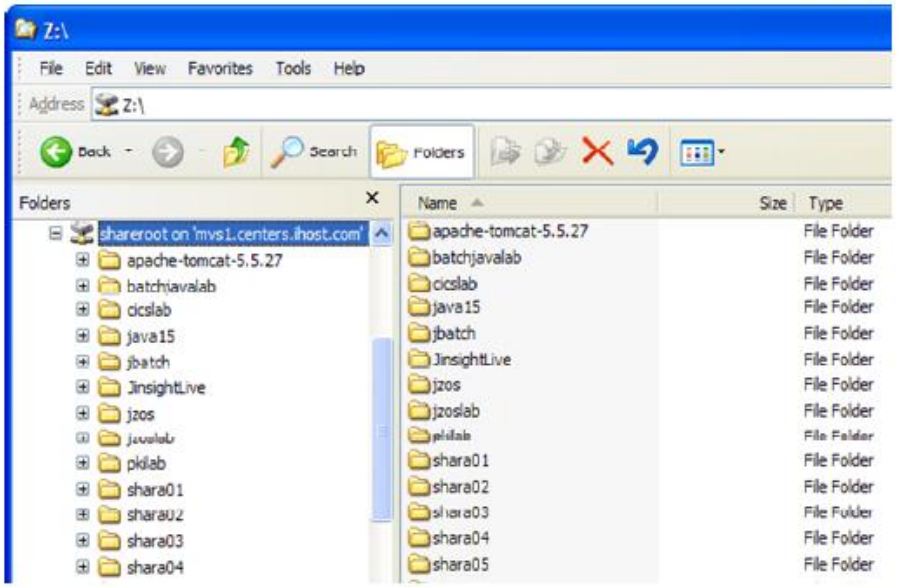
Check out some of the User Interface features and products available for z Systems

- z/OS SMB Server

z/OS:



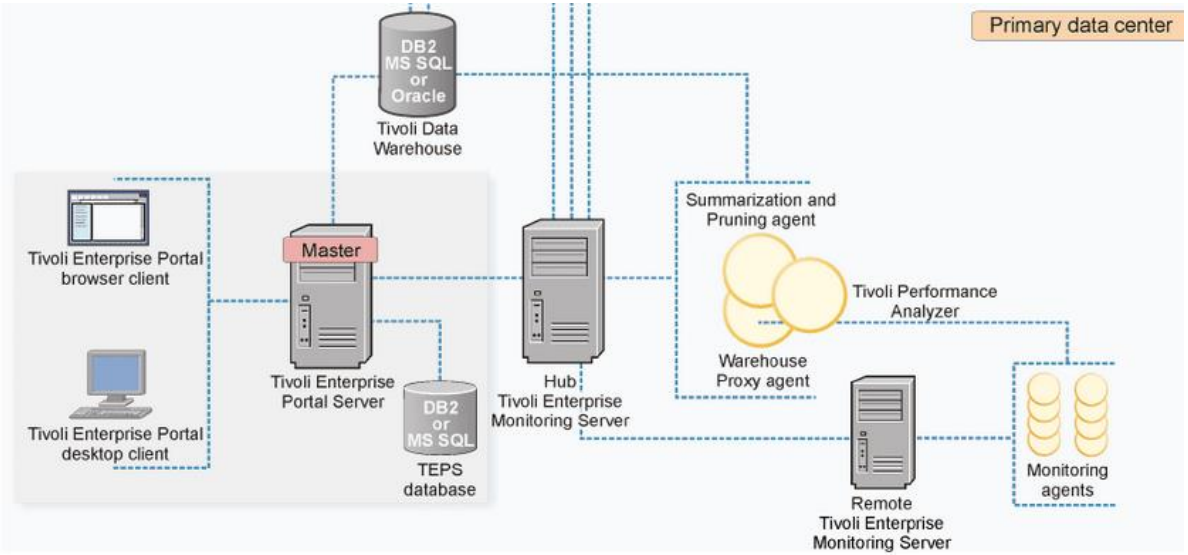
Your workstation:



Monitors, Dashboards and Analytics

A quick look at tools coming your way…

- Tivoli Enterprise Portal Server (TEPS) and Dashboard Application Services Hub (DASH)



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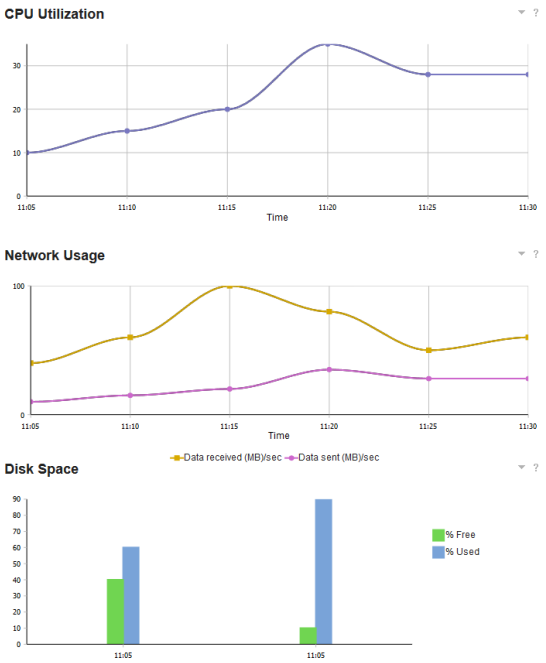
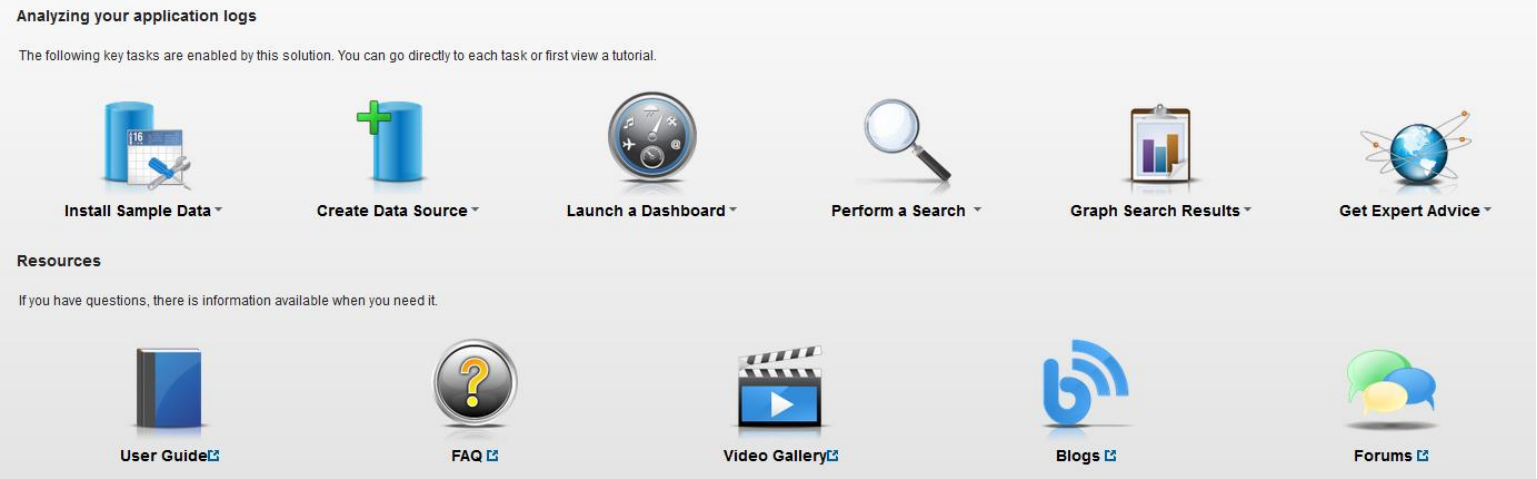


Monitors, Dashboards and Analytics

A quick look at tools coming your way…

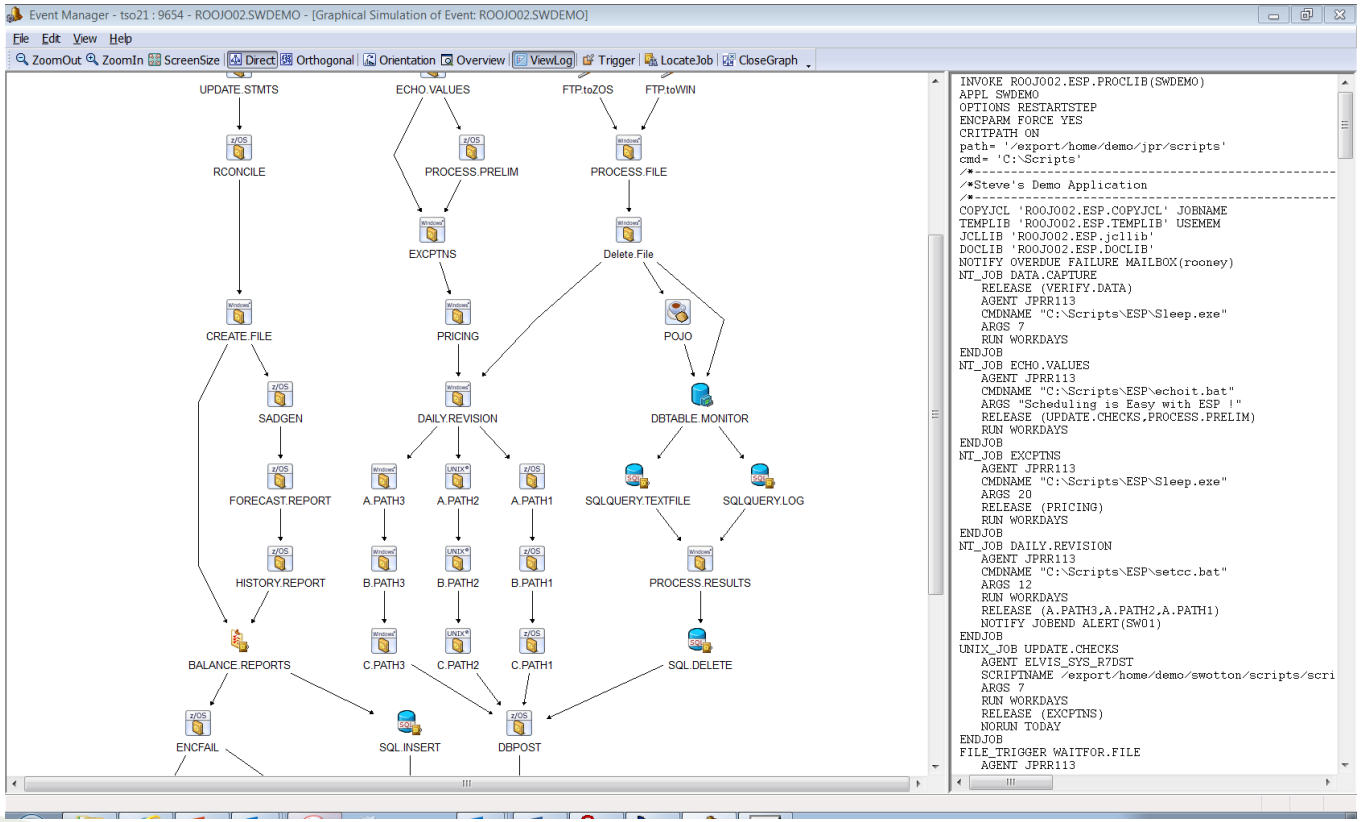
- IBM Operations Analytics for Systems z



Monitors, Dashboards and Analytics

A quick look at tools coming your way….

- ESP Workstation



Monitors, Dashboards and Analytics

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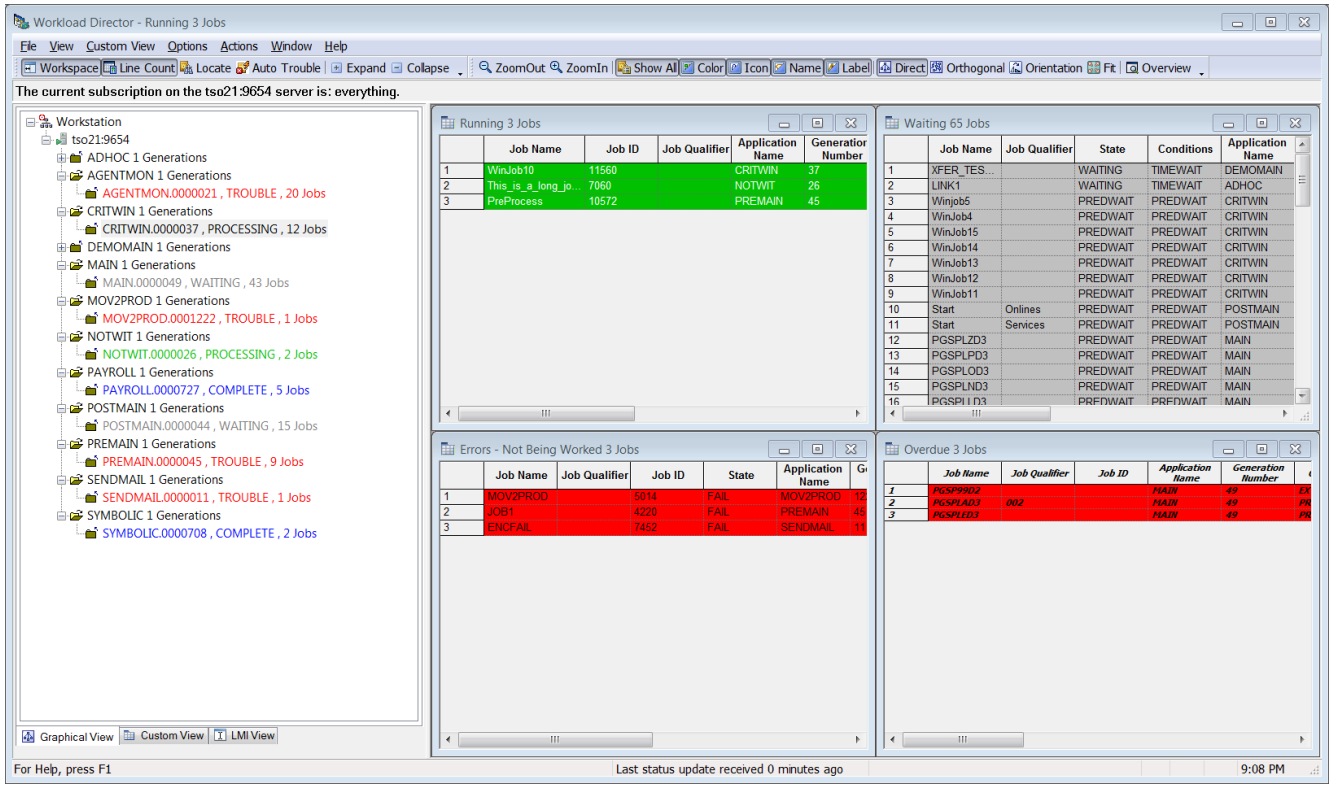
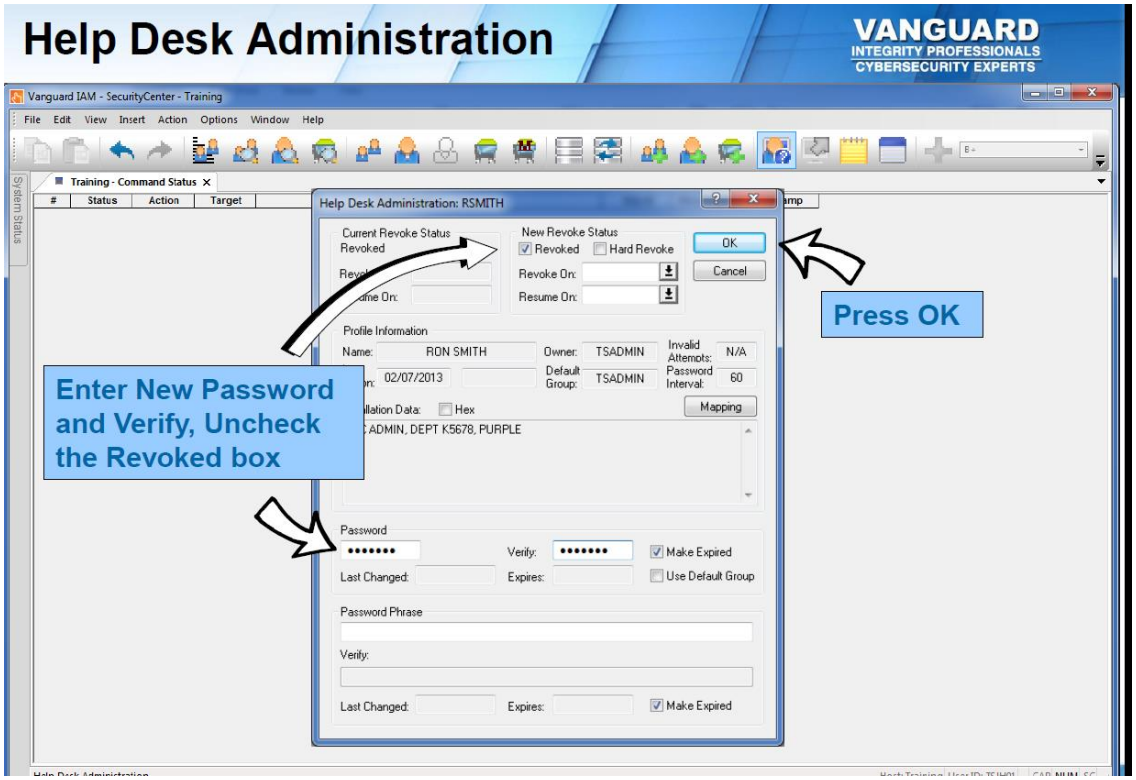
- ESP Workstation



Monitors, Dashboards and Analytics

A quick look at tools coming your way….

- Vanguard Security Center (Windows-GUI based RACF Administration Tool)



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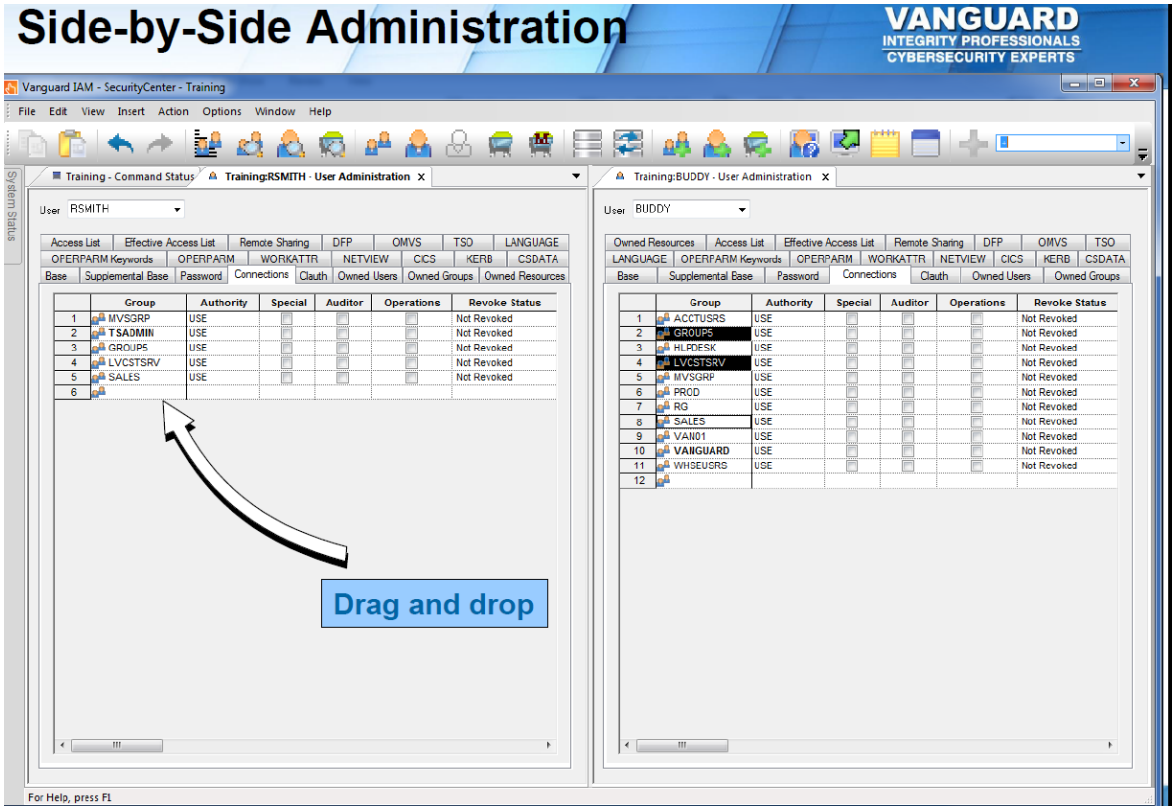

Monitors, Dashboards and Analytics

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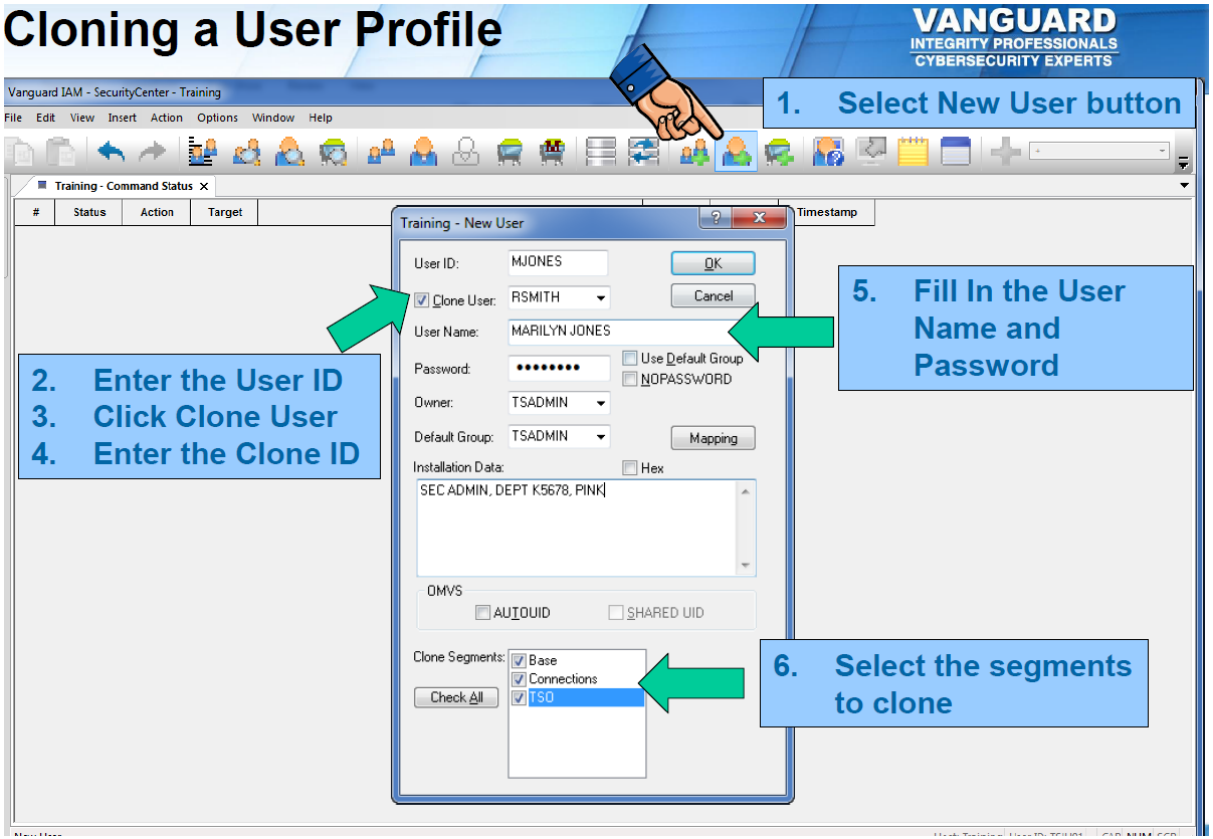
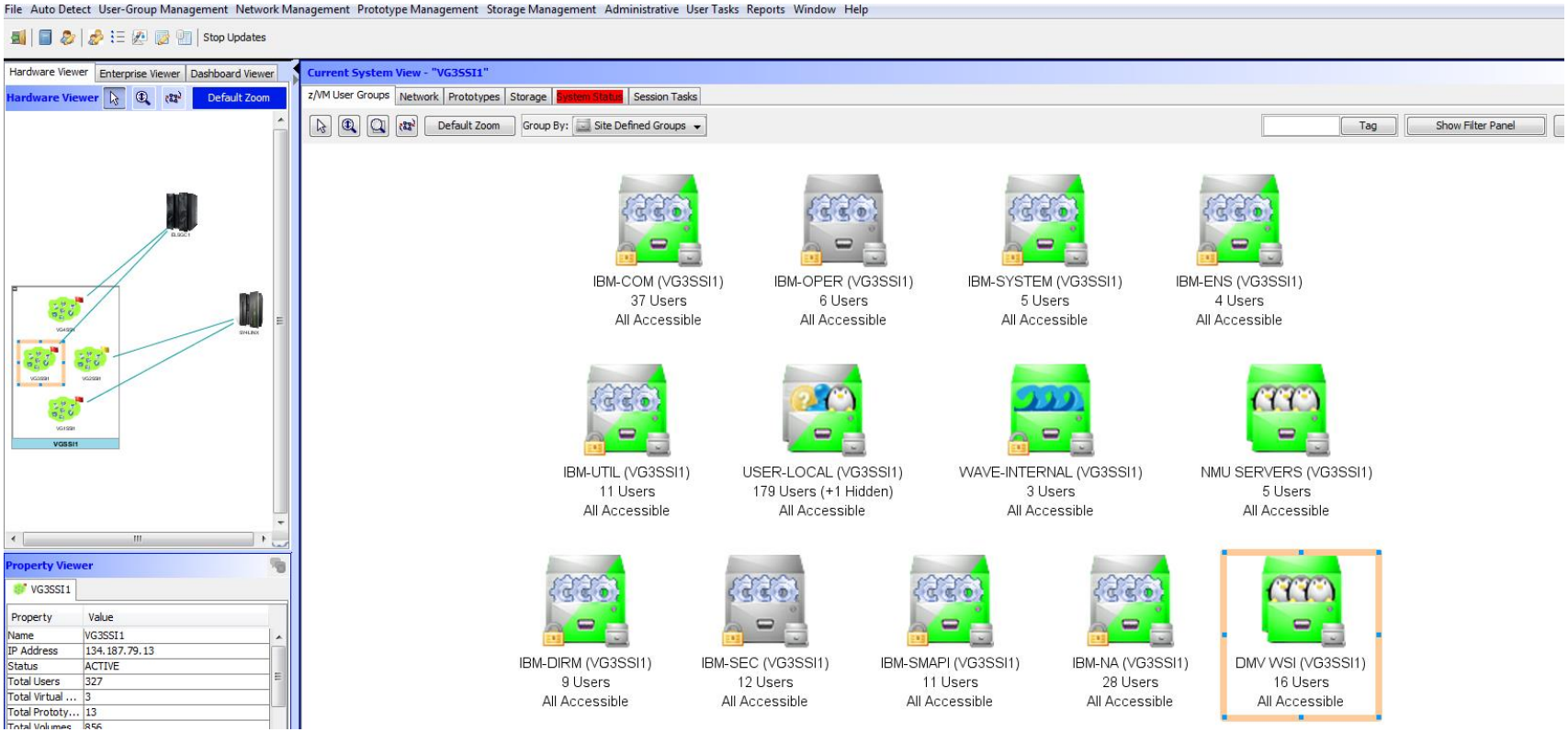


Monitors, Dashboards and Analytics

A quick look at tools coming your way….

- IBM Wave – SmartCloud Provisioning, SmartCloud Management



Questions

Thank You!