



Konferencja Optymalny znaczy najlepszy

czyli, co nam dają nowe wersje oprogramowania?

Tomasz Węśławowicz
Co nowego w z/OS?

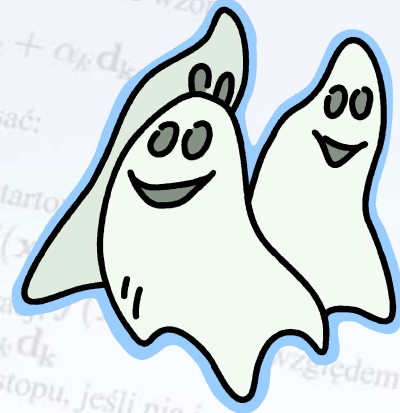
18-19 listopada 2010
Naruszewo, hotel Szkockie Ranczo

Agenda

- End of Support Date
- Korzyści z oprogramowania
- Nowości w z/OS

Tematy wybrano & narracja w duchu

DOSTĘPNOŚCI



Dostępność

- According to the Information Technology Infrastructure Library (ITIL), availability is “the ability of a configuration item or IT service to perform its agreed function when required.”
- **OPTYMALNY znaczy DOSTĘPNY**
- Reliability, maintainability, serviceability, performance, and security **determine** availability.

End of Support Date

Migracja – operacja pewna, szybka i przetestowana, zatem testy i środowisko przed-produkcyjne (pre-produkcja)

Po upgrade do 'nowego software' następuje tzw. Faza Eksploatacji nowych cech

z/OS End of Support

- http://www-01.ibm.com/software/support/lifecycle/index_z.html

View	Product name (**Indicates comments/exception)	Version Rel./Mod.	Policy type ¹	Product ID	General availability ²	End of Support ³
<input type="checkbox"/>	z/OS	1.12.x	S	5694-A01	24 Sep 2010	
<input type="checkbox"/>	z/OS	1.11.x	S	5694-A01	25 Sep 2009	
<input type="checkbox"/>	z/OS	1.10.x	S	5694-A01	26 Sep 2008	30 Sep 2011
<input type="checkbox"/>	z/OS	1.9.x	S	5694-A01	28 Sep 2007	30 Sep 2010
<input type="checkbox"/>	z/OS	1.8.x	S	5694-A01	29 Sep 2006	30 Sep 2009
<input type="checkbox"/>	z/OS	1.7.x	S	5694-A01	30 Sep 2005	30 Sep 2008
<input type="checkbox"/>	z/OS	1.6.x	S	5694-A01	24 Sep 2004	30 Sep 2007

DB2 End of Support

- http://www-01.ibm.com/software/support/lifecycle/index_d.html

View	Product name (*Indicates comments/exception)	Version Rel./Mod.	Policy type ¹	Product ID	General availability ²	End of Support ³
<input type="checkbox"/>	DB2 for z/OS	10.1.0	S	5605-DB2	22 Oct 2010	
<input type="checkbox"/>	DB2 for z/OS	9.1.x	S	5635-DB2	16 Mar 2007	
<input type="checkbox"/>	DB2 for z/OS	8.1.x	S	5625-DB2	26 Mar 2004	30 Apr 2012

CICS End of Support

- http://www-01.ibm.com/software/support/lifecycle/index_c.html

View	Product name (*Indicates comments/exception)	Version Rel./Mod.	Policy type ¹	Product ID	General availability ²	End of Support ³
<input type="checkbox"/>	CICS Transaction Server for z/OS V2.2	2.2.x	0	5697-E93	25 Jan 2002	30 Apr 2008
<input type="checkbox"/>	CICS Transaction Server for z/OS V2.3	2.3.x	0	5697-E93	19 Dec 2003	30 Sep 2009
<input type="checkbox"/>	CICS Transaction Server for z/OS V3.1	3.1.x	0	5655-M15	25 Mar 2005	
<input type="checkbox"/>	CICS Transaction Server for z/OS V3.2	3.2.x	0	5655-M15	29 Jun 2007	
<input type="checkbox"/>	CICS Transaction Server for z/OS V4.1	4.1.x	0	5655-S97	26 Jun 2009	

MQ End of Support

- http://www-01.ibm.com/software/support/lifecycle/index_w.html

View	Product name <small>(**Indicates comments/exception)</small>	Version Rel./Mod.	Policy type ¹	Product ID	General availability ²	End of Support ³
<input type="checkbox"/>	WebSphere MQ for z/OS	7.0.1	0	5655-R36	25 Sep 2009	
<input type="checkbox"/>	WebSphere MQ for z/OS	7.0.0	0	5655-R36	27 Jun 2008	30 Sep 2011
<input type="checkbox"/>	WebSphere MQ for z/OS	6.0.x	0	5655-L82	24 Jun 2005	30 Sep 2011
<input type="checkbox"/>	WebSphere MQ for z/OS	5.3.1	0	5655-F10	28 Mar 2003	30 Apr 2008
<input type="checkbox"/>	WebSphere MQ for z/OS	5.3.0	0	5655-F10	28 Jun 2002	31 Oct 2005

Korzyści z oprogramowania

Praca administracyjna to monitorowanie,
kastomizowanie, szukanie okazji do optymalizacji
oraz reagowanie na zdarzenia –
a nie tylko reagowanie na zdarzenia (zazwyczaj po
wystąpieniu zdarzenia).

Dostępność

- Korzyści z oprogramowania

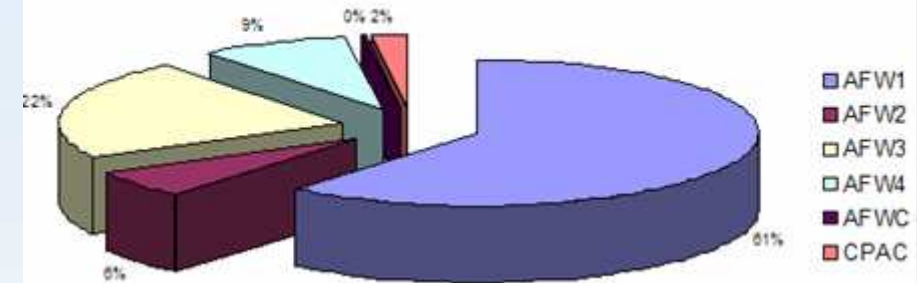
- TDS (Tivoli Decision Support for zOS) (zachęcić)

- zSecure (wprowadzić pojęcie RPA)

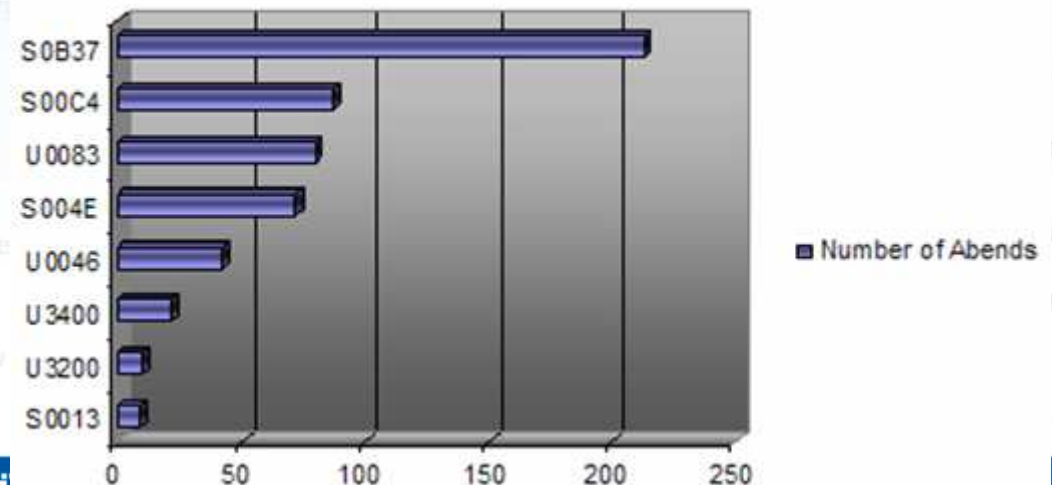
- Tivoli Netview, Tivoli System Automation (poinformować)

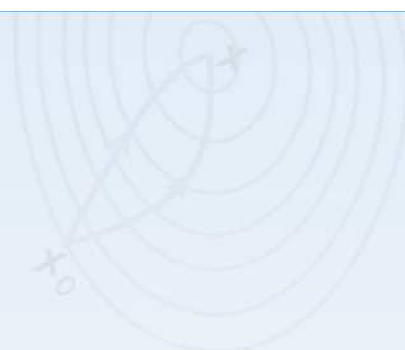
- ICFRU, TACM (uczulić)

DAE DUMPS by LPAR



DAE Analysis





Nowości w z/OS

- Algoritm można zapisać:
1. Wybierz punkt startowy x_0
 2. $d_k = -(\nabla^2 f(x_k))^{-1} \cdot \nabla f(x_k)$
 3. $x_{k+1} = x_k + d_k$
 4. Sprawdź kryterium stopu, jeśli nie jest spełniony

Algoritm w tym przypadku polega, analogicznie jak w przypadku punktu startowego. Dla danego punktu obliczany jest kierunek na jego podstawie minimalizacja kierunkowa, tzn. obliczamy:

$$f(x_k + \alpha_k d_k) = \min_{\alpha > 0} f(x_k + \alpha d_k)$$

Kolejny krok obliczany jest ze wzoru:

$$x_{k+1} = x_k + \alpha_k d_k$$

Algoritm można zapisać:

1. Wybierz punkt startowy x_0
2. $d_k = -(\nabla^2 f(x_k))^{-1} \cdot \nabla f(x_k)$
3. dokonaj minimalizacji $f(x_k + \alpha d_k)$ względem α .
4. $x_{k+1} = x_k + \alpha_k d_k$
5. Sprawdź kryterium stopu, jeśli nie jest spełniony - wykonaj ponownie

Przy implementacji metody Newtona, przy określaniu kierunku poszukiwania, przy obliczaniu odwrotności hessianu $(\nabla^2 f(x_k))^{-1}$, warto skorzystać z numerycznego rozwiązywania układów równań liniowych:

$$\nabla^2 f(x_k) \cdot d_k = -\nabla f(x_k)$$

w celu obliczenia wartości wektora d_k .

$$\bullet \quad \|\nabla f(x_k)\|$$

W danym punkcie początkowym wybierany jest punkt startowy $x_0 \in D$ w którym jest zdefiniowany kierunek poszukiwania $d_k \in D$. Punkt w następnym kroku obliczany jest ze wzoru:

$$x_{k+1} = x_k + d_k$$

W celu sprawdzenia warunku stopu algorytmu, całe postępowanie jest powtarzane. Kierunek poszukiwania w metodzie Newtona wykorzystywane jest rozwinięcie Taylora funkcji celu względem danego punktu x :

$$f(x + \delta) = f(x) + \nabla f(x)^T \delta + \frac{1}{2} \delta^T \nabla^2 f(x) \delta + O(\delta^2)$$

gdzie $\nabla f(x)$ jest wektorem gradientu funkcji, $\nabla^2 f(x)$ jest macierzą Hessego, zaś $O(\delta^2)$ jest resztą rzędu drugiego.

W celu przybliżenia przez aproksymację kwadratową F_1 względem punktu x_k :

$$F_1(x) = f(x_k) + \nabla f(x_k)^T \delta + \frac{1}{2} \delta^T \nabla^2 f(x_k) \delta$$

gdzie $\delta = x - x_k$ mamy aby zminimalizować $F_1(x)$ należy znaleźć δ takie, aby $\nabla F_1(x) = 0$.

IBM Health Checker for z/OS

- Available since z/OS R7 (and also was a web deliverable back to z/OS R4)
- Consists of two parts:
 - Framework – interface that allows you to run and manage checks. Shipped as part of z/OS BCP.
 - Individual Checks – programs that examine specific settings or values for potential problems
 - Shipped and owned by the component, element, or product.
 - Checks are provided by some ISVs, and you can write your own!
- Taka SZYNA dla check-ów 😊

IBM Health Checker for z/OS

- Individual checks look for component, element, or product specific z/OS settings and definitions, checking for potential problems. The specific component or element owns, delivers, and supports the checks.
- You may have had your system configured a certain way for a long time, and now, IBM Health Checker for z/OS is telling you there are exceptions!
 - It's worth it to look over exceptions and make an evaluation. YOU need to decide what is appropriate for your system.

IBM Health Checker for z/OS

- Just because you get an exception, doesn't mean that there is a problem to report to IBM. Exceptions are meant to tell you about potential impacts.
- When you get an exception, it will be issued to:
 - Message buffer – you can view via SDSF or HZSPRINT
 - WTO message – by default. Format is HZS message number and qualified check name, followed on the next line by the check specific, 'actual' exception message id and text.
- No automatic correction of exceptions is done by IBM Health Checker for z/OS. ☹️

Predictive Failure Analysis

- Unlike typical problems or hard failures that have a clear start and a clear cause, soft failures are caused by abnormal, but allowable behavior.
- A classic example is the exhaustion of common storage usage. A low priority, authorized task obtains common storage, but obtains significantly more common storage than usual. Then, a critical authorized system component fails while attempting to obtain a normal amount of common storage. Although the problem occurs in the second critical component, this second component is actually the OFIARA. The first component caused the problem and is considered the NIKCZEMNIK.

Predictive Failure Analysis Przewidywacz

- Soft failures are abnormal yet allowable behaviors that can slowly lead to the degradation of the operating system. To help eliminate soft failures, z/OS has developed Predictive Failure Analysis (PFA).
- PFA is designed to predict if a soft failure will occur sometime in the future and to identify the cause while keeping the base operating system components stateless.
- PFA is intended to detect abnormal behavior early enough to allow you to correct the problem before it affects your business.

Predictive Failure Analysis Przewidywacz

- PFA uses remote checks from IBM Health Checker for z/OS to collect data about your installation.
- It warns you by issuing an exception message when a system trend might cause a problem.
- To help you correct the problem, it identifies a list of potential issues.

Predictive Failure Analysis Przewidywacz

- Predictive Failure Analysis (PFA) provides the following remote checks:

- PFA_COMMON_STORAGE_USAGE
- PFA_LOGREC_ARRIVAL_RATE
- PFA_VIRTUAL_STORAGE_USAGE
- PFA_MESSAGE_ARRIVAL_RATE

- PFA to taka SZYNA dla 'przewidywaczy' 😊

Health Checker vs PFA

- ‘Sprawdzacz’ kontra ‘Przewidywacz’

– Uzupełniają się 😊

IBM z/OS Management Facility

- z/OSMF
- Design goals: Simplify, optimize and modernize system programmer tasks.
- Assist in reducing the number of manual steps required to perform a task, and where possible, to provide and end-to-end guidance, preferably automated, and always with the end user task in mind.
- To również SZYNA 😊

IBM z/OS Management Facility

- With z/OSMF, you manage solutions rather than specific IBM products.
- **z/OSMF Functions**
 - Incident Log
 - Configuration Assistant for the z/OS
 - Communications Server
 - WLM Policy Editor (z/OSMF V1.12)
 - Resource Monitoring (z/OSMF V1.12)
 - Administration

z/OSMF – Incident Log

- When a system problem occurs (SVC abend dump and user initiated SVC abend dumps), additional data from the system is collected, including snapshots of OPERLOG and LOGREC) and the z/OSMF task ties them all together into something we call incidents.
- We collect 30 minutes of Operlog, 1 hour of Logrec detail, and 24 hours of Logrec summary. Later you can use this information to review all the incidents on your sysplex, drill down on those to see what they are and what data is associated with them. You can also FTP the documentation to IBM, ISV or elsewhere for further debugging.

z/OSMF – Incident Log

- **z/OSMF Problem Determination – Incident Log**
 - Display list of incidents (Filter/ sort/ configure/ delete)
 - Display properties – view list of diagnostic data, logs
 - Set properties: associate problem number and tracking id (R11), new fields and more customization capabilities (R12)
 - Send diagnostic data via FTP: Manage FTP jobs status and define FTP Profiles (firewall) (R11), support for encrypted and parallel FTP (R12)
 - Send additional user-defined diagnostic data
 - Enhance scope of diagnostic log snapshots created (R12)
 - Allow next dump

z/OSMF – Incident Log benefits

	Without z/OSMF**	With z/OSMF**
Recognizing a system-detected (dumped) problem occurred	Requires 5 to 7 manual steps, plus skill on effective use of IPCS to extract data from each of the dumps. Up to 5-6 minutes	Display in one click. Greatly reduced skill required As little as five seconds
Collecting and sending diagnostic data	Requires 7 to 15 manual steps, plus skill to locate the right log files, build and run JCL jobs, rename the output datasets, and use an ftp job to send the different data sets to the target destination. Up to 20 minutes Up to 30 minutes for sysplex components	Send the material in eight clicks: <ul style="list-style-type: none"> ▪ Select the incident materials ▪ Specify the FTP destination information ▪ Indicate send the material ▪ Check whether the information was FTP'd successfully As little as 30 seconds
Allow new dump to be taken for the same symptom	Requires 7 to 12 manual steps, plus skill on effective use of IPCS to locate the dump data set, obtain the symptom string, get into the IPCS DAE display, locate the matching symptom string (could be non-trivial) and indicate TakeNext on the IPCS display Up to 15 minutes	Make the update happen in three mouse clicks As little as 10 seconds

** Based on IBM laboratory results, your results may vary

z/OSMF

The screenshot displays the IBM z/OS Management Facility (z/OSMF) web interface in Mozilla Firefox. The browser title is "IBM z/OS Management Facility - Mozilla Firefox: IBM Edition". The address bar shows the URL "https://mysystemz:32208/zosmf/". The page title is "IBM z/OS Management Facility" and the subtitle is "Welcome zmaadm". There is a "Log out" link in the top right corner.

The main content area is titled "Incident Log" and contains a table of incidents. The table has columns for "Incident Type", "Description", "Problem Number", "Tracking ID", and "Notes". A "Refresh" button is located in the top left of the incident log area. A "Select incident, get popup with actions" callout points to a row in the table. A "Many fields, set tracking IDs" callout points to the "Tracking ID" column. An "Add comments" callout points to the "Notes" column. A "Allow Next Dump..." callout points to a row in the table.

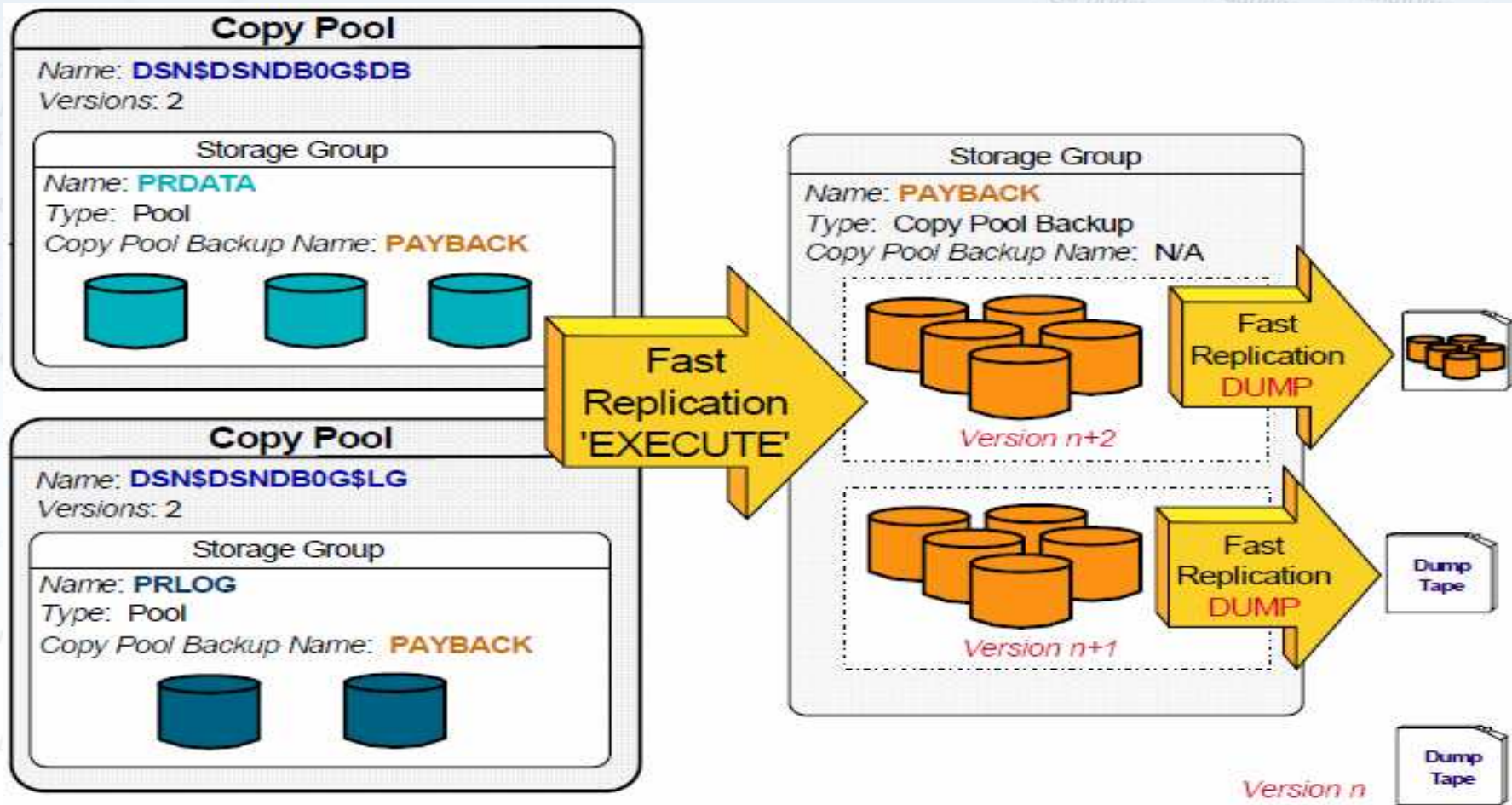
Incident Type Filter	Description Filter	Problem Number Filter	Tracking ID Filter	Notes Filter
<input type="checkbox"/>	PID=SCPX1,ISSUER=BPXMPICE S,REASON=00080005		XR3265746	Screen team analyzing
<input type="checkbox"/>	PID=SCPX1,ISSUER=BPXMPICE S,REASON=04130007			
<input type="checkbox"/>	ABEND S00C3 COMMON WEBSHERE Z/OS, INQ200,ISSUER=BBORADMP,ABEND E BB000UTP	12346,001,001	8662(12)	Received ++AFAR
<input type="checkbox"/>	ABE BSPPHERE Z/OS, INQ200,ISSUER=BBORLEXT,ABEND IAME NOT KNOWN		DB: 5668, Ser: XR-126	Application problem
<input type="checkbox"/>	ABE X,COMPID=SCPX1,ISSUER=BPXMPICE -S0EC3,REASON=04130007			
<input type="checkbox"/>	ABE X,COMPID=SCPX1,ISSUER=BPXMPICE -S0EC3,REASON=00080005			
<input type="checkbox"/>	ABEND S00C4 COMPON=WEBSPPHERE Z/OS, COMPID=5655N0200,ISSUER=BBORFRR,ABEND IN BB00SREF			
<input type="checkbox"/>	ABEND S00C1 COMPON=ZTT TC=ZTTABND,ISSUER=ZTTVDUMP - ABEND FOR PDWB 1			

Total: 8, Filtered: 8, Selected: 0
Refresh Last refresh: Jan 21, 2010 5:25:52 PM local time (Jan 21, 2010 11:25:52 PM GMT)

Continuous Data Protection for DB2

- **Application based CDP for DB2 on System z**
 - Joint solution between DFSMS and DB2
- **Solution based on Point-in-Time (PIT) backup copies combined with DB2 logging**
 - Eliminate need for DB2 Log Suspend
 - Only object-level creates, extends, renames and deletes are suspended
 - Hundreds of volumes backed up in a matter of minutes
 - Managed tape copies created from PIT disk copies
 - Recovery at the System or Tablespace level
 - Based on DFSMSHsm Fast Replication Support

Continuous Data Protection for DB2



REALLOCATE

- **SETXCF START,REALLOCATE**

- Well-received, widely exploited for CF structure management

- For example, to apply “pure” CF maintenance:

- SETXCF START,MAINTMODE,CFNAME=cfname
- SETXCF START,REALLOCATE to move structures out of CF
- Perform CF maintenance
- SETXCF STOP,MAINTMODE,CFNAME=cfname
- SETXCF START,REALLOCATE to restore structures to CF

REALLOCATE – z/OS 1.12

- **DISPLAY XCF,REALLOCATE,option**
- **TEST option**
 - Provides detailed information regarding what REALLOCATE would do if it were to be issued – SYMULACJA PROCESU REALLOCATE
 - Explains why an action, if any, would be taken
- **REPORT option**
 - Provides detailed information about what the most recent REALLOCATE command actually did do
 - Explains what happened, but not why

REALLOCATE TEST Example

```
STRUCTURE(S) REALLOCATED SUCCESSFULLY
```

```
STRNAME: BIGONE
```

```
INDEX: 38
```

```
SIMPLEX STRUCTURE ALLOCATED IN CF(S) NAMED: LF02
```

```
CFNAME      STATUS/FAILURE REASON
```

```
-----  
LF01        PREFERRED CF 1
```

```
INFO110: 00000003 AC007800 00010011
```

```
LF02        PREFERRED CF ALREADY SELECTED
```

```
INFO110: 00000003 AC007800 00020011
```

```
1 REALLOCATE STEP(S): REBUILD
```

```
-----  
STRUCTURE(S) ALREADY ALLOCATED IN PREFERRED CF(S)
```

```
.....
```

REALLOCATE REPORT Example

STRUCTURE(S) REALLOCATED SUCCESSFULLY

STRNAME: CACHE01 INDEX: 2

3 REALLOCATE STEP(S): KEEP=OLD, REBUILD, DUPLEX

COMPLETED ON SYSTEM SY1 ON 08/07/2009 AT 10:31:40.01.

STRNAME: CACHE02 INDEX: 6

3 REALLOCATE STEP(S): KEEP=OLD, REBUILD, DUPLEX

COMPLETED ON SYSTEM SY1 ON 08/07/2009 AT 10:31:53.03.

STRUCTURE(S) ALREADY ALLOCATED IN PREFERRED CF(S)

STRNAME: IXC2 INDEX: 22

EVALUATED ON SYSTEM SY1 ON 08/07/2009 AT 10:32:32.60.

REALLOCATE processes structures in INDEX order

Inne Nowinki

- **New Vary CU Command**

- Recent technologies, like HyperPAV and multiple subchannel sets, have created scenarios where devices attached to a logical control unit are no longer in a consecutive numerical range.
- Vary commands specify individual or ranges of devices.
- Nonconsecutive device numbers complicate command syntax.
- **Solution: Use control unit number as the point of control for the Vary command.**

```
Vary CU { (cunumber) }, { ONLINE[, UNCOND[, FORCE] | , SHR | , RESET] }
                                     { OFFLINE[, FORCE] }
                                     { AUTOSWITCH | AS [, ON | OFF] }
                                     { UNAVAILABLE | UNAVAIL }
                                     { AVAILABLE | AVAIL }
Vary CU { (cunumber, chpid) }, { ONLINE[, FORCE] }
                                     { OFFLINE[, UNCOND | , FORCE] }
```


Inne Nowinki

- **Auto-Reply to WTORs**

- Parmlib member defines a reply value and a time delay for a WTOR.
The system issues the reply if the WTOR has been outstanding longer than the delay

- Very simple automation

- Can be used during NIP !

- **DFSORT**

- New DYNAPCT installation and run-time option allows you to specify additional work data sets to be used if more workspace is required

- **Unique Temporary Data Set Names - ALLOCxx**

Inne Nowinki

- **IDCAMS DELETE of all library members (either PDS or PDSE) - DELETE A.B(*)**
- **IDCAMS Delete Masking**
 - A mask-entry-name (also called a filter key) can have two consecutive asterisks (**) or one or more percentage signs (%).
- **DFSMSdss Larger Block Support for DUMP, COPYDUMP, and RESTORE**

Inne Nowinki

- **SDM Support of ATTREXX**

- Provides interfaces to FlashCopy®, Global Mirror, z/OS Global Mirror (XRC), Metro Mirror (PPRC), and other misc. SDM services
- CLISTs will be provided in SYS1.SAMPLIB for the invocation of ANTTREXX

- **Extended Address Volume (EAV)**

- A volume with more than 65,520 cylinders
- Size limited to 223 GB (262,668 Max cylinders)
- Supported in z/OS V1R10 and higher

Inne Nowinki

- BCPii, Auto Ipl
- IEFSSNxx and a new BEGINPARALLEL keyword
- zAAPs on zIIPs – IEASYSxx ZAAPZIIP=YES
- LOGONHERE – IKJTSOxx
- Alternate Sysplex Root (alternate MCAT !)
 - ALTROOT FILESYSTEM ('OMVS.ALTROOT.ZFS') MOUNTPOINT('/sysalt')

Koniec - Dziękuję

- According to the Information Technology Infrastructure Library (ITIL), availability is “the ability of a configuration item or IT service to perform its agreed function when required.”
- **OPTYMALNY znaczy DOSTĘPNY**
- Reliability, maintainability, serviceability, performance, and security **determine** availability.