

ISV Product Watch

Phil Grainger – BMC Software Ltd Emil Kotrc & David Helsley – Broadcom Karen Wilkins - IBM

November 2019 Session IK







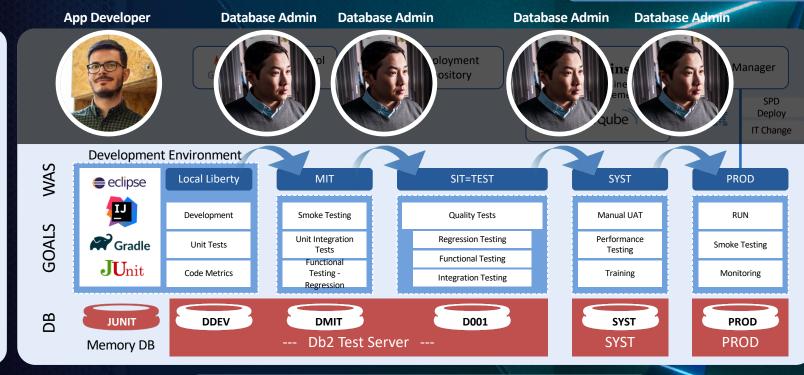




Modern Mainframe DevOps

Schema Changes





Test Case Management Test Automation/ Manual Suite Test Data Management cucumber



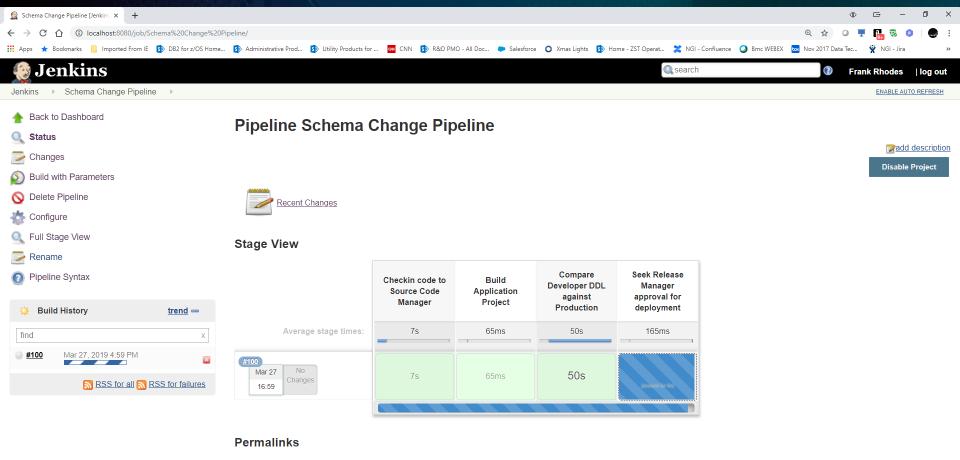




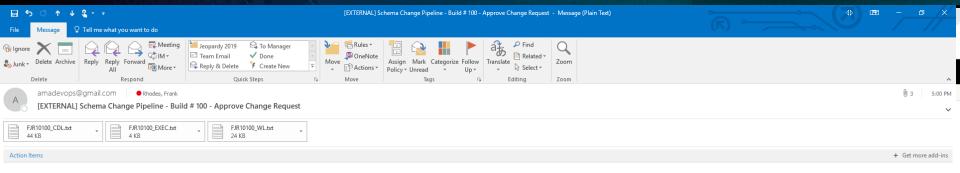
Different Goals Different Priorities







• <u>Last build (#100), 32 ms ago</u>



Please review the changed requested by the developer related to the schema definition of the application. See attached Impact Report and CDL files.

You can generate a Compare report using the CDL generated.

RDAFJR.DEVOPS.CDL(FJR10100)

http://db2a.bmc.com:21210/workbench/index.html

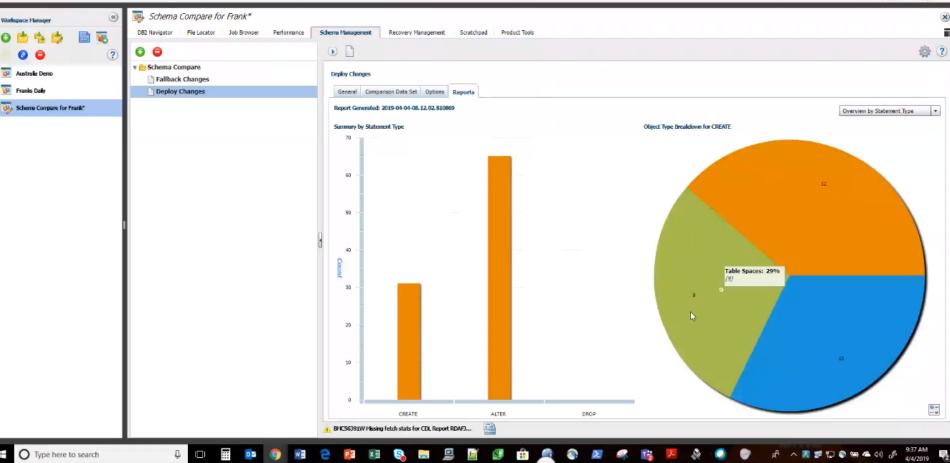
You can approve or reject implementation of changes on Subsystem \${SSID} by using this link:

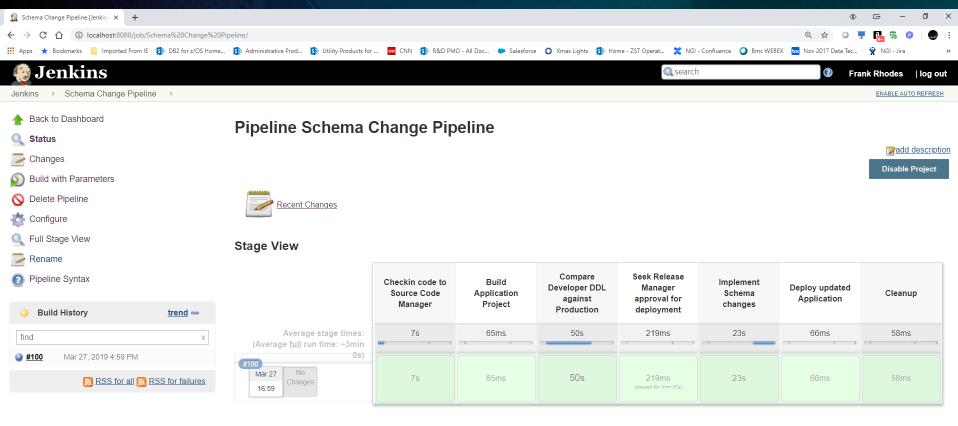
https://urldefense.proofpoint.com/v2/url?u=http-3A localhost-3A8080 job Schema-2520Change-

console&d=DwICaQ&c=UrUhmHsiTVT5qkaA4d oSzcamb9hmamiCDMzBAEwC7E&r=uPRNA26SHjAWYPADNGC 0w&m=y78H3gQBySjhh

CwkSPFh2BsJYfy-o2kA G dkfgEAPE&s=9si20zd4dlymfyBhSBnhJRVRazyO6wiEkRCJG6vaC Y&e=





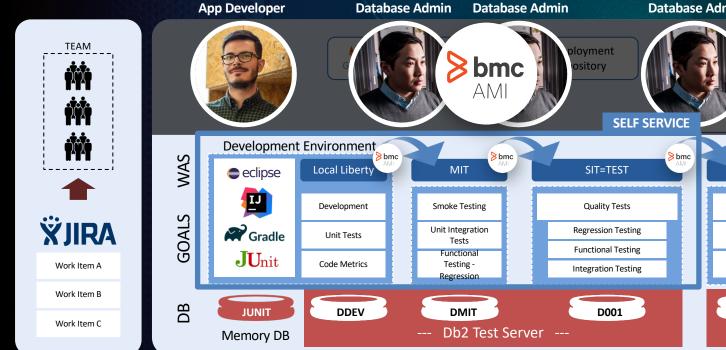


Permalinks

• Last build (#100), 32 ms ago

AMI DevOps for Db2







Test Case Management Test Automation/ Manual Suite Test Data Management cucumber









COLRUYTGROUP

"It helps us react to market evolutions faster."

"With AMI DevOps for Db2 we are working as a unified team now."

- Steven Goedertier DBA, Colruyt



Agility

Added self service to application teams for development and test systems

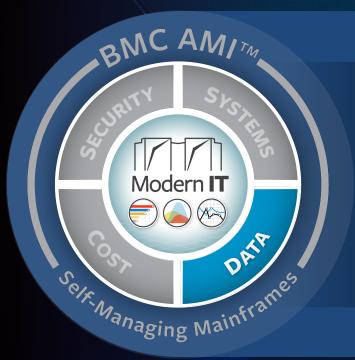


Quality

Improved quality of changes

"Working together with the application development teams gives everyone a better understanding of the entire workflow from beginning to end that we never had before."





AMI DEVOPS FOR Db2

Enables clients to automatically integrate database changes on Db2 for z/OS seamlessly into an agile application development process

Agility while maintaining stability and availability



CA Database Management Solutions for Db2 for z/OS

November 2019



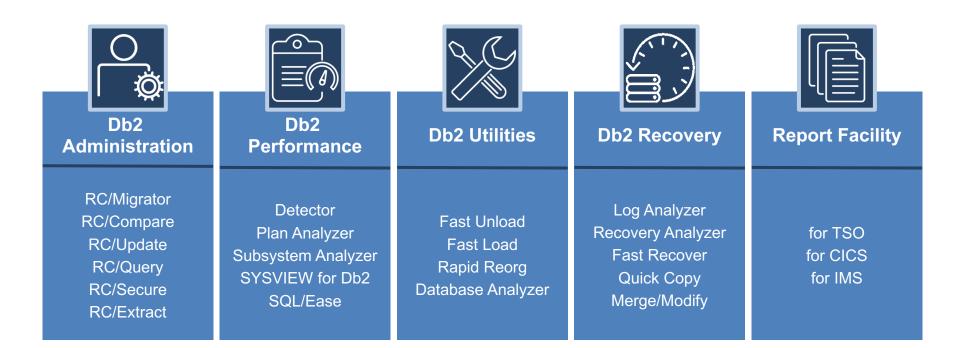
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CA Database Management for Db2 for z/OS



Strategy

Modernization

Enable the **new generation** of IT professionals to interact with the products using **Modern Interfaces** like **Zowe** or via **APIs**.

Autonomics

Minimize the skills required to install, configure or use the products by leveraging Machine Learning algorithms.

Reduced TCO

Improve efficiency of processing to reduce CPU and Elapsed Time as well as minimize outage time.

Data Protection

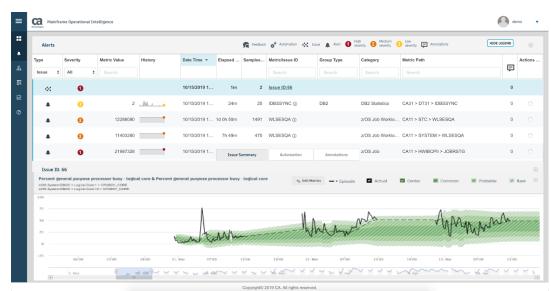
Protecting data by creating or supporting technologies aimed to **ensure data privacy**.

Roadmap CA Database Management Solutions for Db2 for z/OS Timeline as of September 2019

Delivered			Planned		Under Consideration		
Product/ Release	Database Mana	gement for Db2 for z/OS r20.0 IR8	Database Management for	r Db2 for z/OS r20.0 CD	Database Management for Db2 for z/OS r2x		
Marquee Features/ Business Value	monitoring modern broadern broadern broadern broadern broadern broadern by sending MOI Improved performan optimizatio Data Protect	stion of performance for SQL activity through a pwser interface and REST Software Autonomics available SQL metrics to availability and ace of Utilities by and enhanced logic stion Enhancement by the entire portfolio for IBM acryption	optimized sort proc capabilities	d reduction, providing essing, and zIIP providing REST APIs well as further ser experience via enter providing REST APIs well as further ser experience via enter providing REST APIs well as further ser experience via enter providing upgrades by	 Continued Modernization and simplification of user experience via a use-case driven browser interface Provision and deploy Db2 application schema changes via Zowe API/CLI Analytics Based Autonomics to provide recommendations, intelligent data maintenance, and real-time adjustments Sensitive data security through an audit repository to support monitoring of access and handling of critical data Cost reduction Analytics and Performance Optimization by providing advanced workload tuning 		
	Currently GA	Modernization	Autonomics	Reduced TCO	Data Protection		

Intelligent Operations and Analytics:CA Mainframe Operational Intelligence

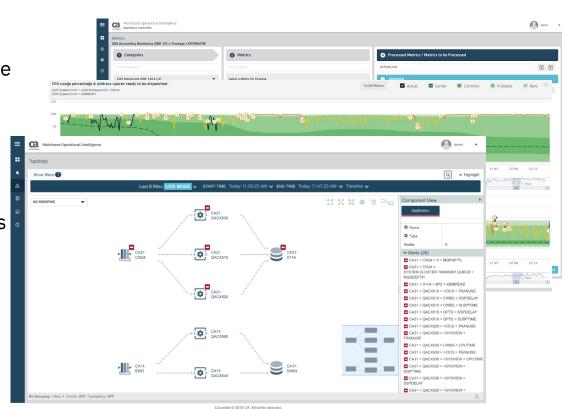
- Multi-source data feeds enable you to gather data and derive intelligence across multiple systems and subsystems
- Multivariate clustering and a casualty modeling.
- Ability to provide input on the value of insights to improve accuracy of unsupervised ML algorithms
- Eliminate significant amount of time spent in de-cluttering the alert backlog and reduce MTTR and SME's bridge calls



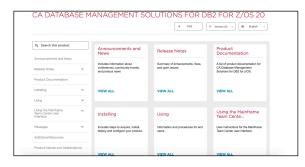
Intelligent Operations and Analytics:

CA Mainframe Operational Intelligence 2.0.05 (planned for release in CY19)

- To cover the key Business applications and MF Infrastructure
- Ability to filter and select the required instances that are important
- Enables Anomaly detection and Issue Intelligence, and Topology hotspot to cover wide subsystems
- Historical Analysis, reporting and dashboarding for DB2, CICS and MQ metrics



Everything is online ... including Roadmap and Manuals





Our product documentation is available online at

www.techdocs.broadcom.com

Short YouTube videos

Update your technical skills on CA Db2 Tools for free!









Db2 Tools for z/OS – Providing Ever Greater Customer Value

Managing Rapid Growth, Reducing Operational Risks, Complexity and Cost

- Grow Db2 data and business while
 - Maximizing efficiency
 - Reducing costs
 - Increasing performance
- Simplify and optimize Db2 environments
 - Automate operations
 - Accelerate agile application development
 - Drive business with innovative technology
- Delivering complete coverage
 - Utilities management, database administration and system and application performance

Self-managing systems

Application Modernization
Intelligent B&R Efficiency Common web-based UI
Change management Cost optimization

ROI for analytics Database provisioning
Utilities Db2 Tools IBM Z Security
Continuous delivery Db2 Tools Agility

Cloning Tool Smarter infrastructure API-ready
Intelligent performance Flexibility solution options
End-to-end administration DEV OPS

Automated routine tasks Reliability/Availability/Security Deep integration with Db2 for z/OS

Best practices Proactive performance
Day 1 Db2 Support IBM Z Security



IBM Db2 AI for z/OS

Empowers the Db2 for z/OS optimizer to determine the best-performing query access paths based on workload characteristics using machine learning capabilities

Db2ZAI empowers the optimizer

Learns patterns from collected DATA Built on top of Watson Machine Learning

No data scientist Support required Db2 generates Training DATA Enhances Application Performance



IBM z Analytics

IBM Db2 AI for z/OS

- Version 1.2 delivers:
- More Db2 generated machine learning models to help improve Db2 for z/OS performance in the following areas:
 - Intelligent SQL concurrency
 - Enhanced application performance through sort optimizations
 - Exception detection from Db2 statistics with recommended actions
- Watson Machine Learning for z/OS as an underlying ML service providing a complete solution





IBM Db2 AI for z/OS

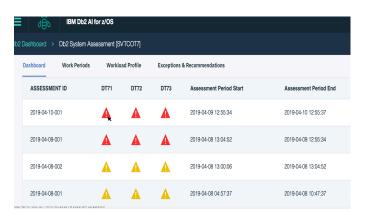
- Version 1.2.0.2 delivers (October 31st) APARs PH17089 and PH17090
 - Improved Up and Running experience
 - · Improved Knowledge Centre
 - Streamlined install / configuration steps
 - Db2ZAI taking less than 20 mins (without WMLz)
 - Self Healing
 - The ability to lock /unlock access paths for both static and dynamic SQL statements
 - System Health Assessment
 - An ISV API REST interface that enables third-party vendor tools to directly invoke system health assessments from their tools (Rocket integration with OMPE)
 - System Health Assessment Enhancements / SMF Assessment for L2
 - Autonomous data collection support for the BP and GBP parameters
 - Enhancement of the system assessment rules to leverage BP and GBP settings when detecting exceptions and making recommendations
 - GUI Improvements
 - Now shows the status of each assessment both during and after execution. Previous releases only showed completed
 assessments
 - Enhanced User Management
 - User access privileges
 - Support for latest pre-reqs
 - Certification of WMLz 2.1.0.2
 - Upgrade to Node.js V8
 - Latest bash



Db2 AI for z/OS 1.2 (Systems Assessment)

Uses Machine Learning to identify **RED ZONES**, serious conditions and sub optimal boundary zones that could endanger the PERFORMANCE of Db2 systems

Priority	CEA1	CEA2		
▲ Critical	K	4	4	
Highly Recommended		15	15	
Nice to Address		6	4	



Dashboard W	Vork Periods	Workload Profile	Excep	otions & Reco	ommendations							
Summary						-						
Priority		CEA1	CEA2									
▲ Critical		K 4	4									
Highly Reco	ommended	15	15									
Nice to Add	ress	6	4									
Q Search						Assess	ment ID:	2019-04	-02-002		;	× •
PRIORITY	METRIC NAM	E	s	UBSYSTEM	EXTRA INFO	WORK PERIOD NAME	RECORD COUNT	EXCP	EXCP PCT	EXCP MIN TSTAMP	EXCP MAX TSTAMP	METR MIN
Critical	STG_COMMC	DN_AUX_64BIT 1	С	EA1		NONE	243	114	46.91	2019-04-02 15:00:37	2019-04-02 16:53:37	0
>	STG_COMMO	Auxiliary storage usa 64 bit common	ge (MB) for	A2		NONE	244	114	46.72	2019-04-02 15:00:37	2019-04-02 16:53:37	0
>	STG_DBM1_	AUX_PRIV_64BIT_N	ONBP 1 C	EA1		NONE	243	114	46.91	2019-04-02 15:00:37	2019-04-02 16:53:37	0
>	STG_DBM1_	AUX_PRIV_64BIT_N	ONBP 1 C	EA2		NONE	244	114	46.72	2019-04-02 15:00:37	2019-04-02 16:53:37	0
>	STG_DBM1_	AUX_STK_64BIT i	С	EA1		NONE	243	114	46.91	2019-04-02 15:00:37	2019-04-02 16:53:37	0
>	STG_DBM1_	AUX_STK_64BIT i	С	EA2		NONE	244	114	46.72	2019-04-02 15:00:37	2019-04-02 16:53:37	0



Introducing Zowe

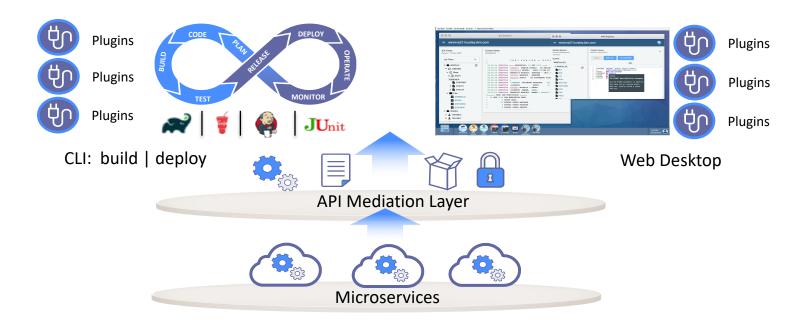
- Extensible framework for connecting applications and tools to z/OS mainframe data and applications.
- Make the z/OS mainframe an integrated and agile platform within the changing IT architectural landscape.
- First open source project launched on z/OS. All code is licensed under the Eclipse Public License version 2.0







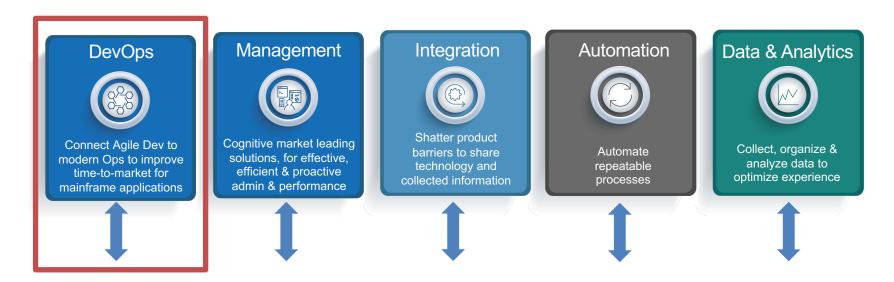
Zowe Open. Simple. Familiar.





IBM is Changing How Data Management Works

Integration of Technology, Information and Roles



Zowe Platform

Create and deliver enterprise applications in a modern platform









Introducing: IBM Db2 DevOps Experience for z/OS



Db2 DevOps Experience for z/OS allows organizations to bring applications to market **more rapidly, at lower cost** and with less risk.

Combined with the mainframe's processing capacity, you can serve customers better, respond to market changes faster and gain competitive advantage.



IBM Db2 DevOps Experience for z/OS

Brings Db2 applications to market faster with lower costs and less risk



- Lines of Business (LOB) owners can respond quickly to customer needs and competition with faster delivery of new or changed Db2 applications
- IT can establish and enforce the criteria for App Dev to create their own Db2 for z/OS test environments, and retains control of rules and standards that protect Db2 databases and data
- App Dev avoids the wait time for IT to create Db2 for z/OS test environments, and can work in teams using more modern agile development methods



IBM Db2 DevOps Experience for z/OS – Features



Access

DBA

P

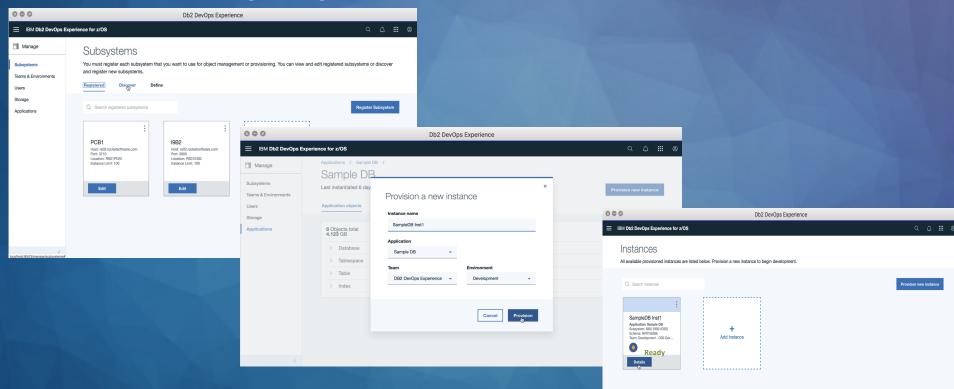
- Ability to create and delete Db2 for z/OS sandbox environment for testing without IT time and assistance
- Make Db2 syntax changes using objectaware Data Definition Language (DDL) editor
- Integrate Db2 database object management into existing continuous delivery development processes

- Define teams of users, environments, and application components for developers to use in their application development
- Discover and select application's Db2 database components to be managed and processed together
- Set rules and storage limits for the defined teams
- Review and approve developer schema changes



zowe.org

IBM Db2 DevOps Experience for z/OS









IBM is Redefining Data Management

- Simplify the complexity of multiple tools, settings, configurations, etc. with technology that shares and collects information
- Reduce the learning curve to onboard new users with no mainframe skills
- Change app development/release processes that were slow, manual and error-prone
- Learn from actions and information for faster resolution and future predictions





- Db2 Administration Tool
 - Retrieve trace data for accelerators APAR PH09847
 - Display accelerator status APAR PH09847
 - Bind avoidance APAR PH06267
 - DBRM Regenerate APAR PH06267
 - Catalog Cleanup APAR PH06267
 - Site standards "Invocation Exit" APAR PH09606



- Db2 Administration/Object Comparison Tool
 - Batch changes, new BET line command APAR PI96053
 - Easier detection of error messages APAR PI66475
 - Consolidated into a single DD ADBMSGS



- Db2 Automation Tool
 - Exception profile simplification and additions APAR PI99194
 - Grouped exceptions together logically by statistical category
 - Add new exceptions to simulate the results DSNACOXX
 - New BUILD primary command to make a temporary change to an existing job profile – APAR PH09073
 - "Order By" clause for Advanced SQL Statements PH10626
 - Process RI option in Object profile now supports a "Build" time option PH10626
 - Other enhancements PH09073



- Db2 Automation Tool
 - Other enhancements PH09073
 - During installation, all BIND jobs now use the OWNER keyword. Also removes the duplicate jobs generated for DSG SSIDs
 - Implemented a new device table in support of Esoteric SORTDEVT Devices
 - Enhance RI Explode to include wild-carded objects at the partition level
 - Group REORGs of partitioned tablespaces with NPIs
 - Implement support for new REBUILD INDEX utility
 - Support use of Db2 Template for REORG INDEX SYSUT1 data set



- Db2 Recovery Expert
 - Reorganisation of LBDR and Transaction Recovery panels in ISPF APAR PH12477
 - The ISPF client was changed to be more task-oriented and consistent with the Web client
 - The LBDR and Transaction Recovery operations are now available from the new "Ad-hoc Operations" option added to the main menu. It is no longer necessary to create a profile to perform LBDR or Transaction recovery jobs.
 - Allow redirected recovery of dropped objects APAR PH11064
 - If source and target SSIDs are equal and log apply is not disabled
 - Additional monitoring of SLB and offload APAR PH13181



- Db2 Recovery Expert
 - Advanced Recovery APAR PI95004
 - Remove some of the previous restrictions with UNDO/REDO SQL recovery plans and log-based dropped object recovery plans
 - Recovery Monitoring APAR PH00827
 - Allows user to view the status of the running recovery jobs to better determine when the recoveries will complete



- Db2 Recovery Expert New Features
 - Inform user if an object being recovered may be part of a replication strategy – APAR PI95383
 - Estimation of log records to avoid sorting problems during
 Advanced Recover or Redirected Recovery APAR PH05326
 - Rebuild NPIs in parallel APAR PI91829
 - Recover Accelerator Tables after Recovery APAR PH03382
 - During recovery plan generation provide the user the option to validate the existence of required Db2 logs and image copies – APAR PI98650



- Db2 Cloning Tool
 - Using DNS instead of IP Address APAR PI97051
 - Enhanced App Cloning Index Processing APAR PI99726
 - The product detects if an index should be rebuilt and if so, will not include it in the list of objects to be cloned
 - Enabling Db2 for z/OS Provisioning APAR PH00169
 - Allows Db2 for z/OS to participate in DevOps provisioning via REST calls for users who do not have the DevOps experience



- Db2 Cloning Tool
 - Support indexes in target log apply processing APAR PH13041
 - Enhances performance and reduces cloning time
 - Support Log Apply with Db2 SORT APAR PI97593
 - Enhances performance and reduces cloning time.
 - Allow COPY-BY-DS to perform copy to Peer-to Peer Remote
 Copy (PPRC) primary volumes APAR PH13041



- Db2 Log Analysis Tool
 - Provide a panel to translate a timestamp with microseconds to an LRSN/RBA and vice versa – APAR PH03886
 - Usage of the DSNHDECP module with a custom name APAR PH11341
 - Allow the header columns for CSV format load files to be changed – APAR PH13447



- Db2 Table Editor
 - Update only those cells whose values have changed APAR PH08648
 - Provide a command to reset the options "Set the confirmation off" APAR PH08608
 - Complete support for Db2 Analytics Accelerator APAR PH01973



- Db2 Query Monitor/Db2 Automation Tool
 - Smarter REORGs APARs PI92519 and PI92498
 - Db2 Automation Tool can be enabled to work with Db2 Query Monitor to provide smarter reorganization recommendations. The performance data that Db2 Query Monitor collects on application objects can be used to determine whether query performance has degraded or not, thereby avoiding unnecessary reorganizations and use of resources.
 - Other considerations
 - Some configuration required (AT-TLS, SSL, certificates, ...)
 - Requires object level performance data to be collected by Db2 Query Monitor
 - Can impact interval cutting



- Db2 Query Monitor
 - Elimination of consecutive identical negative SQL codes APAR PI95524
 - Enables Db2 Query Monitor to detect duplicate SQLCODEs at the thread level or the Db2 subsystem level
 - Collect Positive SQL codes APAR PH01452



- Omegamon Performance Expert
 - Batch support for zHyperLink APAR PH04126
 - Enables customers to measure the impact of zHyperLink and also enables customers who don't have zHyperLink to project how much benefit they might see if installed
 - Batch Support for IRLM Counters and Stats APAR PI93817
 - Extends the reporting of the product by externalizing 30+ IRLM counts
 - HTAP Accounting
 - Allows DBAs to monitor the IDAA HTAP dynamic query statistics
 - Buffer pool data added to the enhanced 3270 UI thread detail
 - Can now review buffer pool information (such as getpages and buffer pool hit ratios), to evaluate how well a thread is performing and to determine if excessive I/O is being consumed for a thread



- Db2 Accelerator Loader
 - Active Load Progress Status APAR PH03209
 - Support sliding scale allocation algorithm for writing data to VSAM APAR PI99482
 - Provide option to pass Db2 DSG into the Loader ISPF interface APAR PH09817
 - Add support for accelerator groups to consistent load APAR PH09817
 - Improves performance by allowing data to be loaded into the target Db2 table and Accelerator in parallel
 - Support Accelerator SP Host Variable MAX Length APAR PH09817
 - Group Consistent Load support to load both Db2 and the Accelerator to an alternate table on the local or remote system – APAR PI49622





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This session is IK



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1. What is your conference registration number?													
* This is the three digit number on the bottom of your delegate badge													
2. Was the length of this presention correct?													
* 11	to 4 = "Too	Short" 5 = '	"OK" 6-9 =	"Too Long"									
1	2	3	⁴	5	6	7	8	°					
3. Did	3. Did this presention meet your requirements?												
* 11	to 4 = "No"	5 = "OK" 6-	9 = "Yes"										
1	2	3	⁴	5	6	7	8	9					
4. Was the session content what you expected?													
* 1 to 4 = "No" 5 = "OK" 6-9 = "Yes"													
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