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1.0 GENERAL

1.1 SUMMARY

The Office of Technology Services (OTech) provides a number of database management system (DBMS) technologies on various hardware and operating system platforms. This document provides guidance on using DB2 LUW (Linux, UNIX, MS Windows, z/OS).

The OTech supports current and one previous version(s) of DB2 LUW in accordance with the OTech Software Version Support Procedure. Failure to migrate off of unsupported versions by predetermined dates may incur additional charges and experience support delays. Refer to the OTech Procedure 4000 – Software Version Support for details.

The OTech only provides DB2 LUW administration on equipment within the Application Hosting offering. This includes installation, patching and product maintenance. Staff performs these tasks according to standard procedures and configurations.

1.2 REFERENCES

Items referenced here support information found elsewhere in this document.

IDENTIFIER	TITLE
04.13.875	DB2 LUW Submittal
3132	OTech Standard 3132 – Midrange Database Security
Website	OTech Service Requests
4000	OTech Software Version Support Policy
4000	OTech Procedure 4000 – Software Version Support
Web Site	OTech Contact Information
3138	OTech System Administrator Standard, 3138
3502	OTech 3502 – Information Security Exception Request
	OTech Security Patching and Monitoring Standard (currently not available for public viewing)

1.3 SUBMITTALS

1.3.1 General

OTech is available to advise and assist customers in formulating IT designs that will leverage available service offerings. Contact your Account Manager to engage architectural/engineering and design consulting services. Additional charges may be incurred.

Include the Customer's name, contact information and associated project name on forms, documents, and requests submitted to OTech.

Use the following method for work requests:

Item	Request Method
Quotes & Billable Service	OTech Customer Service System (CSS)
Modifications to Existing Systems	OTech Service Desk , or Remedy Service Request
Technical Problems	OTech Service Desk or Remedy Incident
Security Related Issues/Incidents	OTech Service Desk
Temporary DBMS Administrator Privilege Request	Information Security Exception Request. Follow procedure outlined in OTech Standard 3132 - Midrange Database Security and Procedure 3502 – Information Security Request

1.3.2 Service Request

A completed DB2 LUW Submittal is required prior to the start of work. To aid in the preparation of providing this technology, all information must be included in the OTech Service Request.

This Submittal is to be revised at appropriate intervals providing for expeditious and practicable execution of the Work. Revised submittal(s) must indicate changes, if any.

1.4 EXPECTATIONS

1.4.1 OTech

The OTech manages contract and licensing for DBMS software and serves as liaison between the Customer and technology vendor for technical system-level DBMS issues.

Technology products must be within vendor supported versions to sustain availability and integrity. The OTech documents end-of-support and will inform Customers of the upgrade plan through OTech Account Managers and E-News notifications.

The OTech follows change management practices. Change requests are recorded in the OTech Remedy system, as a Change Request (CRQ). OTech account managers can provide current change procedures.

1.4.2 Customer

Customers are expected to maintain logical and physical database design diagram(s) and provide them to OTech upon request. Customers should update the logical and physical database design diagram(s) as the database environment(s) are completed and accepted by the Customer.

Customers are expected to understand product lifecycles and collaborate with OTech on upgrades, testing, and verification of their database technology before the end-of-support date. Failure to migrate off of unsupported versions may incur additional charges. Refer to the OTech Procedure 4000 – Software Version Support for details. Additionally, extended support costs are the Customer’s responsibility.

Customers are expected to determine and submit details on hardware capacity (e.g., RAM, storage space) and software (e.g., DB2 LUW version) needs.

Customers are expected to identify and lead the resolution of database application related problems. Customers may identify and report system-level database problems to OTech via a Remedy Incident.

1.5 SCHEDULING

OTech’s goal is to provide timely and economical technology service. Customers promote this goal by promptly providing information requested, and by keeping the OTech project manager / account manager informed of technology project status.

1.5.1 Backup

The OTech performs database backups on the following schedule:

WHAT	WHEN
Incremental Online	Daily except on Sunday & Full backup days
Full Backup Online	Daily
Backup Offline	Once weekly on Friday
Transaction Log Backup	Software initiated based on threshold needs
Backup Retention	28 days

1.5.2 Change Management Schedule

DB2 LUW change proposal / requests follow the established OTech Change Management process. DB2 LUW maintenance activities utilize the corresponding platform maintenance schedule; however, changes may be scheduled. Changes require 2-week prior notification. Shorter periods may not always be accommodated. Additional charges may be incurred for expedited change requests.

Security related changes adhere to the OTech Security Patching and Monitoring Standard.

1.6 DEFINITIONS

Term, phrase, abbreviation	Definition
CRQ	Change Request
DBMS	Database Management System
HACMP	High Availability Cluster Multi-Processing
HADR	High Availability Disaster Recovery
SA	System Administrator
LUW	Linux, UNIX, Windows

2.0 PRODUCTS

Additional components and specific DBMS configuration needs should be documented in 1.3 - SUBMITTALS.

2.1.1 DB2 LUW VERSION(S)

1. v10.5 for Linux, Unix, Windows, and DB2 Connect
2. v10.1 for Linux, Unix, Windows, and DB2 Connect

2.1.2 DB2 LUW OPTIONAL FAILOVER ITEMS

1. High Availability Cluster Multi-Processing (HACMP), used on AIX hardware and requires additional cost for the hardware license.
2. High Availability Disaster Recovery (HADR), used for database failover at no additional cost.

2.2 *PLATFORM*

OTech supports DB2 LUW on AIX, Linux, and Microsoft Windows, and z/OS.

3.0 EXECUTION

3.1 **SECURITY**

DB2 LUW DBMS administration authority is restricted to OTech designated personnel.

Databases should not require the permanent use of system administrator account(s) in order to function. Customers may be provided temporary DBMS administrative privileges for a limited time. This privilege may incur an additional charge and must be authorized by OTech prior to use.

Occasions arise when, during construction, customers may be granted temporary DBMS administration rights to their leased installations of DB2 LUW. This access is limited to four calendar weeks from the time access is provided and will be revoked thereafter. If a customer requires *temporary* DBMS administration rights, a customer must complete an Information Security Exception Request and adhere to OTech Standard 3132 – Midrange Database Security. Follow the procedure outlined in OTech 3502 - Information Security Exception Request Procedure.

Configuration changes made outside the scope delineated above and needing intervention, correction, or troubleshooting by OTech Staff may incur additional charges

3.2 **SUPPORT AVAILABILITY**

The core business hours for DB2 LUW technical support are Monday through Friday 0800 – 1800. State holidays and mandated schedule alterations are observed and may impact staff availability.

After hour, on-call technical support is available upon request and may be provided in accordance with 1.3 - SUBMITTALS.

3.3 **QUALITY CONTROL**

DB2 LUW installation requests must be reviewed and approved by OTech.

1. DB2 LUW installation is provided by OTech in accordance with the manufacturer installation procedures and 1.3 - SUBMITTALS.
2. DB2 LUW utilizes only the OTech Storage Area Network (SAN)
3. File system standard configurations may include either of the following:

A. DB2 LUW file system standard for Non-SAP applications:

File System Name	Size	Comment
/opt/IBM/db2	4 GB	db2 binary
/db2/<instance name>	2 GB	DB2 instance home directory. Sqliib lives here. Each db2 instance should have a separate db2/<instance name> file system
/db2/<instance name>/db2dump	1 GB	DB2 diagnostic file
Development and test environment's log_dir are mounted at instance level /db2/<instance name>/log_dir Production environment's log dir is mounted at database level /db2/<instance name>/<db name> /log_dir	Customer Defined	Active Log
Development and test environment's log_archive are mounted at instance level /db2/<instance name>/log_archive Production environment's log dir is mounted at database level /db2/<instance name>/<db name> /log_archive	Customer Defined	Archive Log
/db2/<instance name>/<db name>/data1	Customer Defined	DB2 Data
/db2/<instance name>/<db name>/data2	Customer Defined	DB2 Data
/db2/<instance name>/<db name>/data3	Customer Defined	DB2 Data
/db2/<instance name>/<db name>/temp01	Customer Defined	DB2 Database Temp Table
/db2/NMDB2	6 GB	Backup Configuration & Scripts

B. DB2 LUW file system standard for SAP applications:

File System Name	Size	Comment
/opt/IBM/db2	4 GB	DB2 binaries
/db2/<SID>		
/db2/db2<DBSID>	2 GB	DB2 instance home directory. Sqliib located here. Each db2 instance should have a separate /db2/db2<DBSID> file system
/db2/<SID>/db2dump	1 GB	DB2 diagnostic file
/db2/<SID>/log_dir	Customer Defined	Active log file
/db2/<SID>/log_archive	Customer Defined	Archive logs and/or Failover logs
/db2/<SID>/sapdata1	Customer Defined	DB2 Data
/db2/<SID>/sapdata2	Customer Defined	DB2 Data
/db2/<SID>/sapdata3	Customer Defined	DB2 Data
/db2/<SID>/sapdata4	Customer Defined	DB2 Data
/db2/<SID>/saptemp1	Customer Defined (Optional)	DB2 Database Temp Table
/db2/NMDB2	6 GB	Backup Configuration & Scripts

3.3.1 OTech Responsibilities

1. Review and approval of submitted information prior to beginning work.
2. Notify Customer of submittal flaws, if any.
3. DB2 LUW installation, upgrades, patches, fixes, and standard configuration.
4. Assist customer in specifying design in accordance with information provided in 1.3 - SUBMITTALS.
5. Assist customer with DBMS incident resolution subsequent to application configuration changes.

3.3.2 Customer Responsibilities

1. Design, develop, deploy, test the database and maintain its interaction with application(s).
2. Submit complete 1.3 - SUBMITTALS information.

3.4 **INSTALLATION**

3.4.1 OTech Responsibilities

1. System-level administration
2. Manage contract and licensing for DBMS software

3. Perform on and off-line scheduled database backups
4. Assist customers upon request to restore a database in accordance with the 1.3 - SUBMITTALS
5. Monitor free disk space and alert Customer when disk space is below threshold levels indicated in 1.3 - SUBMITTALS
6. Maintain data and log file backups
7. Assist in resolution of database application-level problems
8. Create database user account(s) within DB2 and assign permissions in accordance with 1.3 – SUBMITTALS
9. Monitor and modify DBMS software
10. Review and recommend optional configurations that may better meet capacity and performance requirements in accordance with 1.3 – SUBMITTALS
11. Perform DBMS version migrations and upgrades
12. Maintain database administration tools
13. Maintain DBMS software/configurations
14. Resolve database system problems or seek vendor support for DBMS issues through authorized escalation processes

3.4.2 Customer Responsibilities

1. Provide contract and licensing for DBMS software
2. Define database availability requirements
3. Document database design and application architecture
4. Maintain database dictionaries
5. Respond to threshold limit notifications provided by OTech staff with mitigating action
6. Maintain application and database statistics
7. Test new maintenance and software releases at user and application levels
8. Submit services request(s) to purchase DBMS licenses or renew maintenance
9. Additional charges for OTech intervention, troubleshooting and correction of unauthorized changes. This may include a pass-thru charge of licensed auditing software used to repair unauthorized changes.
10. Create and maintain database objects
11. Provide database user name spelling in accordance with the 1.3 - SUBMITTALS
12. Load database data via access provided by OTech
13. Application design, development, testing and migration adhering to supported software versions.
14. Code modification
15. Application design and maintenance adhering to supported software versions
16. Maintain application and database statistics current by running utilities
17. Maintain application development tools running on attached client(s)
18. Ongoing monitoring of database growth in relation to disk space
19. Perform data archival
20. Perform file level maintenance of production data

21. Identity database application related problems or database system problems and report them
22. Determine when a restore is needed. See 1.5 - SCHEDULING above.
23. Data cleansing