

**Upgrading to z/OS V2R4 Communications  
Server IBM zERT Network Analyzer**



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# Chapter 1

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## z/OS Upgrade Workflow

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### Topics:

- [Upgrading the IBM zERT Network Analyzer](#)
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## Upgrading the IBM zERT Network Analyzer

### Description

When you upgrade to z/OS V2R4, you need to upgrade your existing IBM zERT Network Analyzer settings to the new release. You also need to upgrade your user-built queries and possibly the imported SMF data from your existing IBM zERT Network Analyzer database to the new release schema version.

**Table 1: Information about this migration action**

<b>Element or feature:</b>	z/OS Communications Server.
<b>When change was introduced:</b>	z/OS V2R4
<b>Applies to migration from:</b>	z/OS V2R3
<b>Timing:</b>	Before installing z/OS V2R4.  Some information needs to be collected from the existing IBM zERT Network Analyzer settings panels and data in your existing IBM zERT Network Analyzer database may need to be unloaded before installing the new release. Once the install is complete, additional upgrade actions are performed after the first IPL.
<b>Is the migration action required?</b>	Yes, if you use the IBM zERT Network Analyzer and you want to preserve your existing application settings, user-built queries, or imported SMF data.
<b>Target system hardware requirements:</b>	None.
<b>Target system software requirements:</b>	z/OSMF and access to a Db2 for z/OS subsystem (Db2 11 or higher)
<b>Other system (coexistence or fallback) requirements:</b>	If not running Db2 for z/OS on the target system, a remote Db2 subsystem can be used. A co-located Db2 for z/OS subsystem is recommended for the best performance.
<b>Restrictions:</b>	None.
<b>System impacts:</b>	None.
<b>Related IBM® Health Checker for z/OS® check:</b>	None

### Steps to take

#### Upgrading your IBM zERT Network Analyzer settings

##### Before installing the new version of z/OS

- To upgrade the database settings, work with your database administrator (DBA) to determine the database settings for the database that has been set up for the new release (see the following database upgrade steps).
- To upgrade the application settings, take the following steps.
  1. Log into the existing IBM zERT Network Analyzer.
  2. Navigate to **Settings > Application Settings**.
  3. Record the current application settings found within the LOG SETTINGS, REPORT SETTINGS, and EXPORT SETTINGS sections.

## After installing the new version of z/OS and the IBM zERT Network Analyzer and upgrading the new database

Take the following steps.

1. Log into the new IBM zERT Network Analyzer.
2. Navigate to **Settings > Application Settings**.
3. Apply the recorded settings.

## Upgrading your IBM zERT Network Analyzer database

### Before installing the new version of z/OS

- **Upgrading from z/OS V2R3**

Before upgrading from z/OS V2R3, ensure that your existing IBM zERT Network Analyzer database's schema version is at least 1.3.x. If not, you must apply service (including execution of any associated HOLD actions) to bring the network analyzer and its database up to that schema version. Schema version 1.3.x was introduced with APAR PH16222, but it is recommended that you apply the most recent IBM zERT Network Analyzer PTF to get up to the latest level of service.

**Note:** Do not perform the database upgrade steps described later until your V2R3 IBM zERT Network Analyzer database is at the proper schema version. You can check the database schema version and release values in the **Database Information** area of the IBM zERT Network Analyzer's **Settings > Database Settings** dialog.

- **Unload data from your existing IBM zERT Network Analyzer database**

Use the Db2 for z/OS UNLOAD utility to unload the tablespaces listed under [Table 2: Tablespaces to be upgraded to preserve your queries](#) on page 9 and, if appropriate, [Table 3: Tablespaces to be upgraded to preserve your imported SMF data](#) on page 10. See *Using the Db2 for z/OS UNLOAD and LOAD utilities* for detailed instructions on using the utilities.

[Table 2: Tablespaces to be upgraded to preserve your queries](#) on page 9 and [Table 3: Tablespaces to be upgraded to preserve your imported SMF data](#) on page 10 list the specific IBM zERT Network Analyzer database tables that need to be upgraded to preserve your queries and your imported SMF data, respectively.

**Note:** Only the listed tables should be upgraded. Do not upgrade the APPL table (<schema>.<appTable>) or any of the query result tables (the partitioned tables). The APPL table is properly prepared when you create the new database and the query result tables only contain transient data.

**Table 2: Tablespaces to be upgraded to preserve your queries**

Fixed schema and table names	Aliased schema and table names
SYSIBM_EZB_ZNADB.OPENJPA_SEQUENCE_TABLE	<schema>.<openjpaTable>
SYSIBM_EZB_ZNADB.QUERY	<schema>.<queryTable>
SYSIBM_EZB_ZNADB.SCOPE_FLTR	<schema>.<scopeFltrTable>
SYSIBM_EZB_ZNADB.SCOPE_FLTR_ENDPT	<schema>.<scopeFltrEndptTable>
SYSIBM_EZB_ZNADB.SCOPE_FLTR_SYSSPEC	<schema>.<scopeFltrSysspecTable>
SYSIBM_EZB_ZNADB.SEC_FLTR	<schema>.<secFltrTable>
SYSIBM_EZB_ZNADB.SEC_IPSEC_FLTR	<schema>.<secIpsecFltrTable>
SYSIBM_EZB_ZNADB.SEC_SSH_FLTR	<schema>.<secSshFltrTable>

Fixed schema and table names	Aliased schema and table names
SYSIBM_EZB_ZNADB.SEC_TLS_FLTR	<schema>.<secTlsFltrTable>

**Table 3: Tablespaces to be upgraded to preserve your imported SMF data**

Fixed schema and table names	Aliased schema and table names
SYSIBM_EZB_ZNADB.DATAMGMTHISTORY	<schema>.<dmhistTable>
SYSIBM_EZB_ZNADB.DATASET	<schema>.<dsTable>
SYSIBM_EZB_ZNADB.SECURITY_SESSION	<schema>.<secsessTable>
SYSIBM_EZB_ZNADB.SESSION_STATISTICS	<schema>.<sessstatsTable>
SYSIBM_EZB_ZNADB.IPSEC_INFO	<schema>.<ipsecTable>
SYSIBM_EZB_ZNADB.SSH_INFO	<schema>.<sshTable>
SYSIBM_EZB_ZNADB.TLS_INFO	<schema>.<tlsTable>
SYSIBM_EZB_ZNADB.TOPOLOGY	<schema>.<topoTable>
SYSIBM_EZB_ZNADB.OPENJPA_SEQUENCE_TABLE	<schema>.<openjpaTable>

#### After installing the new version of z/OS

It is important to perform the LOAD process into the new IBM zERT Network Analyzer database before any SMF data is imported or any queries are saved. Otherwise, the existing SMF data or queries will be overwritten upon performing the LOAD operation.

Your existing IBM zERT Network Analyzer database setup, the desired setup for the new database and, in some cases, your DBA's preferences determine the exact procedure for loading the contents of your existing IBM zERT Network Analyzer database instance into the new database.

There are three common scenarios, but you can adapt these scenarios as needed for your specific situation.

- **Scenario 1: If your IBM zERT Network Analyzer database uses an aliased database schema (based on IZUZNADA template) where the database for the new release will be created in the same Db2 for z/OS subsystem as the existing database, take the following steps.**
  1. Drop all aliases defined in the network analyzer database.
  2. Specify your local values in a copy of the IZUZNADI variable substitution data set for the new release, taking care to specify a **different value for <schema>** than the one used in the existing network analyzer database.
  3. Use the IZUZNADA template for the latest IBM zERT Network Analyzer version to create a new set of IBM zERT Network Analyzer database objects under the new <schema> name. When the generated DDL executes, a new set of aliases will be created, pointing to the new database objects.
  4. Use the Db2 for z/OS LOAD utility to load the data unloaded from the existing database into the new database.
  5. Start the z/OSMF instance with the new IBM zERT Network Analyzer.
  6. Update the database settings panel and application settings panel as described under *Upgrading your IBM zERT Network Analyzer settings* discussed earlier.
  7. At this point, all the user-built queries (if upgraded) and imported SMF data (if upgraded) from the old database should now be available in the new version of the network analyzer.

If, at any point after this, you need to switch back to the previous release of the IBM zERT Network Analyzer and its associated database. Take the following steps.

1. Drop all aliases.
2. Recreate all those aliases, pointing to the old database objects under the old schema name.

- **Scenario 2:** If the database for the new release will be created in a different Db2 for z/OS subsystem than the existing database (works for both fixed and aliased database schemas), take the following steps.
  1. Specify your local values in a copy of the IZUZNADI variable substitution data set for the new release.
  2. Use the IZUZNADT or IZUZNADA template (as appropriate) for the latest IBM zERT Network Analyzer version to create a new set of IBM zERT Network Analyzer database objects in a different Db2 for z/OS subsystem.
  3. Use the Db2 for z/OS LOAD utility to load the data unloaded from the existing database into the new database.
  4. Start the z/OSMF instance with the new IBM zERT Network Analyzer.
  5. Update the database settings panel and application settings panel as described under *Upgrading your IBM zERT Network Analyzer settings* discussed earlier.
  6. At this point, all the user-built queries (if upgraded) and imported SMF data (if upgraded) from the old database should now be available in the new version of the network analyzer.

If, at any point after this, you need to switch back to the previous release of the IBM zERT Network Analyzer and its associated database, simply point the old version of the IBM zERT Network Analyzer to the old database. All of the data should still be there unchanged from the last time you used the database.

- **Scenario 3: If your IBM zERT Network Analyzer uses a fixed database schema (based on IZUZNADT template)** where the database for the new release is defined in the same Db2 for z/OS subsystem as the existing database, take the following steps.
  1. Drop the existing IBM zERT Network Analyzer database.
  2. Specify your local values in a copy of the IZUZNADI variable substitution data set for the new release.
  3. Use the IZUZNADT template for the latest IBM zERT Network Analyzer version to create a new set of IBM zERT Network Analyzer database objects in the same Db2 for z/OS subsystem where the old database used to reside.
  4. Use the Db2 for z/OS LOAD utility to load the data unloaded from the existing database into the new database.
  5. Start the z/OSMF instance with the new IBM zERT Network Analyzer.
  6. Update the database settings panel and application settings panels as described under *Upgrading your IBM zERT Network Analyzer settings* discussed earlier.
  7. At this point, all the user-built queries (if upgraded) and imported SMF data (if upgraded) from the old database should now be available in the new version of the network analyzer.

If, at any point after this, you need to switch back to the previous release of the IBM zERT Network Analyzer and its associated database, take the following steps.

1. Drop the database created in step 4 earlier.
2. Use the DDL you generated for the prior release to create a network analyzer database at the prior release (and PTF) level. If need be, you can re-generate the DDL for the old release/PTF level using your old customized IZUZNADI data set and the database schema tooling provided with the exact release/PTF level of the old IBM zERT Network Analyzer.

### Using the Db2 for z/OS UNLOAD and LOAD utilities

These steps provide an example of using the Db2 for z/OS UNLOAD/LOAD utilities to upgrade an existing IBM zERT Network Analyzer database schema release to a newer schema release and different schema version. In this example, we illustrate a case that uses a fixed name schema (based on the IZUZNADT template) and a different Db2 for z/OS subsystem for the existing and the new databases. If you are using one of the other approaches described earlier, then you need to adjust these steps to accommodate your scenario.

Although there are different ways to execute the utilities, this example uses the **Db2 Interactive Panels in ISPF** to invoke the Db2 Utilities. For more information on the Db2 Interactive Panels, see [DB21 Primary Option Menu](#).

### Requirements for upgrading via UNLOAD/LOAD:

- Before UNLOADing your existing IBM zERT Network Analyzer database, verify that its database schema release and version is at the latest PTF level. To do this, check the database schema version and release values in the Database Information area of the IBM zERT Network Analyzers **Settings > Database Settings** dialog.

- Perform the LOAD process into the new IBM zERT Network Analyzer database before any SMF data is imported or any queries are saved. Otherwise, the existing SMF data or queries will be overwritten upon performing the LOAD operation.

### Explanation of UNLOAD/LOAD Db2 Utilities:

UNLOAD extracts rows from an existing database table and writes them out to a sequential data set according to the specifications described in a separate input file. For the purpose of upgrading, unload the tablespace using the following command syntax:

```
UNLOAD TABLESPACE database.tablespaceName
FROM TABLE schemaname.tablename
```

For more about syntax information for UNLOAD commands, see [UNLOAD Syntax Diagram](#).

**Note:** Allocate enough space to hold the resulting output sequential data set which contains the tables and data from your existing database, otherwise the UNLOAD job fails.

LOAD reads the data sets created by UNLOAD and writes the data into a database table. Similar to the UNLOAD, we load a table using the following command syntax:

```
LOAD INDDN(inputddname) INTO TABLE schemaname.tablename
```

For more about syntax information for LOAD commands, see [LOAD Syntax Diagram](#).

As an alternative, you may specify the SYSPUNCH parameter in your UNLOAD utility job, which allows for a LOAD DDL to be generated at the time of your UNLOAD. The generated LOAD DDL contains the commands necessary to LOAD your unloaded data into the new database. For more information on the SYSPUNCH parameter, see [LOAD Statements that are generated by UNLOAD](#).

### Steps for using UNLOAD/LOAD Utilities

See the following steps for using the Db2 Interactive Panels to perform an UNLOAD/LOAD, as well as some important considerations.

- **UNLOAD Steps:**

Consider the following when you use UNLOAD with the IBM zERT Network Analyzer database. For detailed steps of using the UNLOAD utility, see [Running the UNLOAD utility from DB2I](#).

- During the UNLOAD, you can choose to have the Db2 UNLOAD Utility generate a LOAD DDL on your behalf by specifying the PUNCHDSN parameter, (i.e. the SYSPUNCH parameter).
- As you are performing your UNLOAD/LOAD, you will find it useful to confirm your output via the SDSF Held Output display.

For more about the SDSF Panels, see [What is SDSF?](#).

- **LOAD Steps:**

Consider the following as you use LOAD with the IBM zERT Network Analyzer database. For detailed steps of using the LOAD utility, see [Running the LOAD utility from DB2I](#).

- As previously stated, this example uses a different Db2 for z/OS subsystem to hold our new database release. Before starting the LOAD, prepare this by changing the Db2 Default Location to point to the subsystem containing the new database by navigating to the SPUFI Db2 Database Panels and selecting Db2 Defaults.

For more information on the Db2 Defaults Panel, see [Db2 Defaults Section](#).

- When confirming your output in SDSF following a LOAD step, you may have noticed that your tablespace has been placed in a COPY-pending state. If so, this is normal. To resolve this issue, follow the few short steps as described under *Resolving Common Issues in UNLOAD/LOAD*.
- Once you have completed all your LOADs and resolved any issues you may have faced, your IBM zERT Network Analyzer database upgrade is complete. At this point, you should be able to start the z/OSMF instance with the new IBM zERT Network Analyzer plug-in, configure the database settings to point to the new database, and use any upgraded queries to analyze any upgraded SMF data.

## Resolving Common Issues in UNLOAD/LOAD

- ***COPY-pending:***

If your tablespace is in COPY-pending state, you cannot update the table, but you can run queries against it.

There are a couple ways to resolve this issue.

- Depending on your needs, you can perform an image copy following the steps outlined in [Running the COPY utility from a JCL job](#).
- If you prefer not make a copy, you can use the REPAIR utility to SET the TABLESPACE to NOCOPYPEND following the syntax outlined in [REPAIR syntax diagram](#) (i.e. REPAIR SET TABLESPACE `database.tablespace` NOCOPYPEND).

- ***Repairing after a Failed UNLOAD/LOAD operation:***

Should you face a scenario where your UNLOAD or LOAD job failed, it is good practice to verify that the job is terminated before processing another utility. This can be done using two simple Db2 commands from inside the Db2 Command Panel or anywhere else a Db2 command can be issued.

- First, you need to find the utility-id associated with the failed job. This can be done using the display db2 utilities command: `-DISPLAY UTILITY (*)`.
- Once you have the utility-id for the utility in progress, you can terminate the utility(s) using the terminate db2 utilities command `-TERM UTILITY (*)` or `-TERM UTILITY (utility-id)`.

By specifying \*, all utility jobs are terminated for which you are authorized.

## Reference information

- For more information on the Db2 Interactive Panels, see [DB2I Primary Option Menu](#).
- For more information on the Db2 Defaults Panel, see [Db2 Defaults Section](#).
- For more information on the SDSF Panels, see [What is SDSF?](#).
- For syntax information for UNLOAD commands, see [UNLOAD Syntax Diagram](#).
- For syntax information for LOAD commands, see [LOAD Syntax Diagram](#).
- For more information on the SYSPUNCH parameter, see [LOAD Statements that are generated by UNLOAD](#).
- For detailed steps of using the UNLOAD utility, see [Running the UNLOAD utility from DB2I](#).
- For detailed steps of using the LOAD utility, see [Running the LOAD utility from DB2I](#).



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