



IBM Software Group

# DB2 Utilities Enhancement Tool for z/OS Version 2 Release 1

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# IBM DB2 Utility Enhancement Tool for z/OS (UET)

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- Problem/Background
- Analysis of Marketing Requirements
- Solution
- Requirements prioritization

## UET: Problem/Background

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- Backlog of requirements against the DB2 Utilities Suite product continues to grow
  - ▶ Many of these are very specific to a few customers' environment
  - ▶ Fewer of these are generic enhancements that would benefit the majority of customers
- The enhancements (implemented in priority order) cycle-time for delivery of utility function is tied to DB2's release cycle (~24 months)
- DB2 and the DB2 Utilities Suite is focused on new version support
- These enhancements are needed in competitive situations; We have missed DB2 Tool opportunities due to lack of DB2 Utilities Suite function
- We can't deliver enhancement requests for the DB2 Utilities Suite fast enough!

## UET: Analysis of Requirements

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- Many can be satisfied with pre- or post-processing of the utility statement (aka, outside of the utility code path)
  - ▶ Load constant values (nine requests)
  - ▶ Split/sort load input
  - ▶ A NORESTART option
  - ▶ ... dozens more
- The current BMC and CA utilities address many of these
- Customized scripts can be written for these tasks
  - ▶ Some customers do this already today (or hire someone to write it)
  - ▶ Few existing customers are interested in writing this supplementary code

## DB2 UET: Solution

- Develop adjunct software to perform pre- and post-processing for the DB2 Utilities Suite
- Opens up ability to deliver utility function more rapidly to target complete replacement of tools with IBM products
- A long term project
  - ▶ Large number of requirements
    - Some functions may be absorbed into DB2/Utilities over time
  - ▶ Frequent releases... maybe one per year, with the opportunity to add significant new functions via the service stream
- Rename V2 of IBM DB2 Thread Expert for z/OS to IBM DB2 Utility Enhancement Tool for z/OS and add utility enhancer function
  - ▶ DSNUTILB intercept
  - ▶ Thread Expert Enhancements
  - ▶ DB2 Utility Enhancements
    - PRESORT keyword on LOAD
    - Automatic creating of mapping table and index for online REORG
    - LOAD with constant values support (CONSTANT and VALUEIF)

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> _____<<
|_NULLIF__field selection criterion_____|
|_DEFAULTIF__field selection criterion_____|
||_VALUEIF__field selection criterion_____VALUE_=__X'byte-string'_____| | |
||                               |   |'_character-string'__|
||                               |   |_'G'graphic-string'__|
||                               |   |_'N'graphic-string'__|
|_|_CONSTANT_____|
  
```



## DB2 Utilities Enhancement Tool - Overview

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- Cancel or block threads on DB2 objects to allow utility processing
  - Prevents users from accessing an object when a utility must be performed
  - Runs the utility
  - Changes status of object so users can access object again
- ISPF User Interface
  - Display and Cancel threads
- Batch Processing
  - Cancel threads
  - Block threads

## DB2 Utilities Enhancement Tool – ISPF Interface

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- Provides an interactive ISPF interface from which you can display a filtered list of active threads
  - View details about a thread that might be causing access problems
  - Cancel threads selectively
- View messages from cancellation processing
- Temporarily override some of the started task initialization options

## DB2 Utilities Enhancement Tool – Batch Processing

- Create batch job steps for blocking and cancelling threads for REORGs and LOADs during the batch window
  - ▶ A single thread-cancellation job step can include many cancel requests, each for a different set of threads
- Intercepts the DSNUTILB program based on a user-defined policy to implement the enhancements
  - ▶ Cancels active threads on DB2 objects that are needed by DB2 online utilities at runtime.
  - ▶ Blocks new threads on these objects until after utility command processing completes
- Three modes of batch thread execution
  - ▶ 'checkparm' mode
  - ▶ 'simulate' mode
  - ▶ 'execute' mode



## DB2 UET – LOAD Enhancements

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- Extends the native DB2 LOAD syntax by providing the following additional options
  - The CONSTANT and VALUEIF options replace the value for a particular field in the input records with another value that you specify
  - The PRESORT option sorts rows by table object identifier (OBID) and by clustering index key (or if no clustering index key is available, by the oldest defined index).
    - Presorting data can help enhance database performance
- ▶ Manually add the options to the LOAD utility syntax

## DB2 UET – REORG Enhancements

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- Enhances the native DB2 REORG TABLESPACE
  - Automatically sizes and creates the mapping table and mapping-table index that are required for the DB2 REORG TABLESPACE utility when the SHRLEVEL CHANGE option is specified
    - automatically drops these objects when reorganization processing completes to preserve space
  - No changes to the existing utility JCL are required
- Supports the standard DB2 restart of a DB2 utility for which interception is occurring or has occurred.
  - No special user intervention is required.
- Limit the duration of REORG utility jobs

## DB2 UET – CHECK DATA Enhancements

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- Expand discarded rows to a flat file
  - ▶ The CHECK DATA statement now supports the DISCARDTO and optional DISCARDSPACE keywords as an alternative to the USE table\_name2 clause.
  - ▶ Discarded rows and a LOAD utility control statements will be written.
  - ▶ Files can optionally be managed using TEMPLATE statements.

# DB2 Utilities Enhancement Tool

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Terminate threads by:

- Object and Access
  - Any thread activity referencing the specified objects will be terminated
  - Any thread activity referencing indexes on tables residing within the applicable tablespaces will be terminated
- Connection and Job
- Package, Plan or Program
- DDF information
- Input masks supported (e.g., Database ABC%)

## DB2 Utilities Enhancement Tool

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- DB2 Utilities Enhancement Tool does *not* cancel the following threads:
  - ▶ Threads that have a thread token value of zero
    - CICS protected / reusable threads
    - No plan open on the thread
      - ◇ Would not be any locks or claims on DB2 objects
  - ▶ Threads for a DB2 Utilities Enhancement Tool started task
- DB2 Utilities Enhancement Tool provides:
  - ▶ Pre- and post-cancel user exits

## DB2 Utilities Enhancement Tool - Summary

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- Cancel or block threads on DB2 objects to allow utility processing
  - Prevents users from accessing an object when a utility must be performed
  - Runs the utility
  - Changes status of object so users can access object again
- ISPF User Interface or Batch processing
  - Display and Cancel threads, or block threads
- LOAD and REORG utility syntax enhancements
  - LOAD syntax requires manual changes
  - REORG syntax does not require manual changes



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## Questions?

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