

Configuration Parameters in DOE



Applies to:

NetWeaver Mobile [Data Orchestration Engine] 7.10 and above. For more information, visit the [Mobile homepage](#).

Summary

This document aims at providing details about various configuration parameters in DOE that could influence performance for a productive DOE server. We shall find more details in this document on default values, optimum values and additional information on the configuration parameters that will be useful while configuring the platform for productive usage.

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Introduction

There are various configuration parameters available in NetWeaver mobile admin portal as a separate 'configurations' link. They are broadly classified as DOE configuration parameters and Backend configuration parameters. with in DOE configuration, some parameters are meant for achieving better performance or load balancing with in DOE depending on the kind of data load expected in the customer system and some others are meant for enabling or disabling certain features according to the business use case.

Backend configurations are meant for improving backend access and inturn improve the processing of data in DOE.

This document is aimed at anyone using SAP NetWeaver Mobile 7.10 who are interested to know in detail about these configuration options in DOE. This documentation is aimed at the following groups:

- Consultants
- Customers using SAP NetWeaver Mobile 7.10

Where to find/set the configurations in DOE

Open the Data Orchestration Admin and Monitoring portal from SAP Easy access menu.

The User should have the DOE role 'SAP_DOE_ADMINISTRATOR' to access the above link.

Mobile Overview Administration Configuration Monitoring Statistics

DOE Configuration
Backend Configuration
Statistics Configuration
System Status Configuration

DOE Configuration

Search Configuration

Performance Relevant	Parameter Name	Description
<input checked="" type="checkbox"/>	CDS_READ_PACK_SIZE_FOR_EXT	Package size to read CDS during extract
<input checked="" type="checkbox"/>	CLIENT_PACKAGE_SIZE	PACKAGE SIZE USED IN EXTRACT TO DETERMINE NUMBER OF INSTANCES TO BE PUT IN A SINGLE MESSAGE
<input checked="" type="checkbox"/>	DOE_PACKAGE_SIZE	PACKAGE SIZE USED WITHIN THE DOE
<input checked="" type="checkbox"/>	DO_NOT_CHECK_PARENT	Flag to check parent
<input checked="" type="checkbox"/>	MMW_RR_PERFORMANCE	PACKAGE SIZE FOR RR CALCULATIONS

Parameter List

Add Save

SWCV Name	Data Object Name	Numeric Value

Note: These configurations could also be set from the transaction SDOE_PARAM. This transaction expects the values in guide (identifiers of objects) that user has to pre-fetch from DOE workbench where as from the configurations link; the user can select the objects from the list (F4) of objects in the system for the current mandt or client.

Display View "Parameter Names": Overview



Para...	Parameter Name	Short Text
MMW	ACTIVE_ADAPTER	ACTIVE ADAPTER FOR THIS CLIENT
MMW	AUTH_DWLD_BE_DEST	BACKEND DESTINATIONS FOR DOWNLOADING USER
MMW	BACKEND_ADAPTER	ALLOW BACKEND ADAPTER CREATION FOR THESE C
MMW	BACKEND_DESTINATION	RFC DESTINATION FOR BACKEND
MMW	BACKEND_MAX_QUEUES	MAXIMUM NUMBER OF QUEUES FOR BACKEND LOAD
MMW	BACKEND_PACKAGE_SIZE	PACKAGE SIZE USED IN GETMASSDATA
MMW	BLOCK_SIZE_FOR_ATTACHMENTS	MINIMUM BLOCK SIZE IN MB FOR ATTACHMENTS
MMW	CDS_EXTRACT_COUNT	NUMBER OF KEYS TO READ FROM CDS DURING RULE
MMW	CDS_READ_PACK_SIZE_FOR_EXT	Package size to read CDS during extract
MMW	CLIENT_PACKAGE_SIZE	PACKAGE SIZE USED IN EXTRACT TO DETERMINE NU
MMW	COMPARE_MEMO	Compare memo fields explicitly if backend says there i
MMW	CONFLICT_DETECTION_FOR_BACKEND	FLAG TO DECIDE IF CONFLICT DETECTION IS REQUI
MMW	DEVICE_MIGRATION_SOURCE	SOURCE FROM WHICH DEVICES NEED TO BE MIGRA
MMW	DISTRIBUTION_MODELER	ALLOW DISTRIBUTION MODEL CREATION FOR THES
MMW	DOE_ADMIN	USER WITH DOE ADMINISTRATOR ROLE
MMW	DOE_PACKAGE_SIZE	PACKAGE SIZE USED WITHIN THE DOE
MMW	DO_SYNC_EXTRACT	THIS PARAMETER IS ONLY USED FOR SYNCHRONOU
MMW	ENABLE_REASSIGNMENT	SWITCH TO ENABLE OR DISABLE DEVICE REASSIGN
MMW	ENABLE_REASSIGNMENT_DO	SWITCH TO ENABLE OR DISABLE DEVICE REASSIGN
MMW	EXTRACT_SCHEDULING	DURATION PERIOD (IN MINUTES) FOR A BATCH JOB
MMW	NAMESPACE	THIS PARAMETER IS ONLY USED FOR SYNCHRONOU
MMW	PULL_ASSOCIATED_DELTA	NAMESPACE FOR MOBILE MIDDLEWARE PARAMETER
MMW	ROLE_DWLD_BE_DEST	PULL THE DATA FOR ASSOCIATED DATA OBJECTS
MMW	RR_DEP_CARDINALITY_VALUE	Dependency Cardinality factor for RR
MMW	RR_DEP_MAX_PKG_SIZE	Max package size for dependency

Configurations

The configurations explained below will be categorized as 'Performance Specific DOE Configurations' and 'Performance Specific Backend Configurations'. The configuration values could be set per SWCV/data object/BE adapter depending on the set of objects that it is applicable.

Performance Specific DOE Configurations

Performance specific category comprises of those configurations that could improve performance upon configuring the system with customer specific values according to the expected data load in the productive scenario. There will be a default value associated with every configuration parameter. A wrongly configured value could bring the performance down as well in certain cases.

Note: The performance specific configuration values will be influenced by the Database being used and load expected during the productive usage.

CDS_READ_PACK_SIZE_FOR_EXT

Extract is the process of reading data object instances from Consolidated Data Store [CDS] and preparing the message that will be pushed to the outbound queue of the devices.

This parameter value will be used as package size during extract in DOE for reading instances from Consolidated Data Store (CDS). This many numbers of instances will be read at once (with one fetch from DB) from CDS during extract.

This parameter could be set per data object in a Software Component Version (SWCV).

Default Value

1000 if this parameter is not set explicitly for a specific DO in a SWCV.

More Information

If this parameter value is set same as client_package_size value, better extract performance is observed.

While deciding on this parameter value, consider the number of child segments in a data object and also the number of child node records for a data object instance.

This is important because while reading 'n' number of instances from CDS, it will have to read the entire child node records for a given root/header node record. This could exponentially go high if the cardinality is big.

If the cardinality is not very complex, this value could be set to a higher value. But if the cardinality is high, then reduce this value.

Note: The cardinality mentioned here refers to the header node to child node relationship. Example: one header node expects 10 child node records, and then the cardinality is 1:10

CLIENT_PACKAGE_SIZE

This parameter value decides how many instances of the same data object should be bundled together in a single message that is sent to the receiver.

Applicable incase of bulk inserts (initial device setup, delta downloads, device attribute change etc can cause inserts of instances to the receiver). End result will be 'n' number of instances part of one XML message that is sent to the receiver (Outbound queue of the device in DOE terms).

Default Value

50 if this parameter not set explicitly for a specific Data object.

More Information

If this parameter value is set same as `cds_read_pack_size_for_ext` value, better extract performance is observed. From the internal performance tests with reference data model, the following values were found optimal Default PDA client: 50, Default laptop client: 1000 to 2000

Note: This value is influenced by the number of records that could be processed at the receiver [client application] in a single commit cycle which could be data base specific. This value will directly influence the size of a message that is send to the receiver.

DOE_PACKAGE_SIZE

This parameter value is used as block size of keys while accessing backend during load of data from backend to DOE.

This parameter value determines the number of backend keys for which a `getdetails()` bapi is invoked during a load when 'Use Bulk' option is active for the backend adapter. This set of keys will be processed in a separate asynchronous process in DOE (Logical Unit of Work or LUW of QRFC) in a single commit work cycle.

Default Value

200 if this parameter not set explicitly for a specific DO.

More Information

If the `getdetails` call takes more time per key and package size set is large, then it might lead to be queue time out during load. While setting this parameter to a higher value, backend bapi performance also needs to be considered.

Note: Since this configuration value determines the amount of data that will be processed in DOE within a single LUW , check whether the QRFC timeout parameter is set high enough to process this set of data including the time taken in the backend to fetch the details of all this set of keys.

DO_NOT_CHECK_PARENT

This configuration is related to the runtime processing incase of dependency defined between data objects. In case of dependency evaluation where the following data object instances are to be deleted from a receiver, there will be a check to confirm whether these instances has to be retained in the receiver due to another leading data object instance.

This configuration value determines whether such a check could be skipped during a dependency evaluation as it is a costly check with respect to performance in a production scenario with considerable amount of data load. This configuration value could be set to 'X' to skip this check for a data object in an SWCV.

Default Value

Not set [Dependency evaluation will be performed by default].

More Information

This could be set only if the business data is such that a following data object instance is linked only to one leading data object instance or a following data object instance will flow down to receiver due to one leading data object instance only.

Note: Need to be very sure about the application data model and understand what kind of data will be sent from backend and how the distribution criteria is defined. If this check is missed incase of receiver getting following data object instance due to multiple leading data object instances, and then it will lead to missing data scenario.

MMW_RR_PERFORMANCE

This is an obsolete parameter.

QUEUESIZE

This parameter determines the number of queues to be used during extract to parallelize the processes. This will decide the number of extract queues as well as number of extract sub queues. Extract queues are common for all data objects and will have a pattern **MMWEXTRACT_QUEUE_***.

The processing starting from CDS read till the message is send to the outbound queue of a device happens with in sub queue specific to that data object with pattern **DOE_EXT***. One extract queue can in turn spawn 'n' number of sub queues for a data object.

Default Value

5 if this parameter not set.

More Information

Take an example where extract is triggered for a receiver that is eligible to get 10,000 instances of 5 different data objects. If no main extract queues are running, this process will run in the first queue created otherwise it will be put to an existing main extract queue with less number of entries as these queues are NOT created per device or data object.

The main extract queue will spawn different sub queues for each of the 5 data objects to perform CDS read and other processing to obtain the most advantage of parallel processing. New sub queue entries will be spawned for package size of extract keys .This is available through on the configuration parameter value '**CDS_READ_PACK_SIZE_FOR_EXT**'. In our example, if this parameter is set to 2000, for every 2000 extract keys either a new sub queue will be spawned or new entry will be put to existing sub queue for a particular data object.

The maximum number of extract queues or sub queues per data object that could be created is the value of configuration '**queue size**'.

Note: Most important factor to be considered while setting this configuration is the total dialogue work processes in the system as each queue entry will be utilizing a dialogue work process. Make sure to free up some dialogue work processes for other processes in DOE server.

RR_DEVICE_CONFIG

During a major realignment (for example, rule evaluation due to subscription additions, device attribute changes etc), this configuration value is used to decide data pertaining to how many devices need to be evaluated at once or in other words in a single commit work cycle.

Default Value

If this value is not set per data object per DMSWCV, then an algorithm within DOE decides this package size depending on the number of instances for that data object currently existing in CDS.

More Information

During initial device data preparation or any other scenario during operational phase where the data re-calculation will be triggered for large number of devices or when large amount of data for a set of devices, then this configuration could be set according to the expected data load for each device.

The distribution criteria or pattern for a particular data object for various set of devices could also be taken in to consideration while setting this value.

Note: If the load per device is not too high and this parameter is set to low, then it would reduce the performance doing unnecessary round trips. Similarly when load per device is too high, evaluating data for large number of devices in one commit cycle could lead to a timeout.

RUNTIME_PACKAGE_SIZE

This parameter value will be used as package size or block size for runtime calculations or replication and realignment processes.

This means 'n' number instance device pairs will be processed during runtime in a DB commit work cycle. This configuration is provided at DOE level, for the current client.

Default Value

If not set, default package size of 50,000 will be used for processing.

More Information

This parameter value will be used as block size for insert / update / delete operations in database.

Note: Since this value will be used as block size for database reads and writes; setting this to high value would require some tests on DB behavior with various block sizes to confirm that there are no overheads due to this high value.

USE_BULK_DELETES

This configuration determines whether to send bulk delete messages (Task = 'D') to receivers. If set to 'X' and when there are more instances to be distributed to receivers, the delete messages will be bulked. This will be applicable to all application objects (all SWCVs) in a DOE server for the current mandt.

Default Value

This configuration is not set by default (Delete messages are not bulked by default)

More Information

Since this is a newly introduced configuration from NW 7.10 SP7 onwards, need to make sure that the receiver or client framework is able to process bulk deletes before switching on this parameter. The CFS Mobile client version from NW 7.10 SP7 can consume bulk deletes.

Customers having older version of Mobile client than NW7.10 SP7 or any other client/server/application that cannot consume or process bulk deletes are NOT supposed to switch on this parameter as this will result in messages with delete task being lost if the receiver is not able to consume them.

Note: In case of huge data flow from DOE to receiver, one instance per message will lead to more processing time in DOE and receiver as there will be large number of reads and writes to the outbound queue followed by long sync time to consume all these single instance messages. Update messages will be sent as single instances irrespective of these configurations.

USE_BULK_INSERTS

This configuration determines whether to bulk the insert messages (Task = 'I') while sending to receivers. If set to 'X' and when there are more instances to be distributed to receivers, the insert messages will be bulked for synchronous extract enabled data object. This will be applicable to all sync extract enabled objects (part of all SWCVs) in a DOE server for the current mandt.

Default Value

Set to 'X' (Insert messages are bulked by default)

More Information

Similar to **use_bulk_inserts**, this also is newly added configuration parameter from NW 7.10 SP7 onwards. This parameter is set to 'X' by default as the existing CFS client for DOE can consume bulk inserts already. Any other client/server/application that will be interacting with DOE is expected to consume or process bulk inserts as the initial data to the devices will always be bulked and send even without this configuration.

Once this is set, whenever there is a major realignment for a device when the device is operational, the insert messages will be bulked and sent. This is aimed at reducing download and processing time of these messages at DOE and receiver (as it will result in less number of messages that is send to the receiver).

Note: The most advantageous scenario will be during major realignments (any rule evaluation scenario triggered due to new devices, device attribute changes, subscription changes etc.) where large number of instances will be freshly sent and / or removed from receivers. During a delta load, if there are more number of data object instances per receiver, bulk inserts will be sent.

Performance Specific Backend Configurations

BACKEND_MAX_QUEUES

This parameter value defines the number of queues to be spawned during a load from backend to DOE (initial as well as delta loads). This determines the number of dialog work processes used during load which means number of concurrent work processes required in BE should be greater or equal to BACKEND_MAX_QUEUES. This could be set per adapter / data object in an SWCV

Default Value

5 queues will be used by default.

More Information

If more number of work processes is available in the system, then this could be increased to achieve better parallelization of processing. In DOE, for each BE queue, an additional flow queue is started, hence there should be at least BACKEND_MAX_QUEUES * 2 number of dialog work processes.

Note: The number of backend_max_queues should be adjusted according to the number of CPU cores available in the system.

BACKEND_MAX_QUEUES = Number of CPU cores + 1

For example, if the backend has 8 CPU cores, DOE box has 4 CPU cores, then BACKEND_MAX_QUEUES = 4 + 1.

BACKEND_PACKAGE_SIZE

This parameter value defines the block size used while invoking getmassdata () bapi where this value specifies number of keys to be returned from backend in a single call from DOE to Backend. This will be used when 'Use Mass Data' option is checked for a backend adapter.

Default Value

200 if this parameter not set explicitly for a specific adapter for a data object.

More Information

If the getmassdata bapi takes more time per key and package size set is large, then it might lead to be queue time out during load. While setting this parameter to a higher value, backend bapi performance also needs to be considered.

COMPARE_MEMO

This parameter is used while sending the attachments or memos downloaded from backend to receiver. If this parameter is set, then the downloaded version of memo is compared with the version of data in the CDS before sending to the receiver. This configuration could be set per adapter/data object in an SWCV.

Default Value

The comparison will not be done with default settings.

More Information

There exists already a flag for backend to let DOE know that attachment is not changed in which case the attachment is blindly downloaded and sent without comparison. If this flag setting is appropriate then comparing with CDS could be avoided.

Note: If the backend logic is in place for pre-deciding if the memo is last changed or not before a load, then it is recommended not to set this parameter as this will affect the performance during the load from backend to DOE.

PULL_ASSOCIATED_DELTA

This parameter defines whether to automatically pull changes of associated data object instances from backend to DOE during a load. This parameter could be configured per data object in a SWCV. Once set, it applies for all associations originating from that data object (all associations held by that data object).

Only immediate associations those are complete (first level associated objects) will be pulled.

Default Value

The associated data will not be loaded with default settings.

More Information

This feature is seen as a replacement for line item filtering in NW 7.10 as this will ensure that all modifications for instances of immediately associated objects will reach DOE when the instance holding the reference reaches DOE.

More flexibility in this feature like pulling the changes during uploads, overriding this configuration at runtime, synchronously sending pulled data to receivers etc is available from NW 7.11 onwards.

If backend push is enabled for all associated data objects, then it's recommended not to enable this configuration as this will end up in multi processing of the same instance in DOE, hence degrading the performance.

Note: If the backend push is enabled for all associated data objects, then it is recommended not to enable this configuration as this will end up in multi processing of the same instance in DOE leading to performance degradation.

Related Content

[Configuration and Maintenance Steps for Server Side Performance Benchmarking](#)

For more information, visit the [Mobile homepage](#).

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