

Section 1

Introduction to Compression and Storage Optimization

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What is Compression?

- Ability to store data rows in compressed format on disk
- Saves up to 90% of row storage space **jenom teoreticky !!**
- Ability to estimate possible compression ratio
- Fits more data onto a page
- Fits more data into buffer pool
- Reduces logical log usage
- Less I/O for data scans... faster scans
- Less I/O for database backups... faster backups

Compression Concepts

- Lempel-Ziv (LZ) based algorithm – static dictionary, built by random sampling
- Frequently repeating patterns replaced with 12-bit symbol numbers
- Any byte that does not match a pattern is also replaced with a 12-bit reserved symbol number
- Patterns can be up to 15 bytes long
- Max possible compression = 90% (15 bytes replaced with 1.5 bytes = 12 bits)

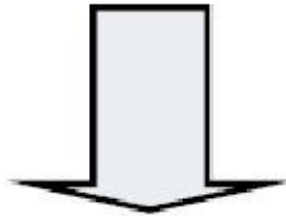
Compression Concepts – functional example

Employee Table

Row	Name	Dept	Salary	City	State	Zipcode
1	Fred Smith	500	10000	Raleigh	NC	27603
2	John Smith	500	20000	Raleigh	NC	27603

Compression Dictionary

Symbol	Pattern
01	Fred
02	Smith
03	500
04	1
05	0000 Raleigh NC 27603
06	John
07	2



Compressed Data

Row	Data stored on disk				
1	01	02	03	04	05
2	06	02	03	07	05

Compression Symbols

- 12-bits means 4,096 symbols
 - 256 reserved symbols for bytes that match no pattern
 - 3,840 pattern symbols
- Patterns > 7 bytes use up two symbol numbers
- Thus not all patterns can be compressed
- Dictionary tries to capture the “best” patterns (frequency x length)
- Non-matching bytes grow by 50% (8 bits replaced by 12 bits)

What is Storage Optimization?

- Ability to consolidate free space in a table or fragment to the end
- Consolidated data means better clustering and less I/O
- Ability to return this free space to the dbspace
- Space returned can then be used by any table in the dbspace
- Better space utilization

Benefits – data affects

- Data with frequently repeating long patterns is the most compressible
 - Long runs of 0's or blanks are very compressible
- Noise-like data is poorly or not at all compressible:
 - Encrypted data
 - Data already compressed by another algorithm
 - Data without long repeating patterns
- Avoid putting a “noise-like” column between other columns that have frequent patterns – disrupts potential column-spanning patterns

Benefits – performance impact

- I/O-bound workloads
 - Compression may improve performance by reducing I/Os (both data page and logical log)
 - More data fits on a page, so more in buffer pool
 - Log records are smaller, so less logging
- For CPU-bound workloads
 - Additional CPU used to compress and expand rows
 - Should not be a large impact

Benefits – summary

- Compression and Storage Optimization can save disk space and thus money
- For I/O-bound workloads Compression can also improve performance
- Compression reduces logical logging
- Compression fits more data into the buffer pool
- Storage Optimization allows space saved by compression to be reclaimed from tables and table fragments

Interoperability – CDC (DataMirror)

- CDC (Change Data Capture - DataMirror)
 - Compression of targets is a function of what the target database supports and what use specifies
 - Compressed tables/fragments are uncompressed before being sent to the target database

Interoperability – ER

- ER

- Compression status of tables is independent between source and target, specified by user

Interoperability – HDR

- HDR

- Tables will be compressed on secondary if they are compressed on primary

Interoperability – OAT

- OAT – Open Admin Tool
- Compression and Storage Optimization can be managed via the OAT graphical interface

Restrictions – things that cannot be compressed

- Out-of-row data (i.e. LOB data)
- Indices (both attached and detached index pages) – 12.10
- System catalog tables
- Temporary tables
- Internal partition tables (i.e. database tblspace, tblspace tblspace)
- Compression dictionary tables
- Tables in the following databases:
 - sysuser
 - sysmaster
 - sysutils
 - syscdr
 - syscdcv1
- Virtual-table interface tables
- Regular tables with less than 2000 rows

Příklad

IBM Informix Dynamic Server

```
dbaccess - -<<!  
drop database pomyk;  
create database pomyk with log;  
!  
export FET_BUFF_SIZE=32000  
time dbaccess pomyk tab  
--2k  
drop table fr1_2k;  
create raw table fr1_2k (a int, b lvarchar(400), c date)  
fragment by round robin  
partition p1 in dat1_2k,  
partition p2 in dat2_2k;  
load from fr.unl insert into fr1_2k;  
alter table fr1_2k type (standard);  
-- 16k  
drop table fr1_16k;  
create raw table fr1_16k (a int, b lvarchar(400), c date)  
fragment by round robin  
partition p1 in dat1_16k,  
partition p2 in dat2_16k;  
load from fr.unl insert into fr1_16k;  
alter table fr1_16k type (standard)
```

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Section 2

Using Compression and Storage Optimization Commands

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Admin API interface

- All compression and storage optimization operations are invoked via the IDS Admin API built-in UDRs (sysadmin database)

- `execute function sysadmin:task (...);`

- `execute function sysadmin:admin (...);`

- Example

- `execute function sysadmin:task("table compress repack shrink",
"table_name", "database_name", "owner_name");`

- Enables OAT graphical interface

- Enables remote execution (DBA does not need to log directly in to the target machine)

Estimating compression

- The expected compression ratio of a table or fragment can be predicted with reasonable accuracy
 - estimates the compression ratio a brand-new dictionary could get
 - if already compressed, calculates the current compression ratio (else 0)
 - also shows the estimated gain to be had by making a new dictionary (difference between first and second estimates)
- `execute function sysadmin:task|admin("table estimate_compression","table_name","database_name","owner_name");`
- `execute function sysadmin:task|admin("fragment estimate_compression","partnum_list");`

Using compression – create_dictionary

- Creates a compression dictionary
- Marks the table/fragment as compressed
- Any rows inserted or updated after creation will be compressed
- Previously existing rows will not be compressed
- A subsequent dummy update will compress the rows
- `execute function sysadmin:task|admin("table create_dictionary", "table_name", "database_name", "owner_name");`
- `execute function sysadmin:task|admin("fragment create_dictionary", "partnum_list");`

Using compression – compress

- Does an implicit create_dictionary if no dictionary exists
- Compresses all previously existing rows
- Any rows inserted or updated afterwards will be compressed
- Table/fragment fully accessible to other queries
- `execute function sysadmin:task|admin("table compress","table_name","database_name","owner_name");`
- `execute function sysadmin:task|admin("fragment compress","partnum_list");`

Compress command and logging

- If the database is logged, a HUPBEF for the source row and a HUPAFT for the target row will be logged. This is done in-place therefore the source and target rowid will be the same.
- Regardless of database logging, all dictionary table operations are logged.

Removing compression – uncompress

- Uncompress every row in the table/fragment
- Deactivate the compression dictionary
- Table is fully accessible
- `execute function sysadmin:task|admin("table uncompress", "table_name", "database_name", "owner_name");`
- `execute function sysadmin:task|admin("fragment uncompress", "partnum_list");`

Removing compression – uncompress_offline

- Uncompress every row in the table/fragment
- Deactivate the compression dictionary
- Table is XLOCKed, no query access
- `execute function sysadmin:task|admin("table uncompress_offline","table_name","database_name","owner_name");`
- `execute function sysadmin:task|admin("fragment uncompress_offline","partnum_list");`

.

Uncompress commands and logging

- The “uncompress” commands function by deleting a row and inserting it back into the table.
- If the database is logged, a HDELETE for the source row and a HINSERT for the target row will be logged.
- If the database is logged and the table has one or more indices, a DELITEM for the source row and a ADDITEM for the target row (for each index) will be logged.
- Regardless of database logging, all dictionary table operations are logged.

Compress vs uncompress commands

- Compress does not need to update indexes and search for or allocate any space. The rows are compressed directly in their existing slots.
- Uncompress has to delete and reinsert every row, which is more expensive than updating them in-place because:
 - it does two write ops per row instead of one
 - it has to search for space
 - it must update of all indexes for every row processed
- Thus uncompress is expected to be more expensive than compress, and if there are many indexes or a lot of new space must be allocated, the cost may be much more expensive. Uncompress is the costliest Compression/SO operation of them all.

Příklad

- komprese začíná už při create table
- tvorba slovníku (kdy)

Removing compression – purge_dictionary

- Deletes old **inactive** dictionaries
- This is a separate command because ER or CDC (DataMirror) might need old dictionaries for log records not yet snooped/replayed

Removing compression – purge_dictionary (cont)

- Deletes old **inactive** dictionary entries for a specified table name:
 - `execute function sysadmin:task|admin("table_purge_dictionary", "database_name", "table_name", "owner_name");`
 - NOTE: this will fail if the table has been dropped.
- Deletes old **inactive** dictionary entries for a specified partnum or list of partnums:
 - `execute function sysadmin:task|admin("fragment_purge_dictionary", "partnum_list");`

Removing compression – purge_dictionary (cont)

- Deletes all old **inactive** dictionaries:
 - `execute function sysadmin:task|admin("compression purge_dictionary");`
- Deletes all old **inactive** dictionaries created prior to the specified date.
 - `execute function sysadmin:task|admin("compression purge_dictionary","date");`

Storage optimization – repack

- Coalesce all the rows to the front of the partition
- Data rows are moved to the available space on data pages in logical page order
- Attached index and partition BLOB pages are not moved
- Table/fragment is fully accessible
- Table/fragment does **not** have to be compressed
- `execute function sysadmin:task|admin("table repack", "table_name", "database_name", "owner_name");`
- `execute function sysadmin:task|admin("fragment repack", "partnum_list");`

Storage optimization – repack_offline

- Coalesce all the rows to the front of the partition
- Data rows are moved to the available space on data pages in logical page order
- Attached index and partition BLOB pages are not touched
- Table/fragment is XLOCKed, no query access
- Table/fragment does **not** have to be compressed
- `execute function sysadmin:task|admin("table repack_offline","table_name","database_name","owner_name");`
- `execute function sysadmin:task|admin("fragment repack_offline","partnum_list");`

Storage optimization – repack commands and logging

- The “repack” commands function by deleting a row and inserting it back into the table.
- If the database is logged, a HDELETE for the source row and a HINSERT for the target row will be logged.
- If the database is logged and the table has one or more indices, a DELITEM for the source row and a ADDITEM for the target row (for each index) will be logged.

Storage optimization – shrink

- Return unused space at end of table or fragment back to the dbspace
- Cannot shrink first extent smaller than the initial first extent size specified at table creation
- Normally done after a repack
- Table/fragment does **not** have to be compressed
- `execute function sysadmin:task|admin("table shrink", "table_name", "database_name", "owner_name");`
- `execute function sysadmin:task|admin("fragment shrink", "partnum_list");`

Storage optimization – interoperability

- Can be ran individually or with other Storage Optimization or Compression commands
- Possible combinations with the “table” method:
 - `execute function task|admin("table compress repack shrink", "table_name", "database_name", "owner_name");`
 - `execute function task|admin("table compress repack", "table_name", "database_name", "owner_name");`
 - `execute function task|admin("table compress shrink", "table_name", "database_name", "owner_name");`
 - `execute function task|admin("table repack shrink", "table_name", "database_name", "owner_name");`
- When run as a single command, the server processes the operations in this order:
 - `create_dictionary compress[_offline] repack[_offline] shrink`

More on Compression and SO “table” commands

- The “table ...” commands operate on the specified table_name, database_name and owner_name
- “table_name” is a required parameter
- “database_name” and “owner_name” are not required as they will default to the current database and user informix
- On fragmented tables, the “table ...” command will process each fragment serially

More on Compression and SO “fragment” commands

- The “fragment ...” commands operate on “partnum_list”
- “partnum_list” is a space-separated list of one or more partnums
 - Example: “0x300002 0x400002”
- The “fragment ...” command will process each partnum serially in the order specified

Achieving parallelism with Compression and SO commands

- There is no automatic parallelism when operating on fragmented tables
- To achieve parallelism, one would need to run a “fragment ...” command on each fragment in concurrent sessions
- Example: table with 2 fragments (partnums 0x300002 and 0x400002)
 - Session 1: `execute function sysadmin:task("fragment compress", "0x300002");`
 - Session 2: `execute function sysadmin:task("fragment compress", "0x400002");`

Commit interval for Compression and SO commands

- To avoid long transactions, compress, uncompress, uncompress_offline, repack and repack_offline use a commit interval of 100 rows per transaction in logged databases.
- **#define COMPRESSION_COMMIT_INTERVAL 100**

Altered tables with Compression and Storage Optimization

- The “compress” commands will update the each compressed row to be the newest version if the table has been altered in-place.
- The “repack” commands start on the last row of the last page, moving it to the available space on data pages in logical page order. If the table has been altered in-place, the moved rows will be of the newest version provided the target page is also the newest version or has no rows from the start.

Monitoring in progress compression/SO commands

- `onstat -g dsk`

Partnum	OP	Processed	Cur Page	Duration	Table
0x00300002	2	128	128	2s	compfragtab
0x00000000	1	0	0	1s	compfragtab

- Translation table for the “OP” column:

- 1 create_dictionary
- 2 compress
- 4 repack
- 8 repack_offline
- 16 shrink
- 32 uncompress
- 64 uncompress_offline
- 128 estimate_compression
- 256 purge_dictionary

- “Processed” is the number of rows processed.
- “Cur Page” is the current page being worked.

Section 3

OAT's Graphical Interface for Compression & Storage Optimization

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OAT – Data Compression

- **OAT → Space Administration → Compression**

The screenshot displays the OpenAdmin Tool for IDS interface. The title bar shows "OpenAdmin Tool for IDS" and "Server: ol_ids_1150_1". The left sidebar contains a navigation menu with the following items: Home, Health Center, Logs, Task Scheduler, Space Administration (highlighted with a red arrow), DBSpaces, Chunks, Recovery Logs, Compression, Server Administration, Enterprise Replication, Performance Analysis, SQL ToolBox, Help, Admin, and Logout. The main content area is divided into two tabs: "Default" and "Space". The "Space" tab is active, showing two charts. The "Memory" chart displays a stacked bar chart with "USED" (orange) and "FREE" (green) memory. The y-axis ranges from 0 to 20000. The x-axis shows time intervals from 15:32:34 to 15:33:24. The "Transactions" chart displays a line graph with "# Transactions" on the y-axis (0 to 0.8) and time intervals on the x-axis from 15:31:25 to 15:33:15. A "Refresh Rate" control is visible at the top, set to "OFF" with a slider for 30 and 60 seconds. A "Full Screen" button is located in the top right corner.

OAT – Data Compression

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Home **Databases** DBSpaces Compression Task Status

stores_demo Table name filter: All

12 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Rows	Estimate	Compressed	Usage
administrator	cust_calls	4 KB	1	8	7		✗	
administrator	cust1	4 KB	173	176	5012		✗	
administrator	client	4 KB	519	528	15036		✗	
administrator	catalog	4 KB	4	8	74		✗	
administrator	cust	4 KB	173	176	5012		✓	
administrator	customer	4 KB	1	8	28		✗	
administrator	orders	4 KB	1	8	23		✗	
administrator	call_type	4 KB	1	8	5		✗	
administrator	manufact	4 KB	1	8	9		✗	
administrator	state	4 KB	1	8	52		✗	
administrator	stock	4 KB	1	8	74		✗	
administrator	items	4 KB	1	8	67		✗	

Server Info

ServerType: Primary
 Version: 11.50.TC4B5TL
 ServerTime: 14:41:11
 BootTime: 04-30 11:00
 UpTime: 03:40:44
 Sessions: 5
 Max Users: 4

Operating System

Total Mem: 2.00 GB
 Free Mem: 850 MB
 # of CPU: 1

OAT – Data Compression

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Home **Databases** DBSpaces Compression Task Status

stores_demo
sysadmin
test

Table name filter: All

12 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Rows	Estimate	Compressed	Usage
administrator	cust_calls	4 KB	1	8	7		✗	
administrator	cust1	4 KB	173	176	5012		✗	
administrator	client	4 KB	519	528	15036		✗	
administrator	catalog	4 KB	4	8	74		✗	
administrator	cust	4 KB	173	176	5012		✓	
administrator	customer	4 KB	1	8	28		✗	
administrator	orders	4 KB	1	8	23		✗	
administrator	call_type	4 KB	1	8	5		✗	
administrator	manufact	4 KB	1	8	9		✗	
administrator	state	4 KB	1	8	52		✗	
administrator	stock	4 KB	1	8	74		✗	
administrator	items	4 KB	1	8	67		✗	

Estimate: Not Available
Used:519
Total:528

Server Info

ServerType: Primary
Version: 11.50.TC4B5TL
ServerTime: 14:41:11
BootTime: 04-30 11:00
UpTime: 03:40:44
Sessions: 5
Max Users: 4

Operating System
Total Mem: 2.00 GB
Free Mem: 850 MB
of CPU: 1

OAT – Data Compression

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Databases DBSpaces Compression Task Status

stores_demo
sysadmin
test

Table name filter: All

12 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Rows	Estimate	Compressed	Usage
administrator	cust_calls	4 KB	1	8	7		✗	
administrator	cust1	4 KB	173	176	5012		✗	
▶ administrator	client	4 KB	519	528	15036		✗	
administrator	catalog	4 KB	4	8	74		✗	
administrator	cust	4 KB	173	176	5012		✗	
administrator	customer	4 KB	1	8	28		✗	
administrator	orders	4 KB	1	8	23		✗	
administrator	call_type	4 KB	1	8	5		✗	
administrator	manufact	4 KB	1	8	9		✗	
administrator	state	4 KB	1	8	52		✗	
administrator	stock	4 KB	1	8	74		✗	
administrator	items	4 KB	1	8	67		✗	

Estimate:19
 Current At: 2009-04-30 09:21:15
 Used:173
 Total:176
 Saving:154

Server Info

ServerType: Primary
 Version: 11.50.TC4B5TL
 ServerTime: 14:41:11
 BootTime: 04-30 11:00
 UpTime: 03:40:44
 Sessions: 5
 Max Users: 4

Operating System

Total Mem: 2.00 GB
 Free Mem: 850 MB
 # of CPU: 1

OAT – Data Compression

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Home

- Health Center
- Logs
- Task Scheduler
- Space Administration
 - DBSpaces
 - Chunks
 - Recovery Logs
 - Compression
- Server Administration
- Enterprise Replication
- Performance Analysis
- SQL ToolBox
- Help
- Admin
- Logout

Server Info

ServerType: Primary
 Version: 11.50.TC4B5TL
 ServerTime: 23:36:51
 BootTime: 04-30 11:00
 UpTime: 12:36:24
 Sessions: 4
 Max Users: 4

Operating System

Total Mem: 2.00 GB
 Free Mem: 592 MB
 # of CPU: 1

Databases

- stores_demo
- sysadmin
- test

DBSpaces

Compression Task Status

Table name filter:

11 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Compressed	Estimate	Compressed	Usage
administrator	cust_calls	4 KB	1	8	Uncompressed		×	
administrator	cust1	4 KB	173	176	5012		×	
administrator	client	4 KB	519	528	15036		×	
administrator	catalog	4 KB	4	8	74		×	
administrator	customer	4 KB	1	8	28		×	
administrator	orders	4 KB	1	8	23		×	
administrator	call_type	4 KB	1	8	5		×	
administrator	manufact	4 KB	1	8	9		×	
administrator	state	4 KB	1	8	52		×	
administrator	stock	4 KB	1	8	74		×	
administrator	items	4 KB	1	8	67		×	

OAT – Data Compression

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Home

- Health Center
- Logs
- Task Scheduler
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 - DBSpaces
 - Chunks
 - Recovery Logs
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- Enterprise Replication
- Performance Analysis
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- Logout

Server Info

ServerType: Primary
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 Sessions: 4
 Max Users: 4

Operating System

Total Mem: 2.00 GB
 Free Mem: 592 MB
 # of CPU: 1

Databases | DBSpaces | **Compression Task Status**

stores_demo | sysadmin | test

Table name filter:

11 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Uncompressed	Compressed	Usage
administrator	cust_calls	4 KB	1	8			<div style="width: 100%; height: 10px; background-color: green;"></div>
administrator	cust1	4 KB	173	176	5012		<div style="width: 100%; height: 10px; background-color: red;"></div>
administrator	client	4 KB	519	528	15036		<div style="width: 100%; height: 10px; background-color: red;"></div>
administrator	catalog	4 KB	4	8	74		<div style="width: 100%; height: 10px; background-color: red;"></div>
administrator	customer	4 KB	1	8	28		<div style="width: 100%; height: 10px; background-color: green;"></div>
administrator	orders	4 KB	1	8	23		<div style="width: 100%; height: 10px; background-color: green;"></div>
administrator	call_type	4 KB	1	8	5		<div style="width: 100%; height: 10px; background-color: green;"></div>
administrator	manufact	4 KB	1	8	9		<div style="width: 100%; height: 10px; background-color: green;"></div>
administrator	state	4 KB	1	8	52		<div style="width: 100%; height: 10px; background-color: green;"></div>
administrator	stock	4 KB	1	8	74		<div style="width: 100%; height: 10px; background-color: green;"></div>
administrator	items	4 KB	1	8	67		<div style="width: 100%; height: 10px; background-color: green;"></div>

OAT – Data Compression

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Home | Health Center | Logs | Task Scheduler | Space Administration | DBSpaces | Chunks | Recovery Logs | Compression | Server Administration | Enterprise Replication | Performance Analysis | SQL ToolBox | Help | Admin | Logout

Server Info
 ServerType: Primary
 Version: 11.50.TC485TL
 ServerTime: 23:36:51
 BootTime: 04-30 11:00
 UpTime: 12:36:24
 Sessions: 4
 Max Users: 4
Operating System
 Total Mem: 2.00 GB
 Free Mem: 592 MB
 # of CPU: 1

Databases | **DBSpaces** | Compression Task Status

rootdbs | ol_ids_1150_1 | sbospace | **datadbs1** | datadbs2 | datadbs3

Table name filter: All

Owner	Table	Page Size	Used Pages	Total Pages	Rows	Estimate	Compressed	Usage
administrator	customer	4 KB	1	8	28		✗	
administrator	orders	4 KB	1	8	23		✗	
administrator	manufact	4 KB	1	8	9		✗	
administrator	stock	4 KB	1	8	74		✗	
administrator	items	4 KB	1	8	67		✗	
administrator	state	4 KB	1	8	52		✗	
administrator	call_type	4 KB	1	8	5		✗	
administrator	cust_calls	4 KB	1	8	7		✗	
administrator	catalog	4 KB	4	8	74		✗	
administrator	cust	4 KB	173	176	5012		✓	
administrator	cust1	4 KB	173	176	5012		✗	
administrator	client	4 KB	173	176	5012		✗	

OAT – Data Compression – Fragmented Table

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Home **Databases** DBSpaces Compression Task Status

stores_demo
sysadmin
test

Table name filter: All

12 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Rows	Estimate	Compressed	Usage
administrator	cust_calls	4 KB	1	8	7		×	
administrator	cust1	4 KB	173	176	5012		×	
administrator	client	4 KB	519	528	15036		×	
administrator	catalog	4 KB	4	8	74		×	
administrator	cust	4 KB	173	176	5012		✓	
administrator	customer	4 KB	1	8	28		×	
administrator	orders	4 KB	1	8	23		×	
administrator	call_type	4 KB	1	8	5		×	
administrator	manufact	4 KB	1	8	9		×	
administrator	state	4 KB	1	8	52		×	
administrator	stock	4 KB	1	8	74		×	
administrator	items	4 KB	1	8	67		×	

Server Info

ServerType: Primary
Version: 11.50.TC4B5TL
ServerTime: 14:41:11
BootTime: 04-30 11:00
UpTime: 03:40:44
Sessions: 5
Max Users: 4

Operating System

Total Mem: 2.00 GB
Free Mem: 850 MB
of CPU: 1

OAT – Data Compression – Fragmented Table

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Home | **Databases** | DBSpaces | Compression Task Status

stores_demo | sysadmin | test

Table name filter: All

12 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Rows	Estimate	Compressed	Usage
administrator	cust_calls	4 KB	1	8	7		✗	
administrator	cust1	4 KB	173	176	5012		✗	
administrator	client	4 KB	519	528	15036		✗	
Partition Num	Partition	Rows	Used Pages	Total Pages	Estimate	Compressed	Usage	
0x00400060	datadbs1	5012	173	176		✗		
0x00500002	datadbs2	5011	173	176		✗		
0x00600002	datadbs3	5013	173	176		✗		
administrator	catalog	4 KB	4	8	74		✗	
administrator	cust	4 KB	173	176	5012		✓	
administrator	customer	4 KB	1	8	28		✗	
administrator	orders	4 KB	1	8	23		✗	
administrator	call_type	4 KB	1	8	5		✗	
administrator	manufact	4 KB	1	8	9		✗	
administrator	state	4 KB	1	8	52		✗	
administrator	stock	4 KB	1	8	74		✗	
administrator	items	4 KB	1	8	67		✗	

Server Info: ServerType: Primary, Version: 11.50.TC4B5TL, ServerTime: 23:36:51, BootTime: 04-30 11:00, UpTime: 12:36:24, Sessions: 4, Max Users: 4, Operating System: Total Mem: 2.00 GB, Free Mem: 592 MB, # of CPU: 1

OAT – Data Compression – Estimate

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

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Server Info

ServerType: Primary
 Version: 11.50.TC4B5TL
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Operating System

Total Mem: 2.00 GB
 Free Mem: 592 MB
 # of CPU: 1

Databases **DBSpaces** Compression Task Status

stores_demo
 sysadmin
 test

Table name filter: All

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administrator	orders	4 KB	1	8	23		✗	
administrator	call_type	4 KB	1	8	5		✗	
administrator	manufact	4 KB	1	8	9		✗	
administrator	state	4 KB	1	8	52		✗	
administrator	stock	4 KB	1	8	74		✗	
administrator	items	4 KB	1	8	67		✗	

Run estimate compression for this table or fragment.

OAT – Compress Operation

OpenAdmin Tool for IDS Server: ol_ids_1150_1@SANJITC-TSA2

Navigation: Home, Health Center, Logs, Task Scheduler, Space Administration, DBSpaces, Chunks, Recovery Logs, **Compression**, Server Administration, Enterprise Replication, Performance Analysis, SQL ToolBox, Help, Admin, Logout

Server Info: ServerType: Primary, Version: 11.50.TC4B5TL, ServerTime: 23:36:51, BootTime: 04-30 11:00, UpTime: 12:36:24, Sessions: 4, Max Users: 4, Operating System: Total Mem: 2.00 GB, Free Mem: 592 MB, # of CPU: 1

Compression Task Status: stores_demo

Table name filter: All

12 Tables for database: stores_demo

Owner	Table	Page Size	Used Pages	Total Pages	Rows	Estimate	Compressed	Usage
administrator	cust_calls	4 KB	1	8	7		✗	
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administrator	manufact	4 KB	1	8	9		✗	
administrator	state	4 KB	1	8	52		✗	
administrator	stock	4 KB	1	8	74		✗	
administrator	items	4 KB	1	8	67		✗	

OAT – Compress Operation (cont.)

OpenAdmin Tool for IDS Server: vonbarg_gama@gama

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 - SQL Editor
 - Query By Example
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- Admin
- Logout

Server Info

ServerType: Primary
 Version: 11.50.FC4
 ServerTime: 15:10:28
 BootTime: 03-27 09:29
 UpTime: 10 days 05:40:38
 Sessions: 4
 Max Users: 6

Operating System

Total Mem: 3.85 GB
 Free Mem: 28.9 MB
 # of CPU: 4

Databases DBSpaces Compression Task Status

sysadmin Table name filter: All

Compress , Repack , Shrink 13 Tables for database: stores_demo

Table	Page Size	Used Pages	Free Pages	Used	Free	Fragmented	Compress
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	
big	128	128	0	100%	0%	X	

Database: stores_demo Owner: informix Table: big Fragment: dspace3:0x00300002

Compress Build a compression dictionary and compress the selected table or fragment.

Repack Consolidate free space in the table or fragment

Offline Place an exclusive lock on the table or fragment during the repack operation to prevent access to the data.

Shrink Return any free space to the dbspace.

OAT – Compressing a Fragment (cont.)

OpenAdmin Tool for IDS Server: vonbarg_gama@gama

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Databases
DBSpaces
Compression Task Status

OFF 60 120 180 240 300

Command	Start Time	End Time	Table	Result
COMPRESS	2009-04-06 15:17:34	2009-04-06 15:17:35(est)	stores_demo:informix.big	Running
fragment coi	2009-04-06 15:14:45	2009-04-06 15:15:03	stores_demo:informix.big	Succeeded: admin_fragment_command('fragment c

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