Installing and configuring CA Datacom/AD R14 for your CA product

Vít Gottwald

CA Technologies

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Session # 13975

SHARE
in Boston

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13975: Installing and configuring CA Datacom/AD r14 for your CA product

- Monday, August 12, 2013: 4:30 PM-5:30 PM
- Room 311 (Hynes Convention Center)
- Speaker: Vit Gottwald (CA Technologies)

- CA Datacom/DB is CA's strategic Database management system for the mainframe platform. It is being widely used in the industry and many large corporations depend on it.
- CA Datacom/AD is a restricted use version that is utilized by many CA products as their internal database today and even more products will use it in the future.
- Come to this session to learn the basics of CA Datacom/AD and how to properly install and configure it for your CA product.
- If you are a new user you will learn all the things you need to get you started.
- If you are an experienced Datacom/DB user, you will learn about differences between CA Datacom/DB and CA Datacom/AD. You will also learn about a new SIMPLIFY feature introduced in release 14 (mandatory for CA Datacom/AD, optional for CA Datacom/DB). It introduces new standards, rules, and protections to greatly simplify the configuration, management, and operation of a CA Datacom environment.
- Take the opportunity to come and raise your questions, concerns, and requirements for Datacom/AD and Datacom/DB with a zNextGen member of the development team!

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- Installing, deploying, and configuring Datacom/AD
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- Manually extending data/index area

What is Datacom/AD, who uses it?

What is CA Datacom/AD?
Relational data repository for use by CA products

Relational data repository for use by CA Products

Based on selected components from CA Datacom family

AD

Full "power" of CA Datacom in a pre-packaged form

Fully accessible to CA SYSVIEW® and other monitoring tools
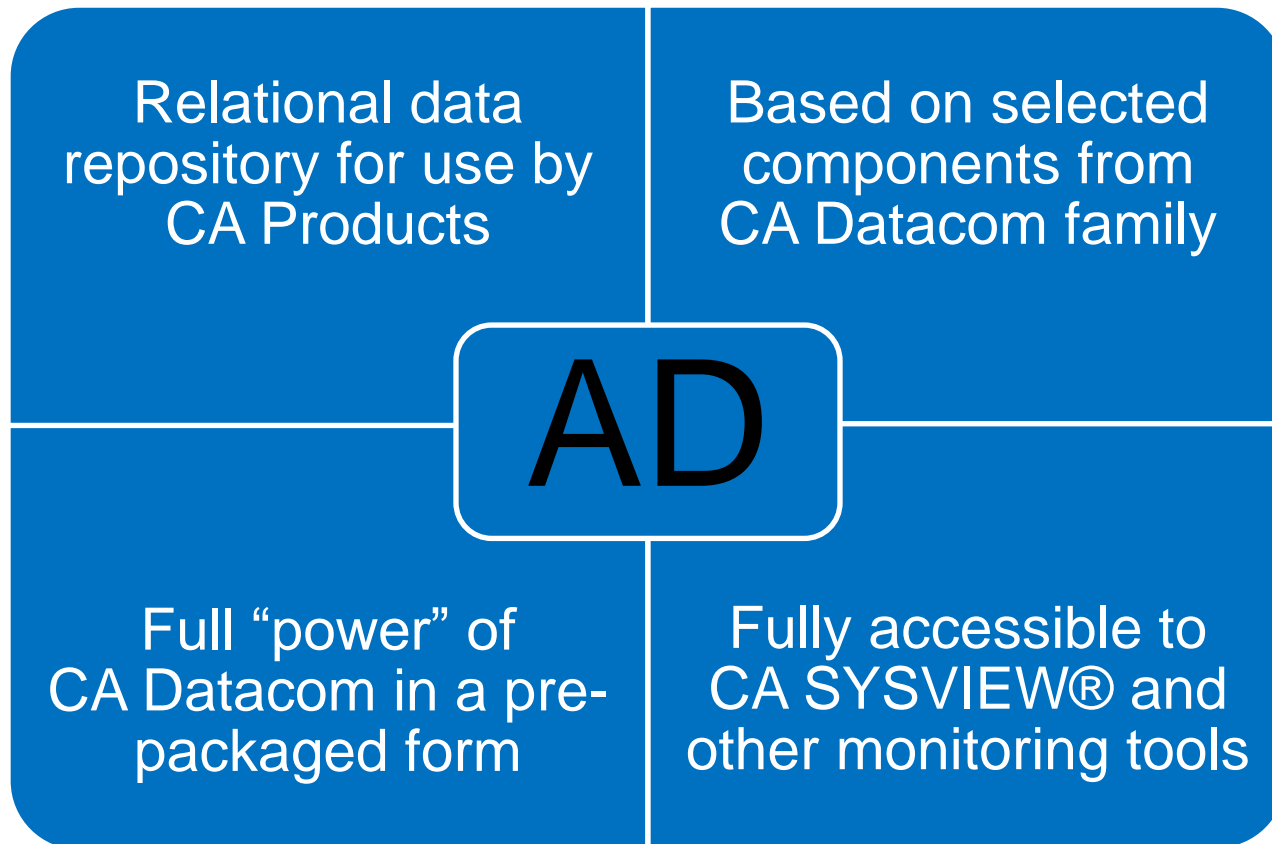
What Is The Difference Between Datacom/DB and Datacom/AD?

AD

5 CA Datacom options packaged together:
DB, DD, DQ, SQL, Server

Single package install

All the power of the CA Datacom/DB products with only one limitation: Only allows CA product databases to be installed

DB

14 Different licensable options, each purchased separately

Multiple packages to install. Packages can be combined under Chorus Software Manager

Unlimited user database definitions

What are the "using products"?
The list is growing …

Primary Data Manager

CA Scheduler	CA 11	CA Jobtrac	CA Disk
CA APCDDS	CA Chorus Software Manager	CA Chorus platform	Future CA 7

Optional Data Manager *

CA CIA	CA Compliance Manager	CA IMS Tools	CA JARS CA PMA Chargeback
CA Common Services	CA NetMaster Report Center	Future …	3rd Party Infor Masterpiece
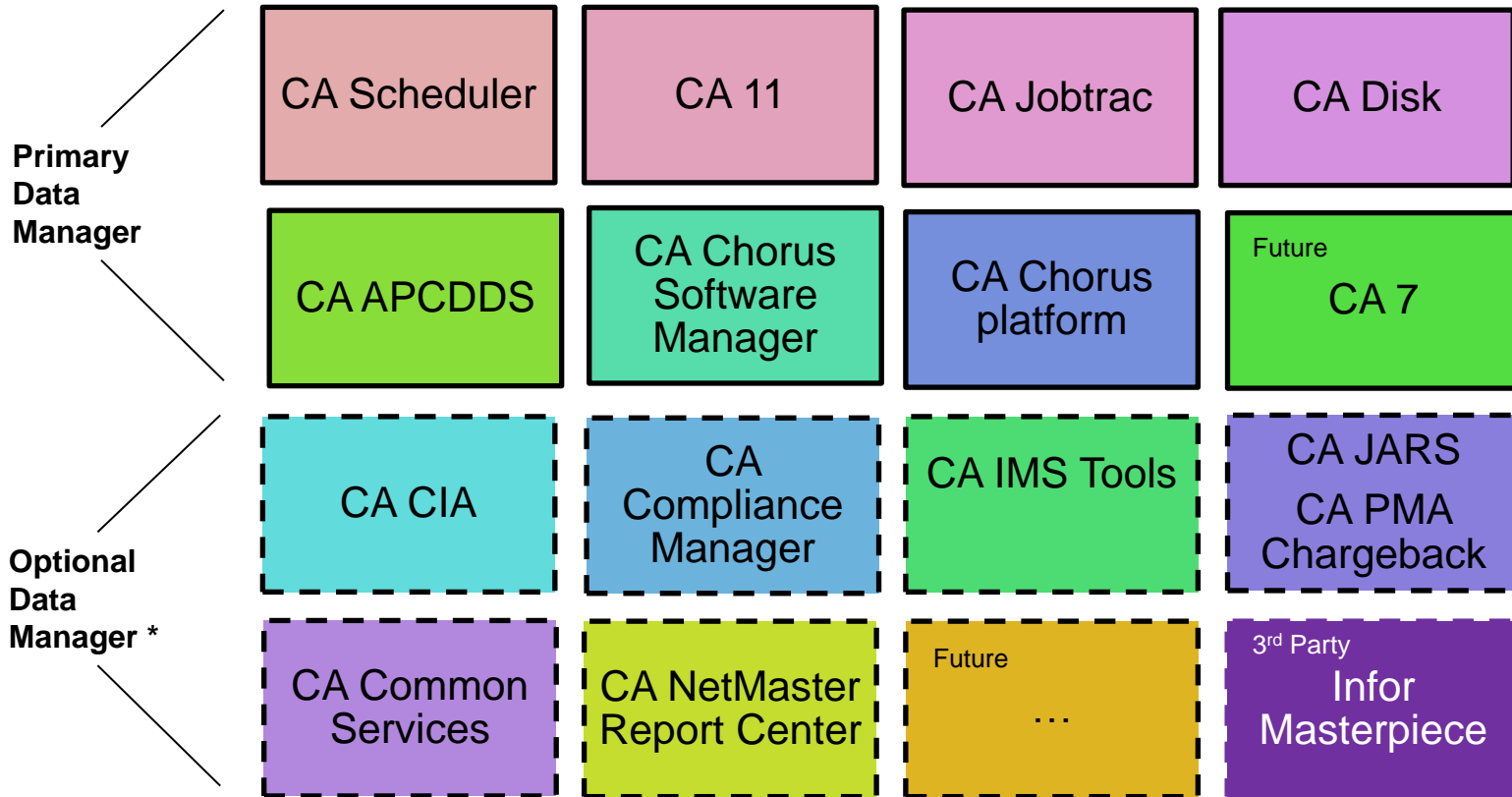
*) Optional data manager means that either AD is only needed if a specific feature is enabled or the product provides an option for an alternative data store.

Installing, Deploying, and Configuring Datacom/AD Using

CA Chorus Software Manager

Installation and Deployment

- Standard processes, same as for other CA products
- Step by step instructions with screenshots included in second presentation file – can be downloaded from the SHARE website.
  - https://share.confex.com/share/121/webprogram/Session13975.html
- Related sessions
  - CA Chorus Software Manager *Hands-on-Lab*
    - Wed 3:00 PM – 4:00 PM, Room 202 (Hynes Convention Center)
  - CA Chorus Software Manager: *User Experience and Update*
    - Thu 3:00 PM – 4:00 PM, Room 113 (Hynes Convention Center)
  - SHARE Technology Exchange – visit our booth

Configuration Steps

- **Build** configuration using a Graphical Wizard
  - Answer questions and/or confirm defaults
  - At any point SAVE wherever you are and get back to it later
  - At the end "build" the configuration
- **Validate**
  - Sanity check before implementation
  - Looks into resource database and makes sure everything is ready for implementation
- **Implement**
  - Uses Software Configuration Service (part of CA CSM) to implement the configuration on target system

Configuration Steps, cont'd

- Only few details required other than defaults
  - **CXXNAME** – Unique 1-7 character name identifying this Datacom/AD environment
  - **DCMHLQ** – High level qualifier of where the configuration datasets will be placed
  - **DCMVOL** – Volume serial of where the configuration datasets will be placed
  - **JOBCARD (1-4) –** JCL JOB card used to run a test job during configuration
    - JOBCARD3 = "`//*JOBPARM S=*`"
      - *When running in a sysplex environment make sure to remove the first '/' so that the job runs on the same system as submitted*

Dataset Summary After Configuration

- GOTVI01.SHRCNF.AD14.CXX.BACKUP
- GOTVI01.SHRCNF.AD14.DDDBBU.BACKUP
- GOTVI01.SHRCNF.AD14.DDDDBBU.BACKUP

- GOTVI01.SHRCNF.CUSLIB
- GOTVI01.SHRCNF.CUSMAC
- GOTVI01.SHRCNF.CUSPROC
- GOTVI01.SHRCNF.INSTJCL ← Sample JLCs

MUF startup JCL is here (ADMUFSTR)

- GOTVI01.SHRCNF.RT.CAAXDATV
- GOTVI01.SHRCNF.RT.CAAXLOAD
- GOTVI01.SHRCNF.RT.CAAXMAC
- GOTVI01.SHRCNF.RT.CAAXSAMP

DCMHLQ is this color
CXXNAME is this color
Control datasets are this color
Load libraries (STEPLIB) are this color

- GOTVI01.SHRCNF.SHAREAD.CBS1006
- GOTVI01.SHRCNF.SHAREAD.CXX
- GOTVI01.SHRCNF.SHAREAD.DDD015
- GOTVI01.SHRCNF.SHAREAD.DD1002
- GOTVI01.SHRCNF.SHAREAD.FXX
- GOTVI01.SHRCNF.SHAREAD.IXX002
- GOTVI01.SHRCNF.SHAREAD.IXX006
- GOTVI01.SHRCNF.SHAREAD.IXX015
- GOTVI01.SHRCNF.SHAREAD.IXX016
- GOTVI01.SHRCNF.SHAREAD.IXX017
- GOTVI01.SHRCNF.SHAREAD.IXX1006
- GOTVI01.SHRCNF.SHAREAD.LXX
- GOTVI01.SHRCNF.SHAREAD.MSG015
- GOTVI01.SHRCNF.SHAREAD.PXX
- GOTVI01.SHRCNF.SHAREAD.SIT015
- GOTVI01.SHRCNF.SHAREAD.SQ1016
- GOTVI01.SHRCNF.SHAREAD.TTM017

Introduction to Datacom/DB

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Basic Datacom/DB Terminology

- **C**XX – **C**atalog/Directory – metadata used at run-time
- **L**XX – transaction **L**og
- **F**XX – **F**orce area – long running transactions
- **R**XX – **R**ecovery file – LXX goes here at SPILL time
  - Typically on a tape, most AD using products do not use

- **I**XX - **I**ndex Area – All indexes for a database
  - One per DBID
    - Index partitioning allows multiple datasets IXX, I01, I02, …
- Data Area (three letter name, e.g. CUS, A01, …)
  - Dataset containing data (rows) for one or more tables
  - 1-240 per DBID

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The Typical AD Environment

Using product data requests
(Datacom Server data requests)

Multi-User Facility

Libraries   CXX   LXX   RXX
PXX   FXX

| DBID 0001 0010 | DBID 0002 0015 | DBID 0006 1006 | DBID 0016 0017 |
| DBID 0003 | DBID 1000 | | User DBIDs |

Memory resident only
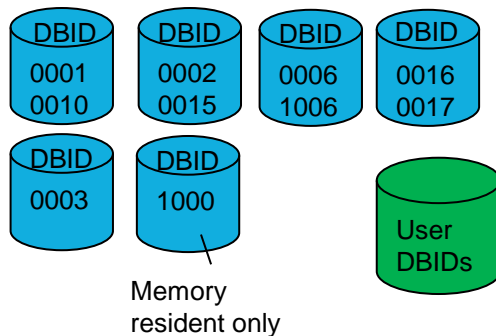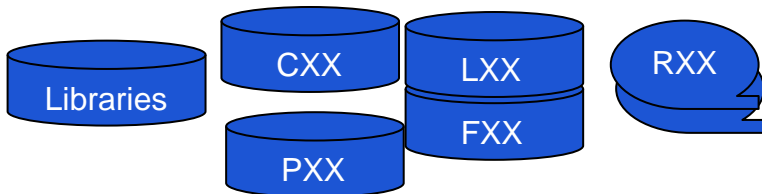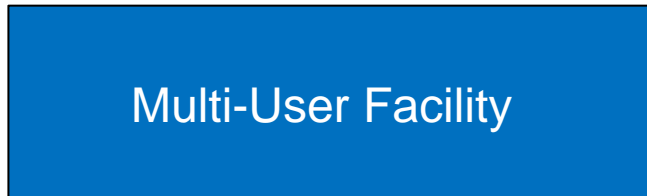
MUF

- Standalone address space that manages the access to the databases
- Utilizes buffering, memory resident data, etc. for high performance access
- Synchronizes all update activity to allow row-level locking
- Allows thousands of users to access the same table for update at the same time
- Provide data integrity features: logging, restart (warm), and recovery
- Symmetrical Multi-processing (SMP)
- Highly zIIP enabled - some sites report numbers well over 60% CU offload
- Navigational and SQL access APIs
- 24x7 and failover support
- Much more….

System control datasets

- Libraries – Set of SMPE/CSM controlled code libraries
- CXX – Directory of databases owned by the MUF (like a VSAM catalogue)
- PXX – Statistics and Diagnostics Area (used for monitoring and debugging)
- LXX – Active LOG file used for warm restart, transaction backout, etc.
- FXX – Fast restart area used to "assist" in quick "warm restarts" (after abends)
- RXX – Recovery file(s) – archive of committed changes used for recovery

System control databases (DBIDs)

- 0001, 0010   – Small sample databases used for install verification
- 0002, 0015   – Meta data dictionary used to house all data definitions
- 0006, 1006   – Navigational (CBS) query optimization databases
- 0016, 0017   – SQL Temporary table and work area databases
- 0003   – Dataquery product database
- 1000   – Dynamic system tables database similar to DB2 catalog with a variety of statistics, tuning and debugging information
- 0001 – 0020, 1000 – 1020, 2000 – 2020, 3000-3020, 4000-4020, 5000 - reserved

S H A R E
Technology · Connections · Results
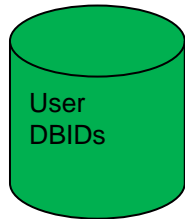
User Databases

User (product databases)
- Each product has its own series of DBIDs
- Each DBID has one index area and one or more data areas

AD Product	Database name (in Datadict)	DBID	DBIDs Reserved for Future	Comments
CA APCDDS	APC100	100		APCDDS/Balancer same DBID
CA-7/Report Balancing	APC100	100		APCDDS/Balancer same DBID
CA Scheduler/Report Balancer	APC100	100		APCDDS/Balancer same DBID
CA Jobtrac	HD0161	161-162	163-168	
Masterpiece/DB 2.0	MP200	200-295		Now 3rd party
Masterpiece/DB 3.0	MP300	300-390		Now 3rd party
CA Netman/DB	NTM400	400	401-407	
CA Scheduler	CH430	430	431-439	
CA JARS	PMA490	490		JARS and PMA use same DBID
CA PMA/Chargeback	PMA490	490		JARS and PMA use same DBID
CA NetMaster	NM500	500	501-502	
CA-11	L7601	601	602	
CA IMS Toolkit	ITKREPDB	615		
CA Disk Backup and Restore	DMS650	650	651-699	
CCS for z/OS ENF	CAS9ENFD	700		
CCS for z/OS Event Manage.	EVENT-MANAGEMENT-DB	1011		
CA Workload Auto.CA7 Edition	CA770	770	771-779	In develeoplment
CSM	CAMSMDB	4000	4001-4002	
Chorus Infrastructure	TSF4003	4003	4004-4008	
Chorus Infrastructure	COP750	750		
Security Compliance Manager	CMG3500	3500	3500-3549	
Security Compliance DataMart	CMD3550	3550	3550-3574	
Security Compliance Warehous	CMW3575	3575	3575-3599	
Security CIA	CIA3600	3600	3600-3699	

The typical User (product) database
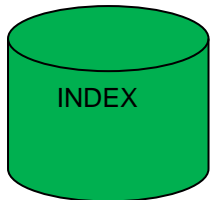
Index area
- Typically one IXX per database (DBID)
- One dataset, can have multiple extents
- DD is IXX plus DBID, i.e. IXX001 or IXX0001 (either works)
- DSNAME follows site implementation standards
- Typically installed as a 4K block size
- Must be **initialized** by DBUTLTY before use
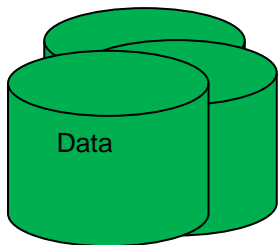
Data areas
- Anywhere from 1 to 240 data areas per DBID
- Each data area:
    - One dataset, can have multiple extents [even multiple volumes]
    - DD is *aaa* plus DBID, i.e. ABC001 or ABC0001 (either works)
    - The *aaa* is decided by the using product when the database is created, many using products use G01, G02, etc.
    - DDNAME follows site implementation standards
    - Typically installed as a 4K – 32K blocksize
    - Must be **initialized** by DBUTLTY before use
    - Must be **loaded** by DBUTLTY before use (can be loaded NONE)

Database Administration

DBUTLTY – the database utility, main administration tool

- Initialization (INIT) – Index and Data Areas
- LOAD – Data Areas only, Index build automatically
- Backup
- Recovery
- Reports
- Sending commands to MUF
- Making databases offline/online
- Automated monitoring (AutoStatus, AutoCollect)
- …

User Database Installation

Product Database Installation

- Provided and documented by AD using product

- Performed during AD using product install (configuration)
  - Can be performed by CA Chorus Software Manager

- Contact AD using product support if any questions

Complete your sessions evaluation online at SHARE.org/BostonEval

Types of AD installations - stand alone

CA Scheduler

CA 11

CA Jobtrac

CA Disk

CA CIA

CA Compliance Manager

CA JARS and PMA Chargeback

CA NetMaster Report Center

Infor Masterpiece
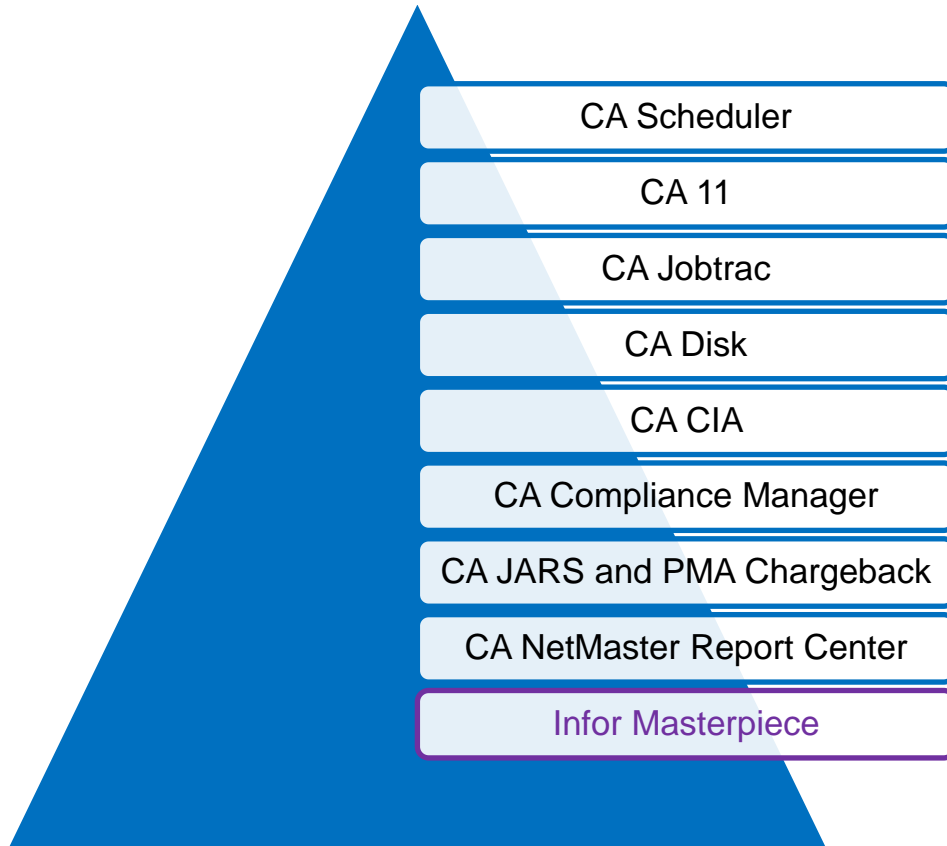
These products utilize a stand alone AD environment that is installed before the using product.

The stand alone AD environment uses the same SMPE FMIDs as Datacom/DB components so a common set of maintenance can be used for all AD and DB sites.

Chorus Software Manager is the recommended path for installation and maintenance of the AD environment.

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Common Steps for User database Install

- Run **DDUPDATE** – Populate Data Dictionary
  - Input is 'BTG deck' that describes all properties of the Database, Areas, and at least one [even if dummy] table, keys
  - Output goes to Data Dictionary (DBID 2)
- Populate CXX and DDD (DBID 15) – used by MUF at run-time
  - Datacom/DB
    - Use 1000 CATALOG transaction in DDUPDATE step above
  - Datacom/AD
    - Run **DDRTVCAT**
- Allocate Data Sets for Data and Index Areas
- Run DBUTLTY **INIT** function on both Data and Index Areas
- Run DBUTLTY **LOAD** function (NULL or from Backup) for all Data Areas, Index is automatically populated

Special Steps for User database Install

- Products using SQL do either
  - Run their own **special** install programs that execute SQL Data Definition Language statements to create their entities
  - Run DD**TRS**LM to create entities they need (e.g. consrtaints)

- CA CSM , CA Chorus and CA Common Services **overlay** CXX, DBID 2, and DBID 15 with their own pre-packaged ones
  - → have to have their private Datacom/AD environment.

Types of AD installations – imbedded

CA Chorus
Software Manager

CA Chorus
Platform

CA Common
Services

These products deliver
the CA Datacom/AD
components as part of
their base product
installation.

The same SMPE FMIDs
are used for the imbedded
AD components so a
common set of
maintenance can be used
for all AD and DB sites.

SIMPLIFY

New feature of CA Datacom r14

SIMPLIFY Benefits - High Level View

- Increases protection and security
- Improves automation, reduces human interaction
  - Especially in case of an unplanned outage
- Improves performance
- Enforces many best practices

- Mandatory for Datacom/AD
- Optional, but **highly recommended** for Datacom/DB

SIMPLIFY Benefits - Some of the Details

- Forces MUF to be always enabled
  - Few exceptions exist - e.g. if MUF cannot enable
- All DBUTLTY functions that need access to data or metadata have to connect to the MUF
- MUF is the only updater of CXX (when enabled)
  - Is in full control, with full knowledge of all on-going activities
- When MUF enabled
  - Return code 67 not possible
  - **Return code 46** cannot occur because of a "previous unplanned system outage" – **no need for a RESET**, if you get an 46 it really means someone is doing processing against the database

SIMPLIFY Benefits - Some of the Details

- Only a few users need security access to CXX
  - Without SIMPLIFY a full update access is required for most DBUTLTY functions
- **Substantial additional dataset protection** to prevent accidental misuse
- CXX, LXX, FXX DDs no longer required in DBUTLTY or MUF jobs

SIMPLIFY - Required Components

- **One** Multi-User Facility (MUF)
  - Is started during or soon after IPL
  - Is in control of all the control datasets all the time (after it is enabled)
  - Stays up until next IPL
  - Has a unique name (MUFNAME) = name of the JOB or STC
    - It is recommended to use MUFNAME = CXXNAME
- Load library with a member DB**SID**PR assembled from DBSYSID macro that defines the environment access

```
TITLE 'DATACOM/DB - DBSIDPR FOR INDIVIDUAL LOGICAL MUF'
DBSYSID                                                          X
     SIMPLIFY_MODE=YES,      YES/NO                              X
     CXXNAME=SHAREAD,        NAME OF THE CXX                     X
     FORCE_DSN_CXXNAME=NO,    YES OR NO                          X
     CONSOLE_MINUTES=2,   TIME BETWEEN AUTOMATIC STATUS CMDS     X
     DELAY68=2,                                                  X
     DELAY85=1,                                                  X
     DELAY_DBUTLTY_SECURITY=NO,    EXTERNAL SECURE YES/NO        X
     TARGET_MUF_LIST=(SHAREAD),                                  X
     CONNECT_ALLOW_PRIORITY=(LOCAL),                             X
     DSN_XXX=GOTVI01.CONF01.SHAREAD.???
END
```

Sample DBSYSID macro generated during an install (configuration) of Datacom/AD

- **DCMHLQ** = **GOTVI01.CONF1**
- **CXXNAME** = **SHAREAD**

SIMPLIFY - Required Components

- Control datasets
  - Directory (CXX) having a unique CXXNAME
    - Unique within a release and across all SYSPLEX environments
    - 1-8 characters, recommended to only use 1-7 for future extensions (e.g. data sharing implementation - MUFplex)
  - Log File (LXX)
  - Force Area (FXX) paired with the Log File
  - Set of Data and Index Areas containing database information
    - It is highly recommended that the DSNAME of these contain the CXXNAME
      - *can be made a requirement by setting FORCE_DSN_CXXNAME=YES in DBSYSID macro (default is NO, see previous slide)*

Complete your sessions evaluation online at SHARE.org/BostonEval

SIMPLIFY - Final Comments

- Activated during CXX INIT - early phase of install (configuration)

- For Datacom/DB can be changed later to match DBSIDPR (produced from DBSYSID macro) by a DBUTLTY function
  - `CXXMAINT OPTION=ALTER,OPTION2=MATCHSID`

- If you are a Datacom/DB user we **highly recommend** that you consider **running SIMPLIFY,** especially if you have new DBAs that have no or little prior experience with Datacom/DB.

- Many user errors are ruled out because of the security and protections built into the feature.

Dynamically Extending Data/Index Area

Dynamically Extending Data/Index Area Datacom/DB vs Datacom/AD users

- Datacom/DB users typically
  - Have a good idea of how much DASD (primary, secondary) space to allocate for a given table
  - Are familiar with Datacom utilities, tools, commands, reports
  - → Know how to find what they need to do their sizing properly
- Datacom/AD users typically
  - Do not directly know what tables are used for what purposes by the AD using CA product
  - Are not familiar with all the tools Datacom provides
  - Sizing depends on how the customer uses the CA product
  - → Contact AD using product support to provide guidance

Dynamically Extending Data/Index Area Limits

- EXTEND limits imposed by z/OS
  - Our datasets are non-VSAM, physical sequential
    - Just a sequential set of tracks (similar idea to Linear VSAM)
      - *Can use tools to move datasets, combine EXTENTs, … as long as the sequential order of tracks within the dataset is preserved (provided the appropriate DBID is offline of course)!*
    - We have our own proprietary I/O (both random and sequential)
    - Can be DSNTYPE=LARGE (more than 64k tracks)
    - Cannot be striped or extended format
  - 16 EXTENTs per VOLUME
  - Can be multi-volume – up to 59 volumes → max 944 extents
  - SMS managed datasets with candidate volumes best option if you want to have the ability to do many extends

Complete your sessions evaluation online at SHARE.org/BostonEval

Dynamically Extending Data/Index Area
How to Check Current Settings

- Find the DataBase ID (DBID) for your product
- Run DBUTLTY CXX REPORT

```
//REPORT   EXEC PGM=DBUTLTY
//STEPLIB    DD DSN=&DCMHLQ..CUSLIB,DISP=SHR
//           DD DSN=&DCMHLQ..RT.CAAXLOAD,DISP=SHR
//SYSPRINT   DD SYSOUT=*
//SYSIN      DD *
 REPORT AREA=CXX,DBID=nnnn
```

- In the output find the right
  - DBID ('Base' in header) and AREA NAME, look at
  - DYNAMIC EXTEND and DYN.EXT.TRACKS values

Complete your sessions evaluation online at SHARE.org/BostonEval

Dynamically Extending Data/Index Area Sample CXX report

```
Date:  8/08/2013    ************************************************      Page:      3
                    *                   CA Datacom/DB                 *
Time: 11.07.43      *                  General Utility                * Version: 14.0
                    *COPYRIGHT (C) 1990-2011 CA.    ALL RIGHTS RESERVED.*
Base:      2        ************************************************ Directory: SHAREAD

TABLE NAME - AGR                         AREA NAME  - DD1
OCCURRENCE - AGGREGATE P008              OCCURRENCE - DATA-DICT-AREA-1 P004
TABLE ID    -        17                  AREA SQLNAME - DATA_DICT_AREA_1
RECORD LENGTH    -      809 /     821    BLOCK LENGTH       -        4,096     SLACK -      0
RECORDS IN TABLE -               269     OVERFLOWS IN AREA -            0
LENGTH OF KEY/ELEMENTS -  1,080          BLOCKS IN USE -        1,024
NUMBER OF KEYS              -        8   BLOCKS UNUSED -      11,036
NUMBER OF ELEMENTS          -        3   TOTAL BLOCKS   -      12,060    CXXMAINT LINK - YES
CHANGE MASTER KEY    - YES               TOTAL TRACKS   -       1,005    DYNAMIC EXTEND -     YES
DUPLICATE MASTER KEY - YES               PERCENT FULL   -           8    DYN.EXT.TRACKS -      10
RECOVER  - YES   ENCRYPTION - NONE       DEVICE TYPE  - 3390
LOGGING  - YES                           BLOCKS/TRACK -    12
PIPELINE - YES                           DSOP MODE    - RANDOM
DB COMPRESSION   - YES                   TABLE LOADED - YES, DATE--8/02/2013, TIME-07.07.46
USER COMPRESSION - NO                    INDEX LOADED - YES
CLUSTER KEY ID      -    0               DATADICTIONARY BASE   -      2
CLUSTER KEY LENGTH -     0               DATA BASE ID CHANGE    -   NO
                                         DEFINITION POSTED VIA  - LOAD FROM BACKUP
AUTHID          - SYSADM                 SQL-INTENT - R
TABLE SQLNAME - AGGREGATE                UNIQUE ROW IDENTIFIERS (URI) -         16,825
...
```

Dynamically Extending Data/Index Area Background (DDUPDATE utility)

3004 AREA transaction

- DYNAMIC-EXTEND (Y/T/C/N) [pos. 45, len. 1]
  - N – do not allow dynamic extend
  - Y – allow dynamic extend (DYN-EXT-TRACK value is TRK)
  - T – allow dynamic extend (DYN-EXT-TRACK value is TRK)
  - C – allow dynamic extend (DYN-EXT-TRACK value is CYL)
- DYN-EXT-TRACKS (0-65535) [pos. 47, len. 5]
  - If nonzero, its value is used as space quantity for the extend
  - If zero, Datacom/DB uses the data set's secondary quantity
  - Zero is the recommended value under z/OS
- See: CA Datacom Datadictionary Batch Reference Guide

```
3004          AREA_SQL_NAME_UP_TO_32_CHARACTER Y 00000
```

Dynamically Extending Data/Index Area
How It Works

When dynamic extend capability enabled (prev. slides)

- If data/index area runs out of its current DASD space Datacom will automatically attempt to acquire a new extent
    - First on the current volume, then on next candidate volume
    - Look for messages DB01701I, DB01702I, DB01703I in the MUF job

```
DB01703I – DYNAMIC EXTEND OF AREA A0100997 STARTED
DB01701I – DYNAMIC EXTEND OF AREA A0100997 ENDED,
           TRACKS BEFORE: 410 TRACKS AFTER: 420
```

A01 - area name, **00997** - DataBase ID

```
DB01703I – DYNAMIC EXTEND OF AREA A0100997 STARTED
DB01702I – DYNAMIC EXTEND OF AREA A0100997 HAS FAILED
```

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Dynamically Extending Data/Index Area
No More Extents/Space/Volumes

- If no more extent/space/volumes available → DB01702I
  - If the AD application can restart and then can continue where it left off
    - Stop the application
    - CLOSE the DBID
    - If you can, add more volumes to the dataset
    - If you can't, do a BACKUP, allocate the area with larger primary, secondary quantity and/or more volumes, do INIT, LOAD from the backup
  - If your AD application can lose the current data
    - Re-allocate the data area with
      - *larger primary, secondary quantity and/or more volumes*
  - Restart the application

> **CA Allocate** allows you to add volumes on the fly and is certified to work with CA Datacom

Dynamically Extending Data/Index Area Data Set (Data/Index Area) Sizing Tips

- Repeat previous steps until successful
  - Or rather than repeat it
    - start with big primary, secondary, and many volumes at the very beginning if you can
- Once you complete the test run DBUTLTY data space report

```
REPORT TYPE=DATASP,AREA=aaa,DBID=nnnnn
```

- This will give you detailed information about the space KBYTES IN-USE/EMPTY, ROWS IN-USE/DELETED
- Do your sizing and run your test to make sure you cover the peak space usage
  - If ROWS DELETED is big, this could be an indication

Datacom/AD Dataset Sizing
DBUTLTY Data Space (DATASP) report

```
//DBUTLTY EXEC PGM=DBUTLTY,PARM='/PGMMONTH=1'
//STEPLIB   DD DSN=&DSNHLQ..CUSLIB,DISP=SHR
//          DD DSN=&DSNHLQ..RT.CAAXLOAD,DISP=SHR
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD *
 REPORT TYPE=DATASP,AREA=DD1,DBID=2
```

```
Date:  8/08/2013    *****************************************************************    Page:    2
                    *                              CA Datacom/DB                     *
Time:  6.05.25      *                             General Utility                    *    Version: 14.0
                    *             COPYRIGHT (C) 1990-2011 CA.   ALL RIGHTS RESERVED.  *
Base:    2          *****************************************************************  Directory: SHAREAD


AREA DD1   BLKSIZE  4,096   TRACKS        975  BLOCKS     11,700  URI YES  DSOP 1 RANDOM                        TO


TBL  CMP  USER COMPRESSION    RECLN         RECORDS
AGR  YES                        821             269
ALS  YES                        388           1,432
...
```

GROUP#	BLOCKS	%	KBYTES	%	ROWS IN-USE	FREESP MAX	ROWS MAX	ROWLEN MAX	0 TO 1/4K	FREESPACE IN BLOCKS 1/2K	1K	2K
	IN-USE	%	IN-USE	%	IN-USE	MAX	MAX	MAX	0 TO 1/4K	1/2K	1K	2K
	EMPTY	%	EMPTY	%	DELETED	MIN	MIN	MIN	3K	4K	8K	12K
					*AVAIL	AVG	AVG	AVG	16K	20K	24K	32K
TOTALS	1,024	9	3,773	8	16,825	4,094	56	2,503	264	727	19	10
	10,676	91	43,019	92	0	200	0	58	2	10,676	0	0
					353,217	3,766	1	228	0	0	0	0

Manually Extending Datacom Areas

Manually Extending Datacom Areas DBUTLTY EXTEND function

- DBUTLTY EXTEND function

```
EXTEND AREA=aaa,DBID=nnnn              EXTEND DATA AREA
EXTEND AREA=IXX,DBID=nnnn              EXTEND INDEX AREA
```

- Uses secondary quantity of the dataset as currently defined (unless non-zero value specified in DYN-EXT-TRACKS in 3004 transaction when the area was defined)
- The secondary quantity can be overridden in the JCL by specifying the dataset DD with a SPACE parameter

```
//DBUTLTY EXEC PGM=DBUTLTY
//SYSPRINT  DD SYSOUT=*
//A01997    DD DISP=SHR,DSN=&DCMHLQ..A01997,SPACE=(CYL,(1,100))
//SYSIN     DD *
 EXTEND AREA=A01,DBID=997
```

Manually Extending Datacom Areas
Directed Dynamic Extend

- Directed Dynamic Extend
  - "Console-Like" command that can be issued as:
    - Console command: `/F MUFJOB,DYNAMIC_EXTEND ...`

    - DBUTLTY function COMM OPTION=CONSOLE:

      `COMM OPTION=CONSOLE,OPTION2='DYNAMIC_EXTEND ...'`

    - Writing to Dynamic System Table named SQL_CONSOLE

```
INSERT INTO SYSADM.SQL_CONSOLE
( MUF_NAME, CONSOLE_COMMAND )
VALUES ( CURRENT DATACOM MUF_NAME,'DYNAMIC_EXTEND ...');
```

Manually Extending Datacom Areas DYNAMIC_EXTEND syntax

`DYNAMIC_EXTEND dbid,aaa,x,t`

- **dbid** - Database ID (0-5000)
- **aaa** - Area name
- **x** – Extension amount – number of tracks/cylinders, zero means default value
- **t** – type (CYL, or TRK, or *), * means default value

- For details see
  - CA Datacom/DB Database and System Administration Guide
    - search for DYNAMIC_EXTEND, "Console-Like", console

Manually Extending Datacom Areas DYNAMIC_EXTEND sample, messages

```
//EXTEND   EXEC PGM=DBSQLPR
//STEPLIB    DD DSN=&DCMHLQ..CONF01.CUSLIB,DISP=SHR
//           DD DSN=&DCMHLQ..RT.CAAXLOAD,DISP=SHR
//STDOUT     DD SYSOUT=*,LRECL=1500
//SYSPRINT   DD SYSOUT=*
//SYSIN      DD *
INSERT INTO SYSADM.SQL_CONSOLE
( MUF_NAME, CONSOLE_COMMAND )
VALUES ( CURRENT DATACOM MUF_NAME,
         'DYNAMIC_EXTEND 2,DD1,0,*' );
```

- Look for messages DB01705I, DB01706I in the MUF joblog.

```
DB01705I - DYNAMIC EXTEND START DD1002 TRK 975
           GOTVI01.CONF01.SHAREAD.DD1002
DB01706I - DYNAMIC EXTEND END DD1002 TRK 990 MPT006
           VOL 1 VOLS 1 EXT 2 TRK +10
```

Manually Extending Datacom Areas Documentation

- For details about DBUTLTY functions see
  - CA Datacom DBUTLTY Reference Guide for z/OS

- For details about "Console-Like" commands see
  - CA Datacom/DB Database and System Administration Guide

- For details about DBSQLPR see
  - CA Datacom/DB SQL User Guide

- For CA Chorus Software Manager information, visit our both at the **SHARE Technology Exchange** (STE)

THE END

Complete your sessions evaluation online at SHARE.org/BostonEval

Dynamically Extending Data/Index Area Background (DDUPDATE utility)

- Areas defined to Datacom via DDUPDATE utility
  - Used to create Database/Area/Table/Key/… definitions
  - Input [SYSIN] called a "BTG deck"
    - Provided by AD using CA product as part of its installation
    - AREA transaction **3004** determines if an area can be dynamically extended
  - Documented in
    - CA Datacom Datadictionary Batch Reference Guide

Dynamically Extending Data/Index Area Background (DDUPDATE utility)

3004 AREA transaction

- DYNAMIC-EXTEND (Y/T/C/N) [pos. 45, len. 1]
  - N – do not allow dynamic extend
  - Y – allow dynamic extend (DYN-EXT-TRACK value is TRK)
  - T – allow dynamic extend (DYN-EXT-TRACK value is TRK)
  - C – allow dynamic extend (DYN-EXT-TRACK value is CYL)
- DYN-EXT-TRACKS (0-65535) [pos. 47, len. 5]
  - If nonzero, its value is used as space quantity for the extend
  - If zero, Datacom/DB uses the data set's secondary quantity

```
3004          AREA_SQL_NAME_UP_TO_32_CHARACTER Y 00000
```

Complete your sessions evaluation online at SHARE.org/BostonEval

Check Current Extend Settings - SYSVIEW MENU DATACOM

```
CA31 EW ISPF3 CA31 --------- MENU, CA Datacom Menu ---------- 08/08/13 14:59:01
Option ====>                                              Scroll *===> PAGE
------------------------------------------------------------ Lvl 2 Row 1-19/19
Jobname GOTVI01    ASID 046C   Jobid TSU18968   Datacom n/a
-----------------------------------------------------------------------------

Option Command   Parameters                     Description
S    1   DCLIST                                  List of Datacom jobs
_    2   DCAREAS                                 Directory areas
_    3   DCDBASES                                Directory databases
_    4   DCMUFS                                  MUF identity
_    5   DCTASKS                                 MUF active tasks


_    6   MENU      DCDIR                         Directory information


                                                 MUF information
_    7   MENU      DCMON                         MUF monitoring information
_    8   MENU      DCCDC                         MUF change data capture info
_    9   MENU      DCDBASE                       MUF database monitoring info
_   10   MENU      DCDEBUG                       MUF debug information
_   11   MENU      DCOPT                         MUF options
_   12   MENU      DCSQL                         MUF SQL information


_   13   MENU      CSF                           Datacom CICS service facility


_   14   CA Datacom online reference
```

Check Current Extend Settings - SYSVIEW DCLIST

```
CA11 EW ISPF3 CA11 -- DCLIST, CA Datacom System Activity ---- 08/08/13 15:07:47
Command ====>                                          Scroll *===> PAGE
--------------------------------------------------- Lvl 2 Row 1-34/46 Col 1-79/208
Formats DEFAULT AD DB
Jobname GOTVI01    ASID 0345   Jobid TSU19095   Datacom n/a
---------------------------------------------------------------------------------
Cmd        Name       DCType JobStat  Job-CPU RealStg IOReqs Clocktime  Jobnr
_____   AD14MUF  AD      NS       3.210287    10M   2298  74:55:24  50343
_____   APC12MUF DB      NS       26.18226  49.4M  35564  72:24:13  52940
_____   CHRE1MUF AD      NS       00:05:30  91.6M 430559  04:45:01  13113
S_____   DBDVADMF AD      NS       1.471431  34.4M   1179  09:08:55   6214
```

```
CA11 EW ISPF3 CA11 -- DCLIST, CA Datacom System Activity ---- 08/08/13 15:07:47
Command ====>  DCDBASES                                Scroll *===> PAGE
--------------------------------------------------- Lvl 2 Row 1-34/46 Col 1-79/208
Formats DEFAULT AD DB
Jobname GOTVI01    ASID 0345   Jobid TSU19095   Datacom n/a
---------------------------------------------------------------------------------
Cmd        Name       DCType JobStat  Job-CPU RealStg IOReqs Clocktime  Jobnr
_____   AD14MUF  AD      NS       3.210287    10M   2298  74:55:24  50343
_____   APC12MUF DB      NS       26.18226  49.4M  35564  72:24:13  52940
_____   CHRE1MUF AD      NS       00:05:30  91.6M 430559  04:45:01  13113
_____   DBDVADMF AD      NS       1.471431  34.4M   1179  09:08:55   6214
```

Complete your sessions evaluation online at SHARE.org/BostonEval

Check Current Extend Settings - SYSVIEW DCDBASES 2

```
CA11 EW ISPF3 CA11 DCDBASES, CA Datacom Directory Databases - 08/08/13 15:16:37
Command ====>                                           Scroll *===> PAGE
------------------------------------------------------- Lvl 3 Row 1-17/17 Col 1-79/188
Jobname DBDVADMF  ASID 04BD  Jobid JOB06214  Datacom 14.0   DBID *
-------------------------------------------------------------------------------
Cmd DBID Occurrence                        Tracks Index Part Extend Read Rep SQL
___      1 HUMAN-RESOURCE
S__      2 DATA-DICT
___      3 DATAQUERY
___      4 PRM-ACT-DB
```

```
CA11 EW ISPF3 CA11 -- DCAREAS, CA Datacom Directory Areas --- 08/08/13 15:22:03
Command ====> RIGHT                                     Scroll *===> PAGE
------------------------------------------------------- Lvl 4 Row 1-1/1 Col 1-79/207
Jobname DBDVADMF  ASID 04BD  Jobid JOB06214  Datacom 14.0   DBID    2
-------------------------------------------------------------------------------
Cmd DBID Area Occurrence                      Inserts HiURI Moved Slack
___    2 DD1  DATA-DICT-AREA-1                        16825         0
****************************** End of Data ******************************
```

Complete your sessions evaluation online at SHARE.org/BostonEval

Check Current Extend Settings - SYSVIEW DCAREAS DD1

```
CA11 EW ISPF3 CA11 -- DCAREAS, CA Datacom Directory Areas --- 08/08/13 15:23:47
Command ====>                                              Scroll *===> PAGE
------------------------------------------- Lvl 4 Row 1-1/1 Col 1-14&80-144/207
Jobname DBDVADMF  ASID 04BD  Jobid JOB06214  Datacom 14.0   DBID    2
--------------------------------------------------------------------------------
Cmd DBID Area|SQLName                        DataSpace  Extend ExtType ExtVal
___    2 DD1  DATA_DICT_AREA_1               RANDOM     EXTEND TRK        10
****************************** End of Data ******************************
```

Complete your sessions evaluation online at SHARE.org/BostonEval