



Datacom: Getting started with SQL and Server

LYNETTE ELWELL | DATACOM SOFTWARE ENGINEERING

Disclaimer

Certain information in this presentation may outline Broadcom's general product direction. This presentation shall not serve to (i) affect the rights and/or obligations of Broadcom or its licensees under any existing or future license agreement or services agreement relating to any Broadcom software product; or (ii) amend any product documentation or specifications for any Broadcom software product. This presentation is based on current information and resource allocations as of September 2021 and **is subject to change or withdrawal by Broadcom at any time without notice. The development, release and timing of any features or functionality described in this presentation remain at Broadcom's sole discretion.**

Notwithstanding anything in this presentation to the contrary, upon the general availability of any future Broadcom product release referenced in this presentation, Broadcom may make such release available to new licensees in the form of a regularly scheduled major product release. Such release may be made available to licensees of the product who are active subscribers to Broadcom maintenance and support, on a when and if-available basis. The information in this presentation is not deemed to be incorporated into any contract.

Copyright © 2021 Broadcom. All rights reserved. All trademarks, trade names, service marks and logos referenced herein belong to their respective companies. **THIS PRESENTATION IS FOR YOUR INFORMATIONAL PURPOSES ONLY.** Broadcom assumes no responsibility for the accuracy or completeness of the information. TO THE EXTENT PERMITTED BY APPLICABLE LAW, BROADCOM PROVIDES THIS DOCUMENT "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. **In no event will Broadcom be liable for any loss or damage, direct or indirect, in connection with this presentation, including, without limitation, lost profits, lost investment, business interruption, goodwill, or lost data, even if Broadcom is expressly advised in advance of the possibility of such damages.**

Abstract

- If you haven't yet begun to use SQL and Server for modernization, find out how to quickly get these options active in your environment to deliver value to DBAs and applications developers. You'll learn how to make a table SQL-accessible and how our Datacom View extension lets you access tables, without conversion, that standard SQL could not.

Agenda

GETTING STARTED WITH DATACOM SQL

GETTING STARTED WITH DATACOM SERVER

GENERAL ANNOUNCEMENTS

Datacom SQL

Topics

- Integration
- Turning it on
- Access
- Management
- Access legacy data
- Accessing SQL data from SAAT and RAAT

Integration

Fully Integrated!

- SQL, SAAT and RAAT can all be used in the same program
- Transactions are across all types of requests
- Constraints created by SQL are enforced for SAAT and RAAT
- SQL can access all data
 - Group fields are “seen” as a single character column
 - Single dimension arrays can be defined for each element (OCCURS)
 - Multi-dimension arrays can be defined for single character column (REDEFINES)
 - You can cast numeric columns to character without conversion and use concatenate to update group columns
 - Use Datacom View for redefined data

The background of the slide is a solid orange color. Overlaid on this are several thin, dark, diagonal lines that create a sense of depth and perspective. Scattered across the background are numerous binary digits (0s and 1s) in a lighter shade of orange, giving the impression of digital data or code.

Turning it on



MUF Options

- **DATACOM SQL**
 - Code is there, just need to turn it on
- **SQLOPTION YES,017,DATACOM,30,NO**
 - 017: Default DBID for TTM (temporary tables)
 - DATACOM: Allow Datacom SQL extensions
 - 30: 30 minute timeout of LUWs
 - NO: View Security
- **SQLDEFAULT 016,CASQLDEFAULT**
 - Default DBID,AREA for creating tables
- **VIRTUAL IXX006,250M CBS TEMP INDEX**
- **VIRTUAL IXX017,32M TEMP WORK INDEX FOR SQL REQUESTS**
- **VIRTUAL TTM017,9G TEMP WORK AREA FOR SQL REQUESTS**

MUF Options

- DATETIME date[,time]
 - Specifies external format of SQL Date and Time data types
 - ISO yyyy-mm-dd hh.mm.ss (default)
 - USA mm/dd/yyyy hh:mmAM|PM
 - EUR dd.mm.yyyy hh.mm.ss
 - JIS yyyy-mm-dd hh:mm:ss
- SYSOUT 0,4M,SQL,4M,ML CLASS,ML,CBS,SQL,DD
 - Combines SQL and CBS dumps/tracing
- PROCEDURE 5K,3,16 PROCEDURE SIZE, NESTS, TCBs
 - Needed for external procedures
 - Need LOADLIB in MUF libs for program executable modules

URTs with SQL

- URT is always used to access MUF
- RAAT and SAAT (CBS) URTs specify which tables can be accessed
- SQL URT is just a stub
- In MUF, SQL creates a URT for each table
 - Closed based on plan close option at run unit or transaction end
 - PLNCLOSE=T/R
 - T – Transaction end
 - R – Run unit end
 - Default: R

Make Databases SQL Accessible

- Table not accessible until SQL-INTENT set

- Use DDUPDATE 1500 Transaction

- SQL-INTENT: Y = yes, R = read-only

```
-USR DATACOM-INSTALL,NEWUSER  
-UPG TABLE,ABC*(TEST)  
1500 SQL-INTENT,Y  
-END
```

- SQL NAME

- You can set, but default is DD name with dash replaced with underscore
 - Dash means subtract in SQL

Make Databases SQL Accessible

- Must have logging activated for backout
- Unique record identifier (URI) attribute required for SQL
 - Normal data load default to URI=yes
 - For non-URI tables
 - Backup and load required to build as URI
 - May affect RAAT programs that use LOCxx followed by REDLE logic
- Catalog to CXX and data definition directory (DDD)
- [Making Existing Tables SQL Accessible](#)

Access



Embedded SQL

- COBOL, C, PL/I, Assembler
 - Pre-process program to convert SQL statements to DBSQLE calls to MUF
 - Link batch programs with DBSBTPR URT
 - CICS uses URT020
- Ideal
- Static vs Dynamic SQL
 - Dynamic most flexible since query is compiled at execution
 - Static avoids overhead of binding at execution
- [Using SQL](#)

Interactive SQL

- Datacom Server
 - ODBC driver provides access from applications not written in Java
 - JDBC driver for applications written in Java
- Datacom DBSQLPR Utility
 - Batch utility to execute SQL statements

Management

SQL Impact on existing production workload

- Limit execution with CBSIO resource unit per MUF request limit
 - In Datacom Server, DBSQLPR and batch plan option
 - One CBSIO is a physical I/O or accessing 100 rows
 - CBSIO=500000
- DIAGOPTION A,500000 ROWS REJECTED
 - Reports inefficient queries in SQL SYSOUT
- Increase MUF memory
 - SQL likes memory!
 - LUW_STATEMENT_LIMIT 10
 - Limit prepared statements per LUW to limit memory use

Monitor with SQL Performance Analyzer

- COMM STATUS refresh every 10 seconds
- Current Activity
 - Shows each processing step for active queries
 - Kill LUW button
 - Get SQL Optimization Report button
- Source Cache
 - Reports Datacom Server and DBSQLPR queries
 - Can limit CBSIO and execution time by query
 - Find inefficient queries
 - Use QUERYNO to tie query back to its source

Access Legacy Data

Datacom View

```
CREATE DATACOM VIEW VLI (  
    PO_NBR, LI_NBR, PART, QTY) AS  
    SELECT PO_NBR, LI_NBR, PART, QTY  
    FROM ORDERS  
    WHERE REC_TYPE = 'L';  
  
UPDATE ORDERS  
    SET ADDR = :STREET || :CITY || :ST || :ZIP  
    WHERE REC_TYPE = 'O'  
    AND PO_NBR = :PO_NBR;
```

Accessing SQL Data With SAAT and RAAT

NULL INDICATOR

- Columns are nullable unless created with NOT NULL
- Nullable columns begin with a 1-byte null indicator field
 - *(Externally it's a 2-byte binary null indicator column)*
- NULL value has null indicator = 'N'
 - Value area is blanks or zero
- Not NULL value has null indicator = ' ' (space)

SQL DATE, TIME, TIMESTAMP

- Internal format is binary
 - Example 2019-10-16 → x'14130A10'
 - Hard for non-SQL, but possible to convert
- Convert character dates to SQL to use date functions
 - Example `DATE(YEAR || '-' || MONTH || '-' || DAT) + 1 MONTH > CURRENT DATE`

VARCHAR

- Length is 2-byte binary at front
- Use COBOL group level
 - ```
01 SQL-NAME.
 05 NAME-LENGTH S9999 COMP.
 05 NAME X(20) .
```
- Length of zero is valid
  - This is NOT a NULL value
- The field is internally stored at maximum length – no compression
  - Value after the length is technically undefined, but Datacom sets to blanks

---

## Customer Poll Question

- Are you currently leveraging Datacom SQL?
  - Yes in production
  - Yes in development
  - No
  - I would like to request a follow-up to further discuss



# Datacom Server

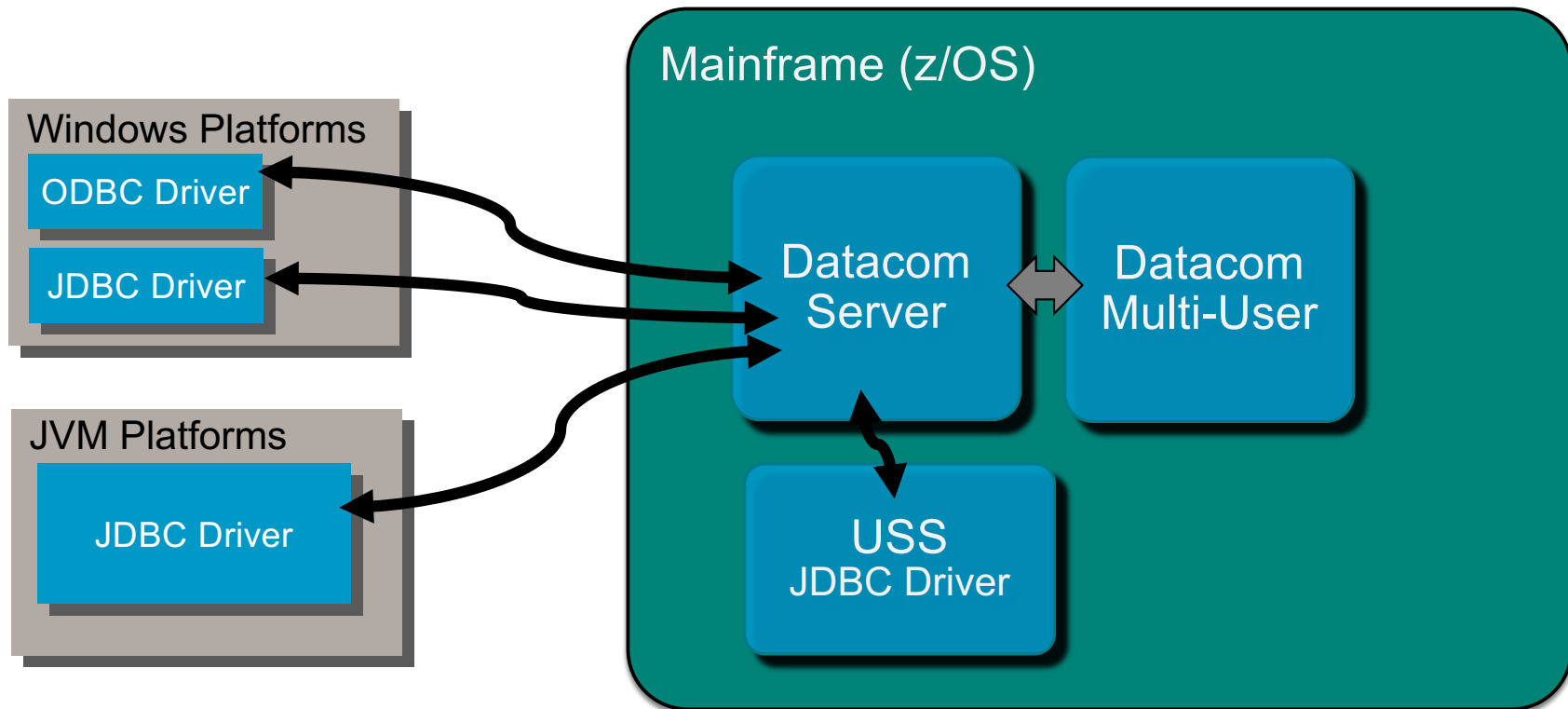




# Datacom Server Components



## Datacom Server Components



# Datacom Server Components

- Mainframe Component (SVDBSPR)
  - Runs in separate address from Datacom Multi-User
  - Acts as a 'conduit' between the client drivers and the SQL engine in MUF
  - Handles communication between distributed clients and MUF
- ODBC Driver – cadcmf32.dll and/or cadcmf64.dll
  - Windows only
  - Translates client driver 'language' into Datacom SQL internal commands
  - "Connects" C/C++, PHP, .NET, etc applications to enterprise Datacom data
  - Performs conversion to/from EBCDIC/ASCII
- JDBC Driver – cadcjdbc.jar
  - Any operating system that supports a JVM
  - "Connects" Java, JavaScript, etc applications to enterprise Datacom data
  - Available in USS

# Datacom Server Mainframe



# Datacom Server Mainframe

- Installation – SMP/E Pax similar to Datacom
- Datacom/AD 15.1 includes Datacom Server
- **MUST CHANGE Multi-User (MUF) Startup Options!**
  - MUF DBDATIN2 member or SYSIN

```
**DATACOM PRODUCTS MULTI-USER STARTUP OPTIONS * REVIEW *
 DATACOM SQL Datacom/DB-SQL
 DATACOM DQ CA DATAQUERY
*DATACOM PRESSPACK Datacom/DB PRESSPACK
 DATACOM CICSSVCS Datacom/CICS SERVICES
*DATACOM VSAMT Datacom/VSAM TRANSPARENCY
 DATACOM DTCMSRVR Datacom/SERVER
*DATACOM FASTR Datacom/FAST RESTORE
```

## Datacom Server Mainframe Task (cont'd)

- YT15STRT – sample JCL member
  - Datacom/AD *hlq.CAAXMAC* – OR – *hlq.CAASAMP(ADYTSTRT)*
  - Datacom Server *hlq.CAYTMAC*
- STEPLIB or JOBLIB
  - Datacom/DB CUSLIB
  - Datacom Server LOADLIB
  - Datacom/DB LOADLIB
- SYSTCPD – TCPIP.DATA dataset - defines TCP/IP stack (site-specific)
- CEEOPTS – LE Run-time Options  
*hlq.CAYTMAC(CEEUOPT)*
- SYSIN – Startup options

# Datacom Server Startup Options - SYSIN

- **SERVERNAME=your\_server\_name**
  - Token used in connection strings or data source settings
  - Uniquely identifies the Server instance/region
- **APPLID=your\_applid**
  - (another) token used in connection strings or data source settings
  - Uniquely identifies the Server instance/region
- **PLANNAME=aaaa**
  - SQL plan name prefix used to 'dynamically' build the plan for each open connection
  - Must be unique for all Server regions attached to a Multi-User
- **AUTHID=SYSUSR**
  - Used as the default schema name for non-qualified table, view or procedure names
  - Must be a valid AUTHID in the Multi-User instance

## Datacom Server Startup Options – cont'd

- **PROTOCOL=TCP**
  - Specifies the communication protocol – CCI, TCP or BOTH
  - Default: CCI
  - Suggested: TCP
- **TCPIP\_HOST=LOCALHOST, IP address or DNS name**
  - Specifies the name of the LPAR associated with the TCPIP\_PORT= number for TCP/IP transmissions
  - LOCALHOST or 0.0.0.0 allows the Server to listen on any LPAR at TCPIP\_PORT
  - Recommended if PROTOCOL=BOTH or TCP
  - Ignored if PROTOCOL=CCI
- **TCPIP\_PORT=**
  - Specifies listener port number for incoming TCP/IP traffic
  - Default: 5465
  - Consult with local Network Admin



## Datacom Server Startup Options – cont'd

- DBUSERS=nn
  - Specifies the number of Datacom/DB threads dedicated to the Server
  - Review the TASKS startup parameter in Datacom MUF

DB01900I - TASKS 250,45K,0,0,250,50 # OF TASKS,SIZE,0,0,XCFTASKS

- Any number of non-update requests can share a thread
- An update request locks or holds the thread
  - Threads are locked until the task issues a commit or rollback
  - Or ... if the connection is closed or timed out
- Best Practice: reserve enough threads to service the number of concurrent updates expected. Then, monitor the shutdown statistics to see if adjustments should be made.

# Datacom Server Sample Startup JCL & Options

```
//YT15STRT JOB (125401000),'SERVER 15.0',
// CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID
//DBSERVER EXEC PGM=SVDBSPR,REGION=0M
//STEPLIB DD DISP=SHR,DSN=DTCOMC.MUFC.V151.CUSLIB
// DD DISP=SHR,DSN=DCMQA.DBSRV150.DEV.CAYTLOAD
// DD DISP=SHR,DSN=DTCOMC.TEAMC.CABDLOAD
//SYSTCPD DD DISP=SHR,DSN=PIT.ZPDT.TCPIP.DATA(DATAZM1D)
//SYSPRINT DD SYSOUT=*
//CEEOPTS DD DISP=SHR,DSN=DCMQA.DBSRV150.DEV.CAYTMAC(CEEUOPT)
//SYSIN DD *
SERVERNAME=SV15_MUFSTRTS
APPLID=SV15_MUFSTRTS
PLANNAME=MUFS
AUTHID=SYSUSR
DBUSERS=10
PROTOCOL=BOTH
TCPIP_HOST=0.0.0.0
TCPIP_PORT=5465
LOGON=NO
//
```

# Datacom Server Sample Output

DSV00077I-CA Datacom Server Version 15.0 Program Messages

Current Date: 09/18/2019

Current Time: 18:32:33:62

DSV00038I-Input parameters received:

SERVERNAME=SV15\_MUFSTRTS

APPLID=SV15\_MUFSTRTS

PLANNAME=MUFS

AUTHID=SYSUSR

DBUSERS=10

PROTOCOL=BOTH

TCPIP\_HOST=0.0.0.0

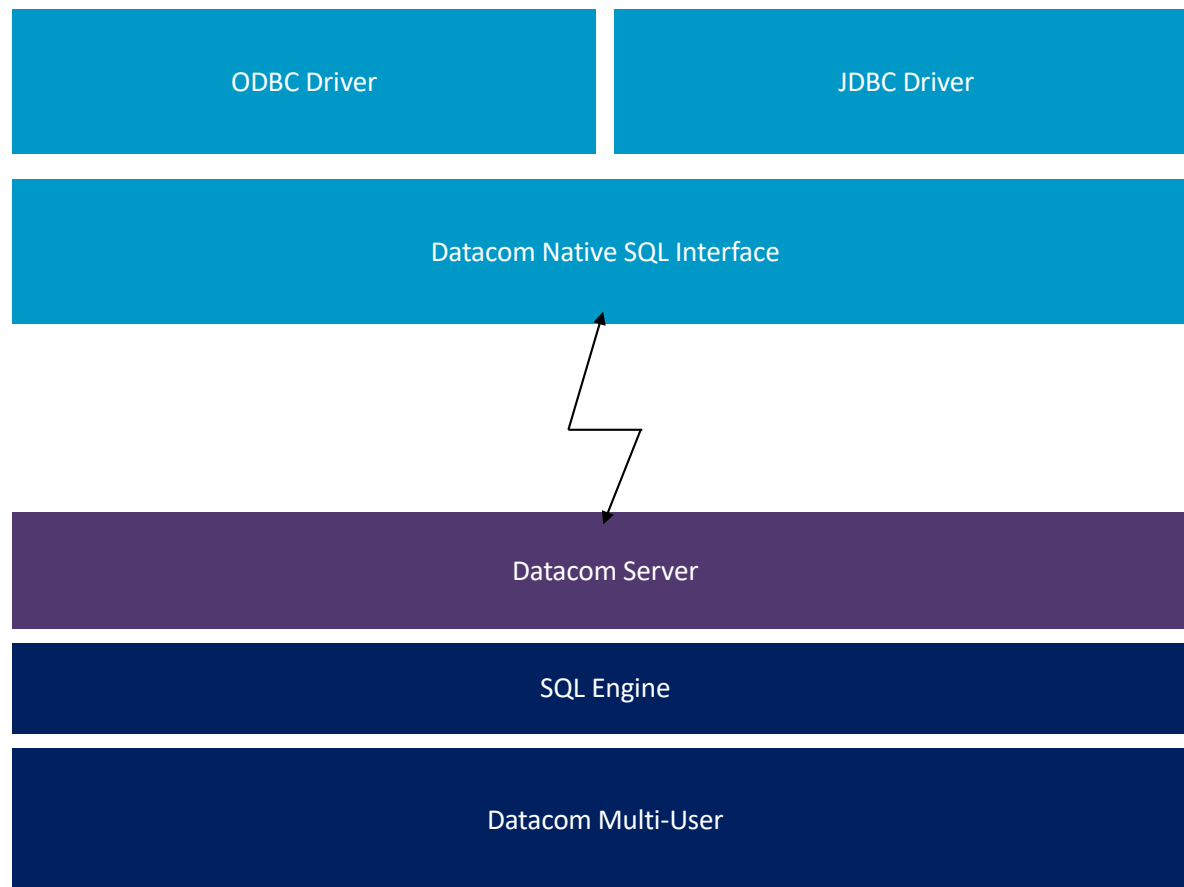
TCPIP\_PORT=5465

LOGON=NO

# Datacom Server Architecture



# Datacom Server Basic Architecture



# Datacom Server ODBC Driver



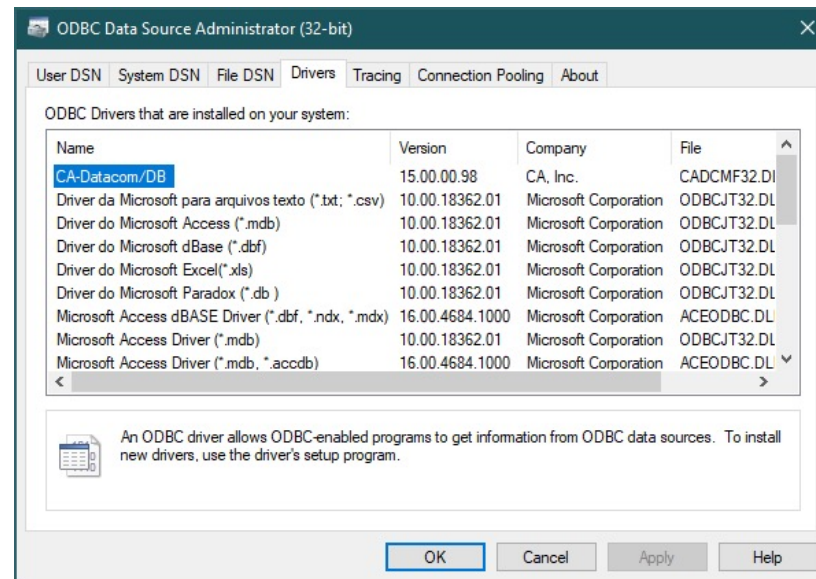
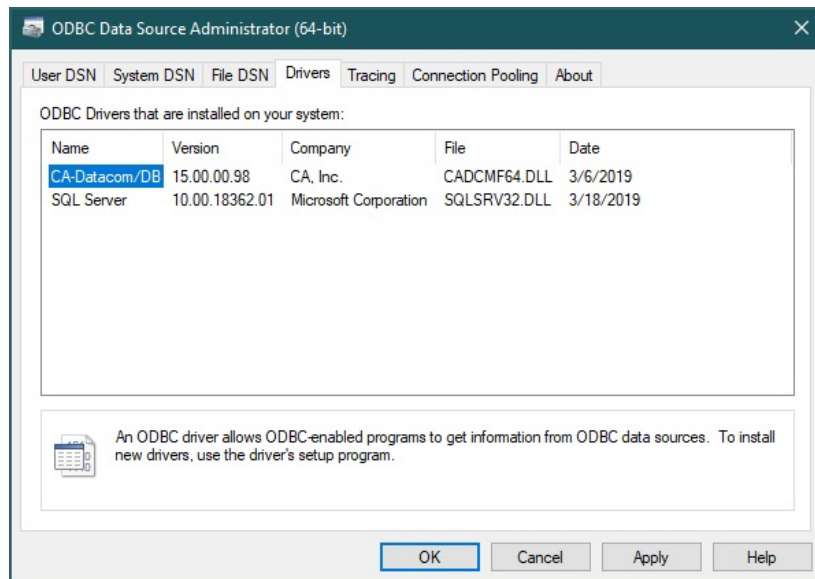
---

# Datacom Server ODBC Driver

- Windows only
- ODBC 3.8 Compliant
- Supports both 32-bit (x86) and 64-bit (x64) platforms and applications
  - Installed with separate installers
  - Both can be installed on the same Windows machine
  - 64-bit installed in c:\Program Files\CA-DatacomServer
  - 32-bit installed in c:\Program Files (x86)\CA-DatacomServer
- Communication Protocols
  - CCI – Common Communication Interface – CA-ENF
  - TCP/IP – sent directly to the Server Mainframe Region
- Requires an ODBC Data Source

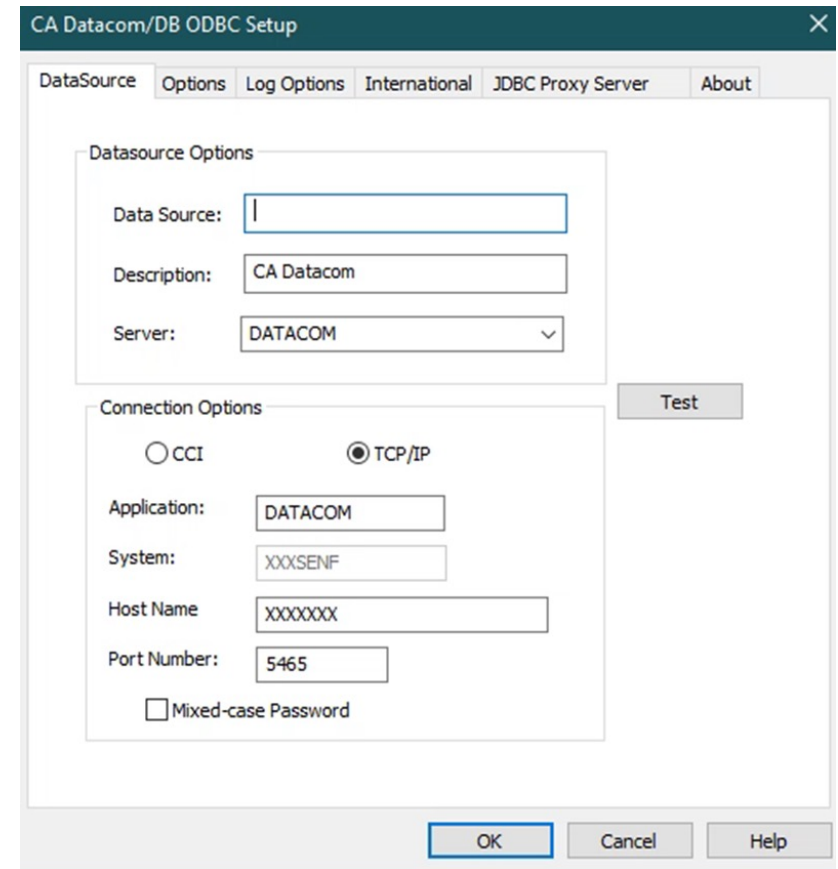
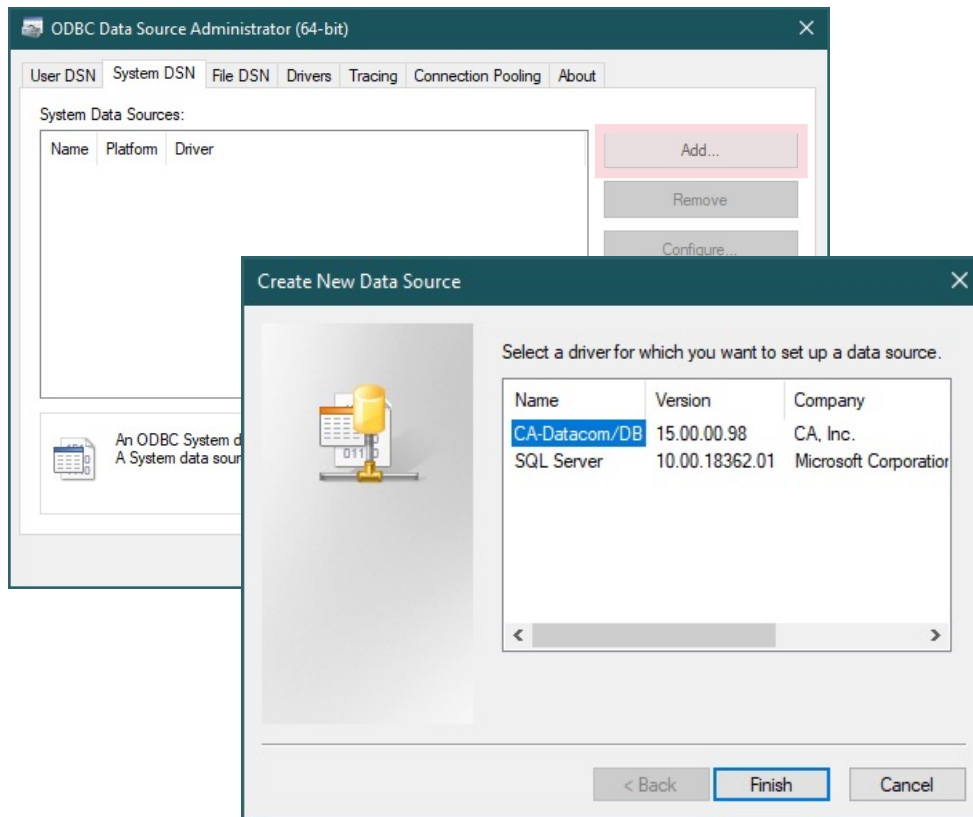
# Datacom Server ODBC Data Source Setup

- (Microsoft) ODBC Data Source Administrator (odbcad32.exe)
- Search for 'ODBC' in Windows search box
- ODBC Data Sources (32-bit) and (64-bit)





## Datcom Server ODBC Data Source Setup – cont'd



## Datcom Server ODBC Data Source Setup – cont'd

CA Datcom/DB ODBC Setup

DataSource Options

Data Source:

Description: CA Datcom

Server: DATACOM

Connection Options

☐ CCI ☒ TCP/IP

Application: DATACOM

System: XXXSENF

Host Name: XXXXXXX

Port Number: 5465

☐ Mixed-case Password

Test

OK Cancel Help

Your\_Data\_Source\_Name

DSV00077I-CA Datcom Server Version 15.0 Program Messages

Current Date: 09/18/2019

Current Time: 18:32:33:62

DSV00038I-Input parameters received:

SERVERNAME=SV15\_MUFSTRTS

APPLID=SV15\_MUFSTRTS

PLANNAME=MUFS

AUTHID=SYSUSR

DBUSERS=10

PROTOCOL=BOTH

TCPIP\_HOST=0.0.0.0

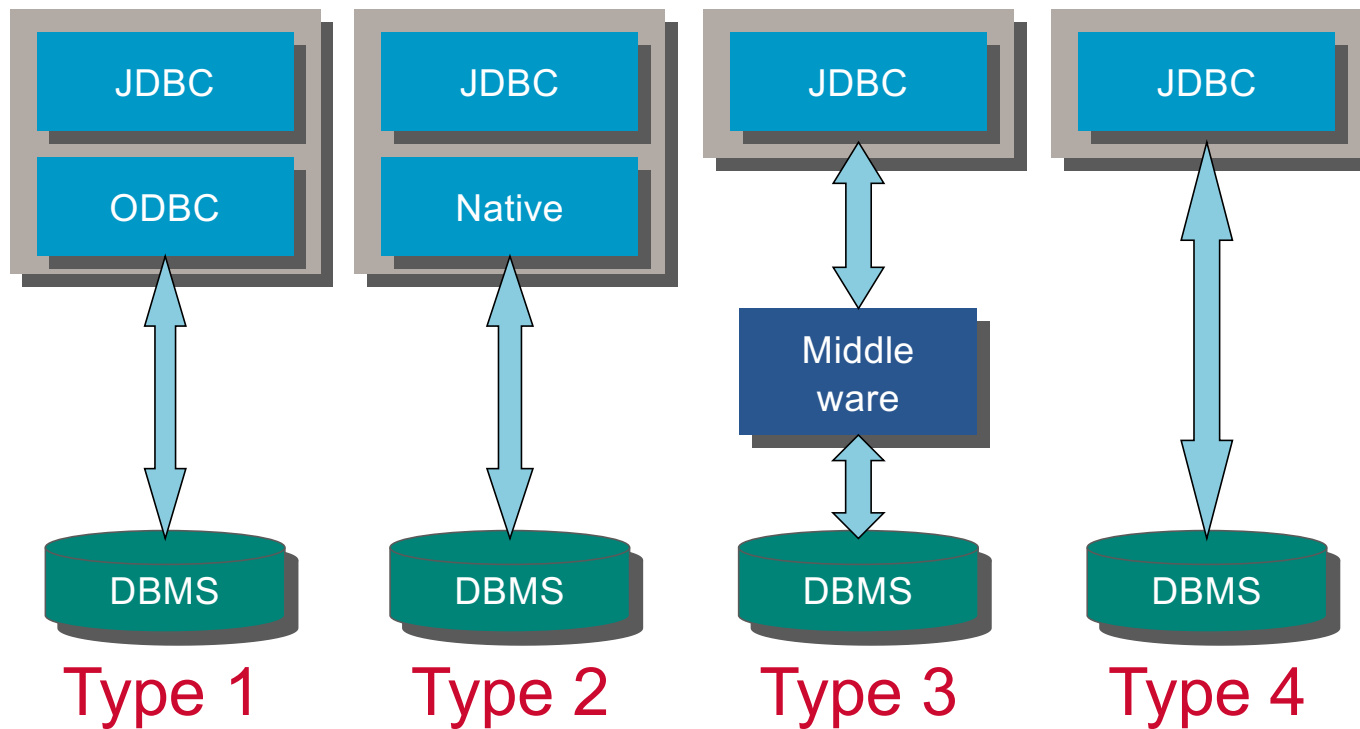
TCPIP\_PORT=5465

LOGON=NO

# Datacom Server JDBC Driver



## JDBC Driver Connection Types



---

## Datacom Server JDBC Driver – cadcjdbc.jar

- JDBC 4.0 compliant
- “Universal” driver
  - Types 2, 3, 4
- All client platforms that support Java
  - Windows
  - z/OS USS
  - Linux(x86, z/Series)
  - Other Unix type platforms
- Uses connection URLs (Universal Resource Locator) to connect and communicate with Datacom Server

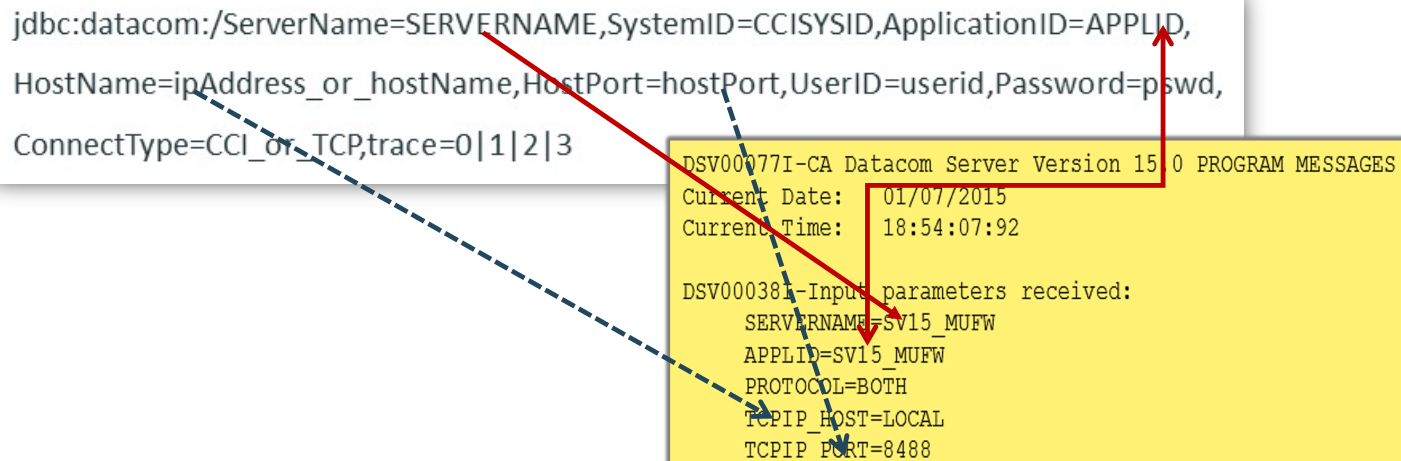
# Datacom Server JDBC Type 2 Driver Connection - URL

- Requires Datacom Server native interface
  - Windows and z/OS USS, only – not valid on Linux platforms
- General Syntax:

```
jdbc:datcom:/ServerName=SERVERNAME,SystemID=CCISYSID,ApplicationID=APPLID,
HostName=ipAddress_or_hostName,HostPort=hostPort,UserID=userid,Password=pswd,
ConnectType=CCI_or_TCP,trace=0|1|2|3
```

```
DSV00077I-CA Datacom Server Version 15.0 PROGRAM MESSAGES
Current Date: 01/07/2015
Current Time: 18:54:07:92

DSV00038I-Input parameters received:
SERVERNAME=SV15_MUFW
APPLID=SV15_MUFW
PROTOCOL=BOTH
TCPIP_HOST=LOCAL
TCPIP_PORT=8488
```



# Datacom Server JDBC Type 3 Connection - URL

- Requires a JDBC Proxy on Windows or USS (Middleware)
- Linux Platforms – x86 or z/Series
- General Syntax:

```
jdbc:datcom:/proxyHost/proxyPort/ServerName=SERVERNAME,
ApplicationID=APPLID,SystemID=CCISYSID,HostName=hostname/IP,
HostPort=hostPort,ConnectType=CCI_or_TCP,UserID=,Password=
```

```
DSV00077I-CA Datacom Server Version 15.0 PROGRAM MESSAGES
Current Date: 01/07/2015
Current Time: 18:54:07:92
```

```
DSV00038I-Input parameters received:
SERVERNAME=SV15_MUFW
APPLID=SV15_MUFW
PROTOCOL=BOTH
TCPIP_HOST=LOCAL
TCPIP_PORT=8488
```

```
CA Datacom Server 15.0
Copyright 2011 CA, Inc.
2015/01/13 05:20:44.457 T:main
Proxy 15.0.3
...
Driver Version: 15.0.3
Press enter to end...
UJS0001I JDBC Server [0.0.0.0:3709] started on 138.42.160.72
```

CA Datacom Server JDBC

## Datacom Server JDBC Type 4 Connection - URL

- Type 4 – Requires TCP/IP - not valid with PROTOCOL=CCI
- Pure Java - Supported on all Java platforms
- Direct Connection to Datacom Server Mainframe region
- General Syntax:

```
jdbc:atacom://TCPIP_HOST:TCPIP_PORT/ServerName=SERVERNAME,UserID=,
Password=,trace=0|1|2|3
```

```
DSV00077I-CA Datacom Server Version 15.0 PROGRAM MESSAGES
Current Date: 01/07/2015
Current Time: 18:54:07:92

DSV00038I-Input parameters received:
SERVERNAME=SV15_MUFW
APPLID=SV15_MUFW
PROTOCOL=BOTH
TCPIP_HOST=LOCAL
TCPIP_PORT=8488
```



---

## Customer Poll Question

- Are you currently leveraging Datacom Server?
  - Yes in production
  - Yes in development
  - No
  - I would like to request a follow-up to further discuss

---

# Resources

- Microsoft ODBC Specification  
<https://docs.microsoft.com/en-us/sql/odbc/microsoft-open-database-connectivity-odbc?view=sql-server-2017>
- IBM ODBC Specification:  
[https://www.ibm.com/support/knowledgecenter/en/SSEPEK\\_11.0.0/odbc/src/tpc/db2z\\_hdapi.html](https://www.ibm.com/support/knowledgecenter/en/SSEPEK_11.0.0/odbc/src/tpc/db2z_hdapi.html)
- JDBC Specification:  
<https://docs.oracle.com/javase/8/docs/technotes/guides/jdbc/>
- [Lynette.Elwell@Broadcom.com](mailto:Lynette.Elwell@Broadcom.com)

# Session Questions





# General Announcements

# Mainframe Technical Exchange

## October 5-7, 2021

- Connect virtually with peers and Mainframe technical experts
- Over 140 technical education, product update and ideas sessions
- No registration fee! Open to all Broadcom customers
- **REGISTER TODAY:** <http://bit.ly/2021TechExchange>



AI/ML



DevOps



Infrastructure  
Management



Security



# Mainframe Technical Exchange

## Must See Datacom Sessions!

- **Tuesday October 5 @ 12:00pm (ET):** [“Datacom New Features”](#) (Dale Russell, Product Owner; Emelda Peter, Datacom Software Engineer; Dick Williamson, Datacom Software Engineer)
- **Tuesday October 5 @ 1:00pm (ET):** [“Datacom Framework for 24x7 Utilities”](#) (Kevin Shuma, Director of Engineering)
- **Wednesday, October 6 @ 8:00am (ET):** [“VS Code integration with IDMS and Datacom”](#) (Teri Schnitt, IDMS Software Engineer; Lukas Zima, DevOps Product Owner)
- **Wednesday, October 6 @ 10:00am (ET):** [“Datacom REST API Overview and Benefits”](#) (Jacob Huerta, Datacom Software Engineer)
- **Wednesday, October 6 @ 12:00pm (ET):** [“Security in the Datacom World”](#) (Robert Floarian, Datacom Software Engineer)
- **Thursday, October 7 @ 8:00am (ET):** [“Datacom Systems Performance”](#) (Owen Williams, Redcentric PLC; Kevin Shuma, Director of Engineering)
- **Thursday, October 7 @ 10:00am (ET):** [“Datacom and IBM Media Manager”](#) (Joe Lynn, Datacom Software Engineer)

# Mainframe Technical Exchange

Calling all Customers!!

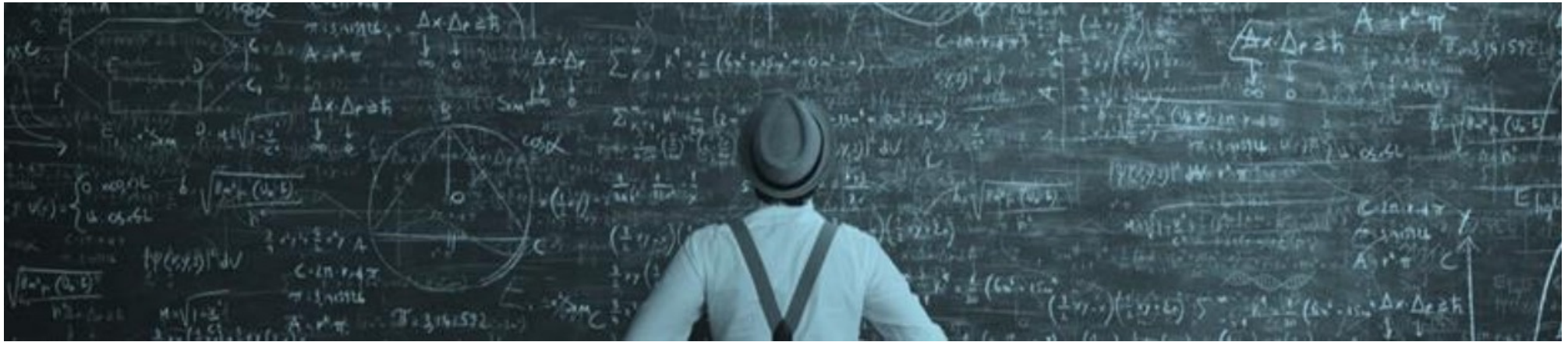


- [\*“Datacom User Experience” on Thursday, October 7 @ 12:00pm \(ET\).\*](#)
- Customer feedback and direction is invaluable to our overall strategic direction. We are interested in hearing your voice and providing us with insight based on real-life experiences and requirements. Please join us for an interactive user experience (UX) session where we look to you – our customers – to assist in shaping the future of our products.



# Partnering with You – How you Can Get Involved

We're Interested In Your Thoughts



Join us on our **journey** to achieve our ongoing **vision**, we are **actively seeking feedback and suggestions from our customers**. We want to hear your voice!

- |                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Submit your ideas on CA Datacom/CADRE <a href="https://communities.broadcom.com">communities.broadcom.com</a></li><li>• Vote and comment on ideas that are important to you</li></ul> | <ul style="list-style-type: none"><li>• Join our <a href="#">validation program</a> to influence our product direction<ul style="list-style-type: none"><li>– End-of-Sprint review meetings</li><li>– Early access to new features and enhancements</li></ul></li></ul> | <ul style="list-style-type: none"><li>• Attend our monthly <a href="#">webcasts</a> – check out the Communities site for upcoming sessions<ul style="list-style-type: none"><li>– 2<sup>nd</sup> Thursday each month</li></ul></li></ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



# Final Questions





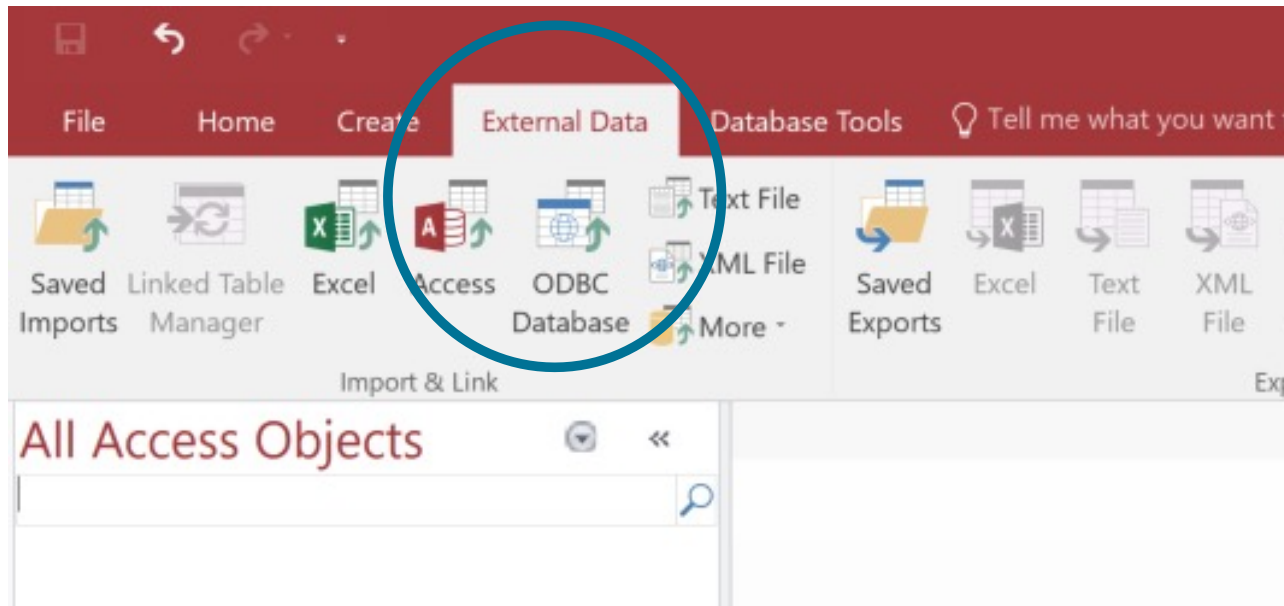
# Thank You

# Appendix

# Using Microsoft Access and Datacom Server as a Front-end to Datacom

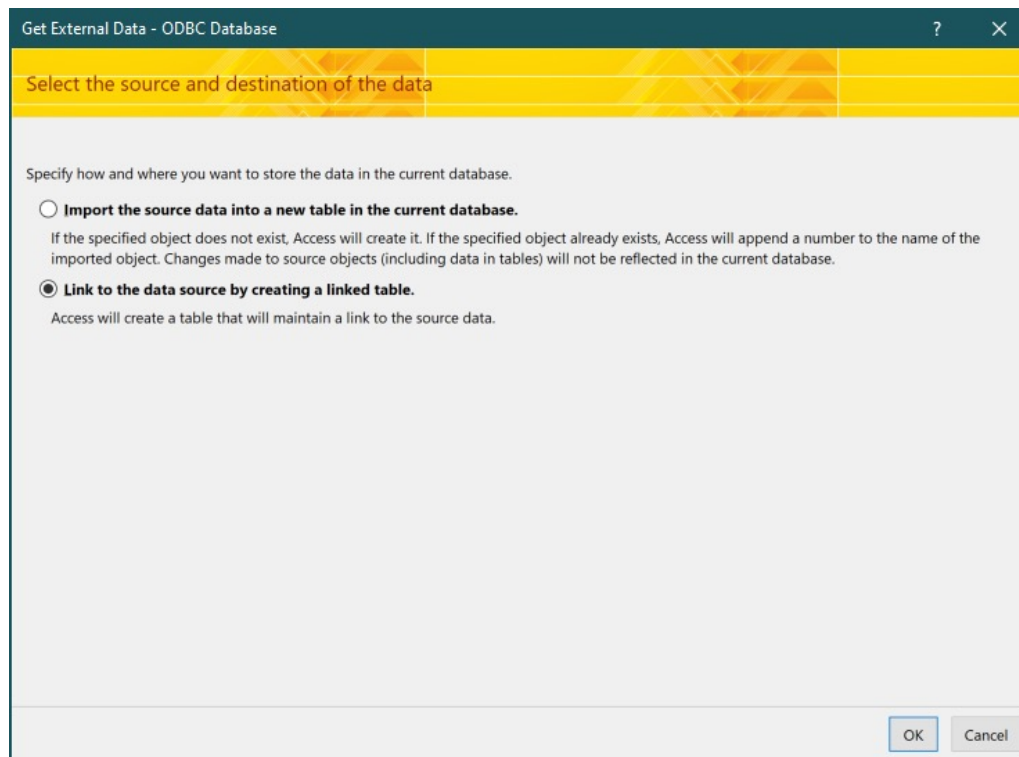
## *Create a linked table*

1. Open the Access database you want to link or create a new one
2. On the **External Data** tab, choose **ODBC Database**



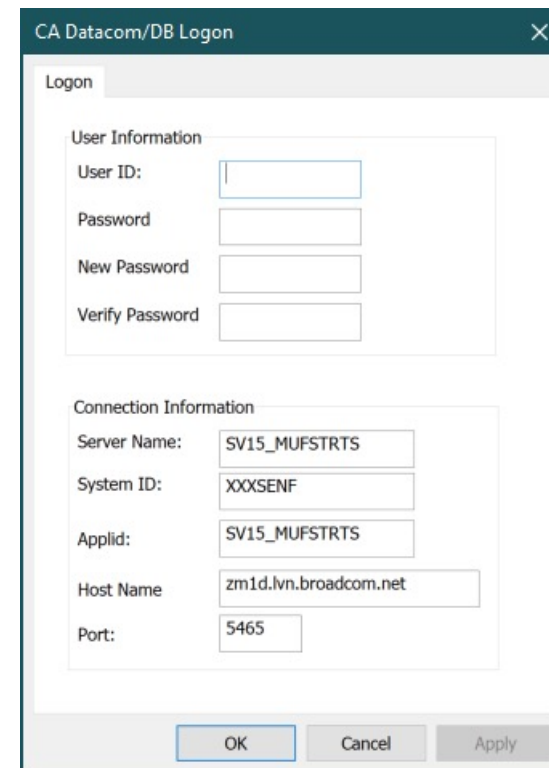
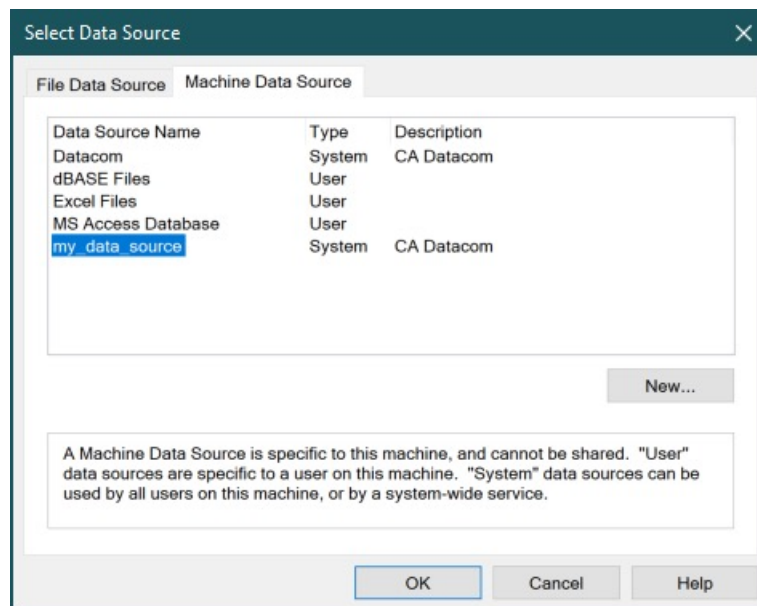
# Using Microsoft Access and Datacom Server as a Front-end to Datacom

3. In the **Get External Data** dialog box, choose **Link to the data source by creating a linked table** and click **OK**



# Using MS Access and Datacom Server as a Front-end to Datacom

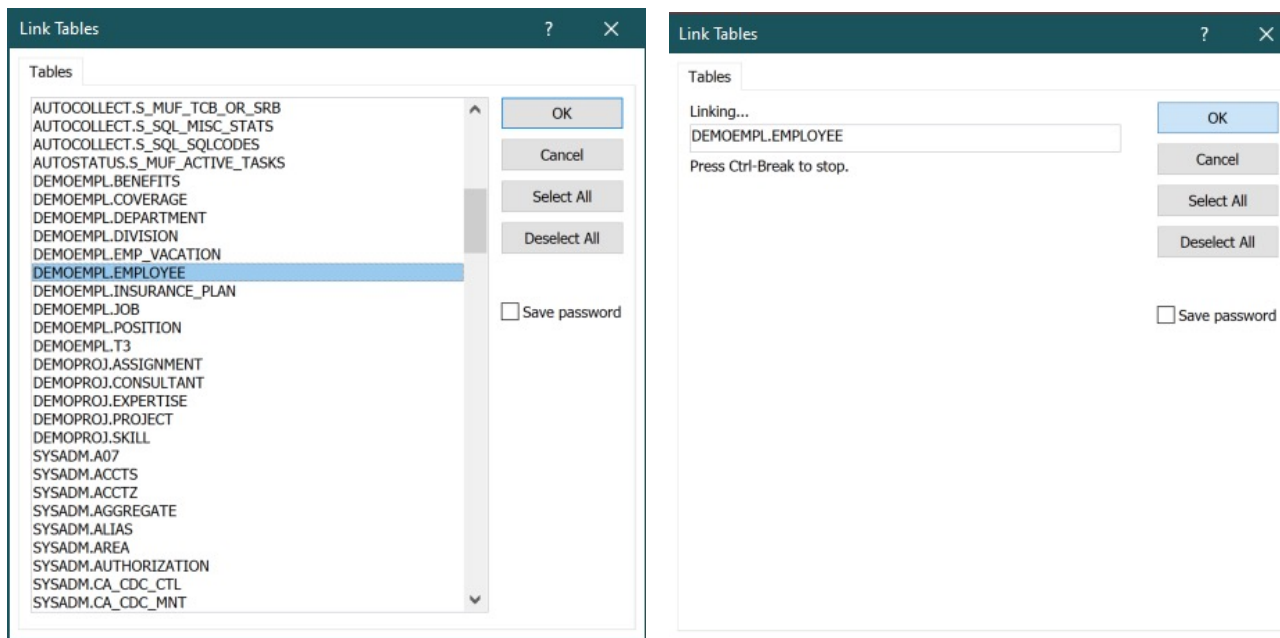
4. In the **Select Data Source** dialog box, click the **Machine Data Source** tab, then double-click the Datacom Server ODBC DSN you wish to use. Provide logon credentials if needed.





## Using MS Access and Datacom Server as a Front-end to Datacom

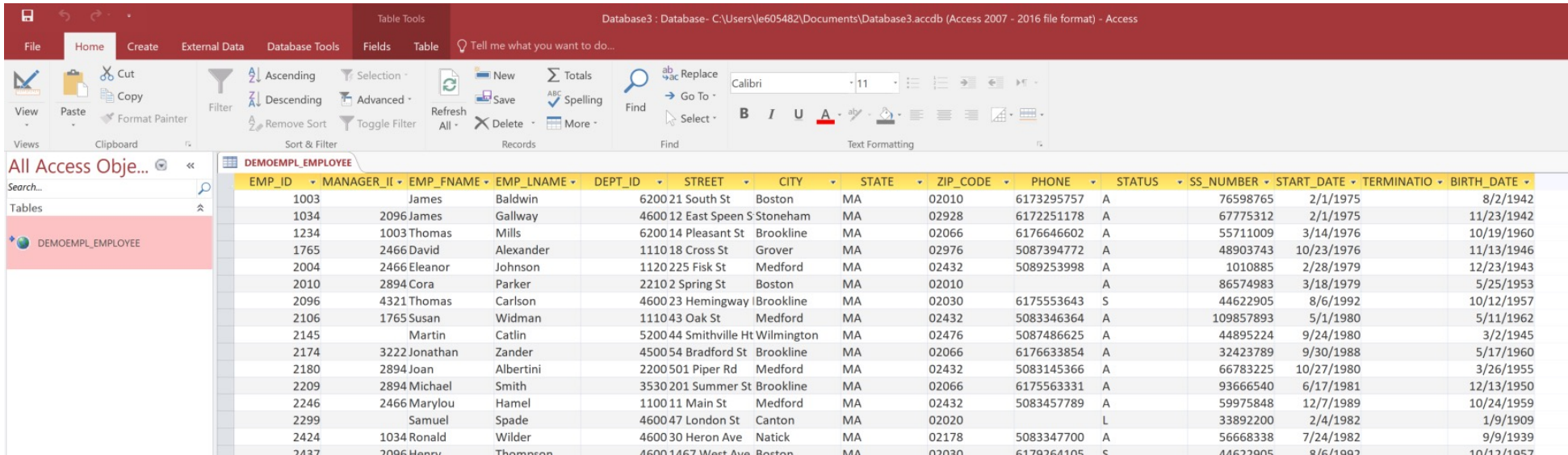
5. MS Access connects to Datacom Server and returns a list of Datacom tables. Choose the table(s) you wish to link and click **OK**.



6. If MS Access is unable to determine the unique record identifier automatically, it will ask you to choose a column or combination of columns which uniquely identify each row.

# Using MS Access and Datacom Server as a Front-end to Datacom

Once the process is complete, you can build interfaces and queries on the linked tables as you would for any Access database.

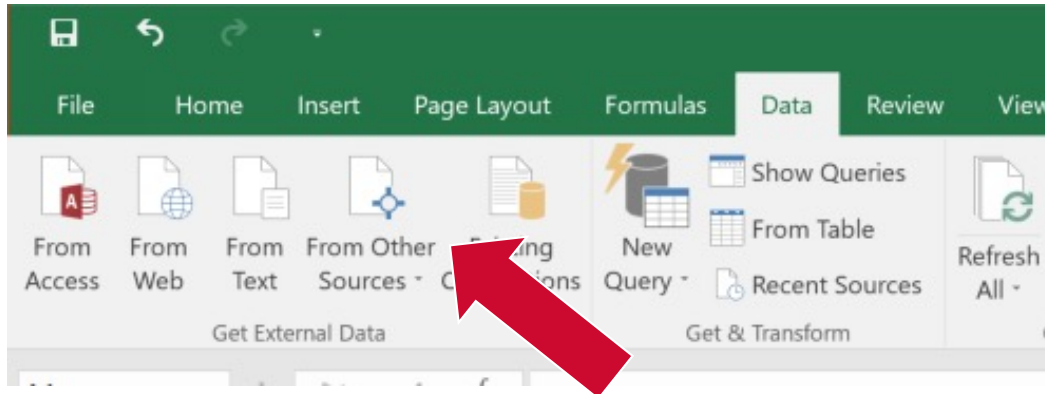


| EMP_ID | MANAGER_ID | EMP_FNAME | EMP_LNAME | DEPT_ID | STREET                | CITY       | STATE | ZIP_CODE | PHONE      | STATUS | SS_NUMBER | START_DATE | TERMINATIO | BIRTH_DATE |
|--------|------------|-----------|-----------|---------|-----------------------|------------|-------|----------|------------|--------|-----------|------------|------------|------------|
| 1003   |            | James     | Baldwin   |         | 6200 21 South St      | Boston     | MA    | 02010    | 6173295757 | A      | 76598765  | 2/1/1975   |            | 8/2/1942   |
| 1034   | 2096       | James     | Gallway   |         | 4600 12 East Speen S  | Stoneham   | MA    | 02928    | 6172251178 | A      | 67775312  | 2/1/1975   |            | 11/23/1942 |
| 1234   | 1003       | Thomas    | Mills     |         | 6200 14 Pleasant St   | Brookline  | MA    | 02066    | 6176646602 | A      | 55711009  | 3/14/1976  |            | 10/19/1960 |
| 1765   | 2466       | David     | Alexander |         | 1110 18 Cross St      | Grover     | MA    | 02976    | 5087394772 | A      | 48903743  | 10/23/1976 |            | 11/13/1946 |
| 2004   | 2466       | Eleanor   | Johnson   |         | 1120 225 Fisk St      | Medford    | MA    | 02432    | 5089253998 | A      | 1010885   | 2/28/1979  |            | 12/23/1943 |
| 2010   | 2894       | Cora      | Parker    |         | 2210 2 Spring St      | Boston     | MA    | 02010    |            | A      | 86574983  | 3/18/1979  |            | 5/25/1953  |
| 2096   | 4321       | Thomas    | Carlson   |         | 4600 23 Hemingway     | Brookline  | MA    | 02030    | 6175553643 | S      | 44622905  | 8/6/1992   |            | 10/12/1957 |
| 2106   | 1765       | Susan     | Widman    |         | 1110 43 Oak St        | Medford    | MA    | 02432    | 5083346364 | A      | 109857893 | 5/1/1980   |            | 5/11/1962  |
| 2145   |            | Martin    | Catlin    |         | 5200 44 Smithville Ht | Wilmington | MA    | 02476    | 5087486625 | A      | 44895224  | 9/24/1980  |            | 3/2/1945   |
| 2174   | 3222       | Jonathan  | Zander    |         | 4500 54 Bradford St   | Brookline  | MA    | 02066    | 6176633854 | A      | 32423789  | 9/30/1988  |            | 5/17/1960  |
| 2180   | 2894       | Joan      | Albertini |         | 2200 501 Piper Rd     | Medford    | MA    | 02432    | 5083145366 | A      | 66783225  | 10/27/1980 |            | 3/26/1955  |
| 2209   | 2894       | Michael   | Smith     |         | 3530 201 Summer St    | Brookline  | MA    | 02066    | 6175563331 | A      | 93666540  | 6/17/1981  |            | 12/13/1950 |
| 2246   | 2466       | Marylou   | Hamel     |         | 1100 11 Main St       | Medford    | MA    | 02432    | 5083457789 | A      | 59975848  | 12/7/1989  |            | 10/24/1959 |
| 2299   |            | Samuel    | Spade     |         | 4600 47 London St     | Canton     | MA    | 02020    |            | L      | 33892200  | 2/4/1982   |            | 1/9/1909   |
| 2424   | 1034       | Ronald    | Wilder    |         | 4600 30 Heron Ave     | Natick     | MA    | 02178    | 5083347700 | A      | 56668338  | 7/24/1982  |            | 9/9/1939   |
| 2437   | 2096       | Henry     | Thompson  |         | 4600 1467 West Ave    | Boston     | MA    | 02030    | 6179264105 | S      | 44622905  | 8/6/1992   |            | 10/12/1957 |



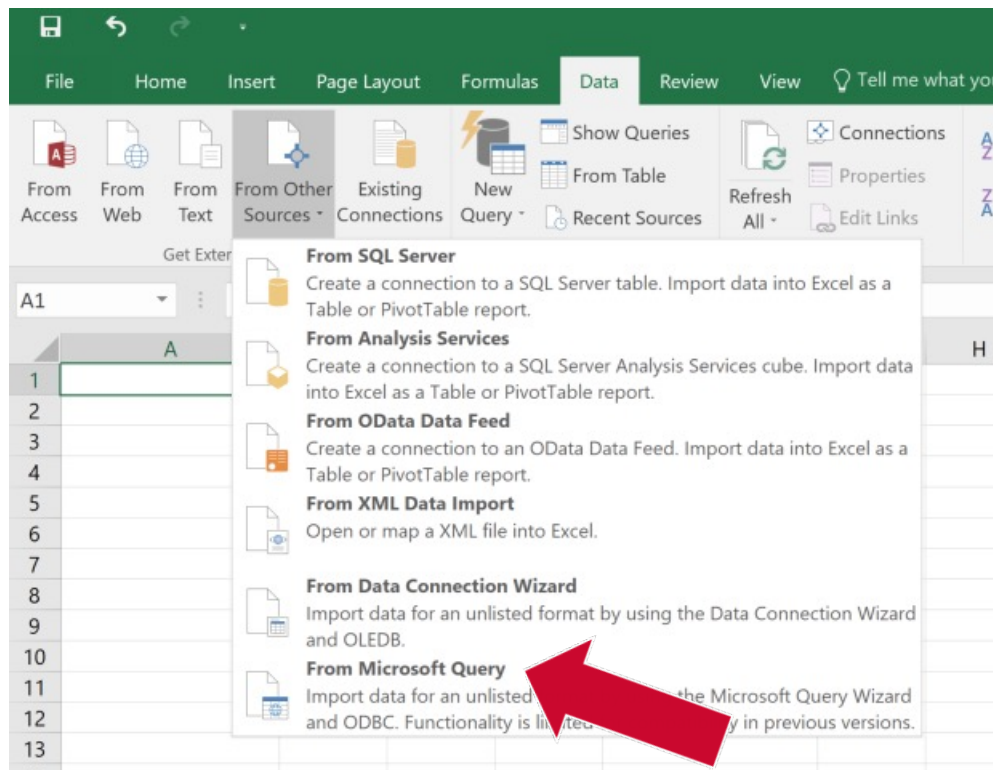
# Using MS Excel with Datacom Server

1. Click the **Data** tab. In the **Get External Data** group, choose **From Other Sources**



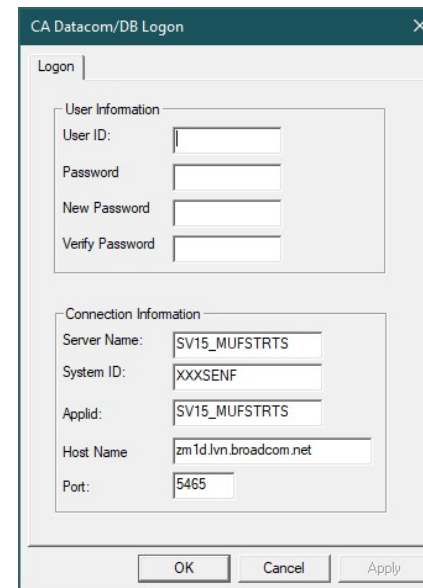
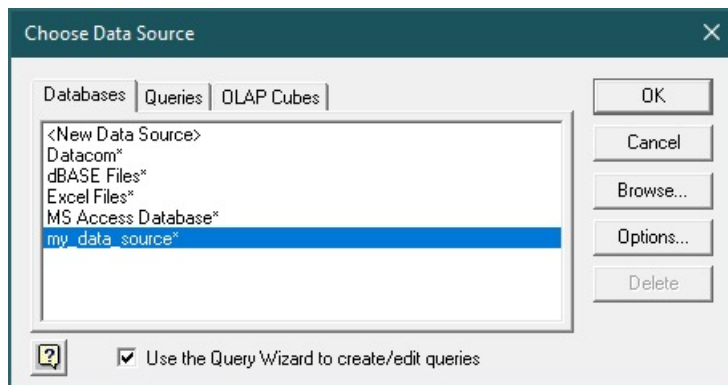
## Using MS Excel with Datacom Server - cont'd

### 2. Choose From Microsoft Query



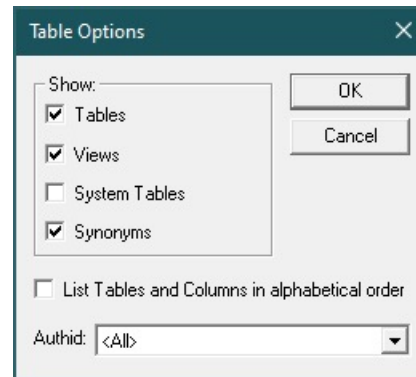
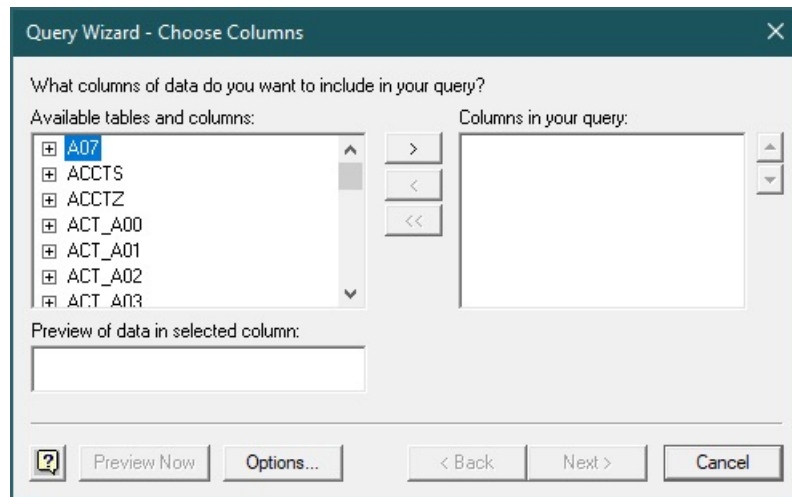
## Using MS Excel with Datacom Server - cont'd

3. When the Choose Data Source panel appears, select the Server ODBC data source you wish to use to make a connection.
4. Enter your credentials when the logon panel appears.



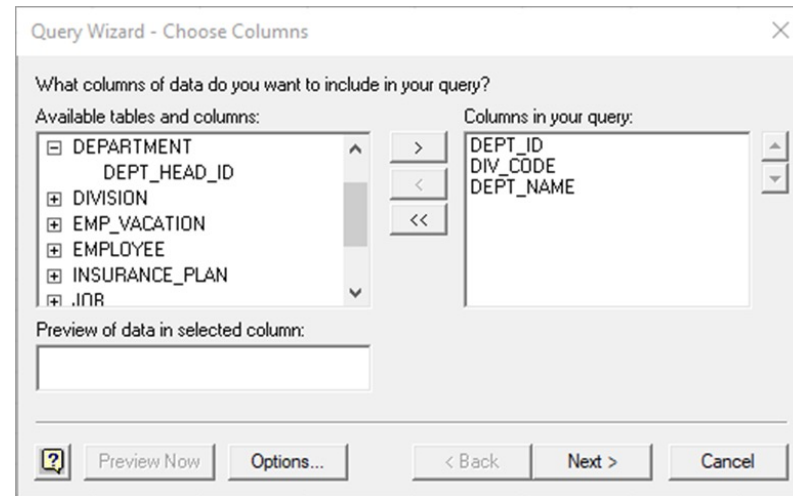
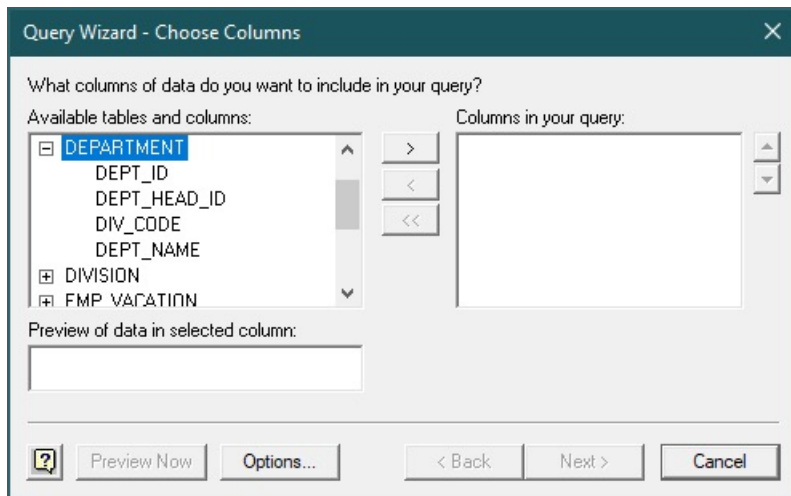
## Using MS Excel with Datacom Server - cont'd

5. A table list appears. Optionally, click the Options button to filter the table list by Authid/Schema name, tables, views, synonyms, etc.



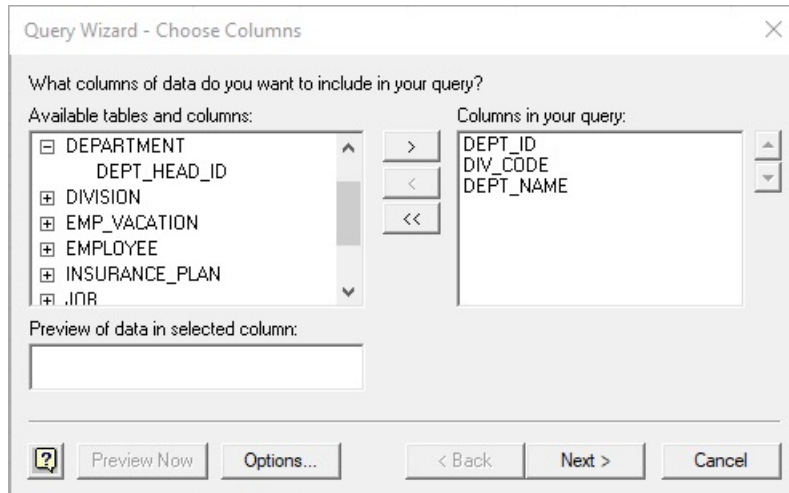
## Using MS Excel with Datacom Server - cont'd

6. Click the + to the left of the desired table to expand the column list
7. Choose the columns for the query and click the right arrow to add them
8. Click next to proceed.



## Using MS Excel with Datacom Server - cont'd

8. The **Query Wizard – Filter Data** panel allows you to build a WHERE clause to filter the data.



Query Wizard - Choose Columns

What columns of data do you want to include in your query?

Available tables and columns:

- DEPARTMENT
  - DEPT\_HEAD\_ID
- DIVISION
- EMP\_VACATION
- EMPLOYEE
- INSURANCE\_PLAN
- JOB

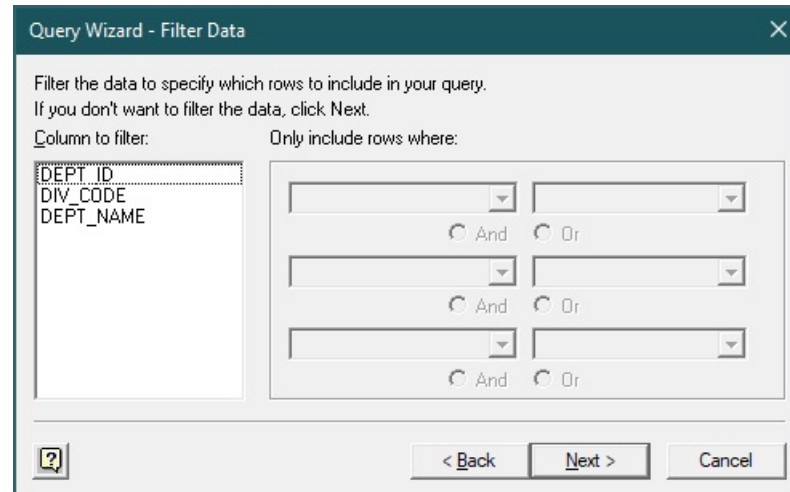
Columns in your query:

- DEPT\_ID
- DIV\_CODE
- DEPT\_NAME

Preview of data in selected column:

[Empty text box]

[?] Preview Now Options... < Back Next > Cancel



Query Wizard - Filter Data

Filter the data to specify which rows to include in your query.  
If you don't want to filter the data, click Next.

Column to filter:

- DEPT\_ID
- DIV\_CODE
- DEPT\_NAME

Only include rows where:

[Dropdown] [Dropdown]  
☐ And ☐ Or

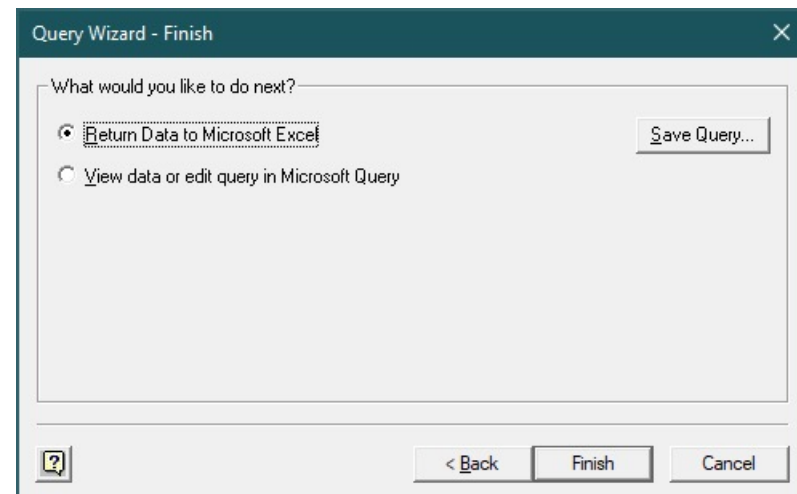
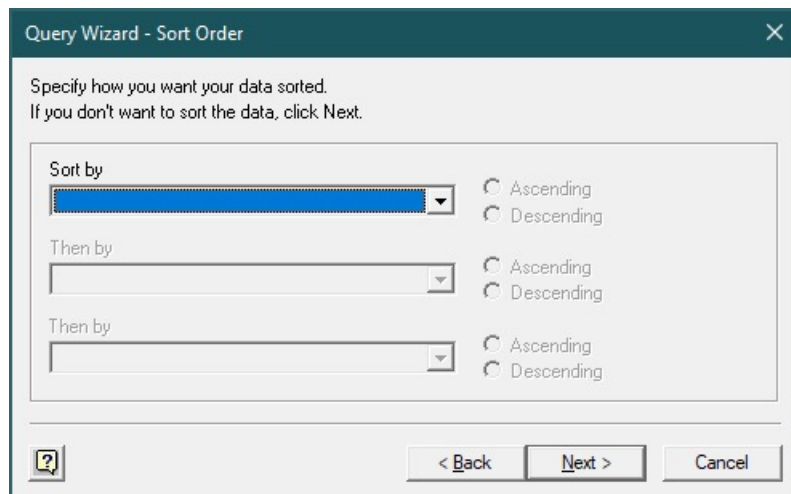
[Dropdown] [Dropdown]  
☐ And ☐ Or

[Dropdown] [Dropdown]  
☐ And ☐ Or

[?] < Back Next > Cancel

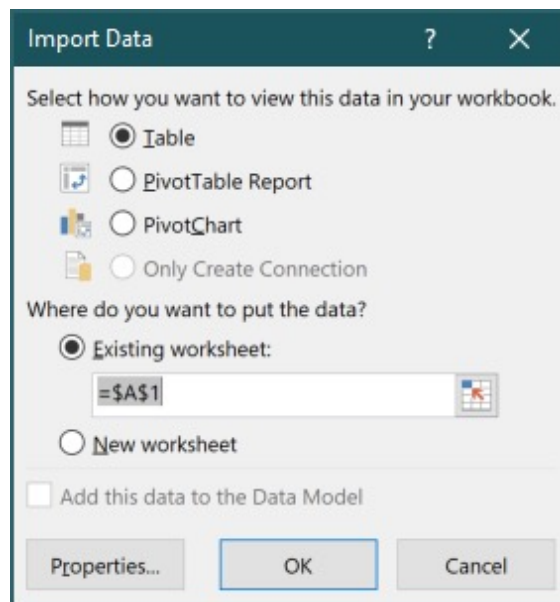
## Using MS Excel with Datacom Server - cont'd

10. The Query Wizard – Sort Order panel allows you to enter sort options.
11. Click Next to proceed.
12. The Query Wizard – Finish panel allows you to save the query, return the data to MS Excel immediately or open Microsoft Query to further edit the query.

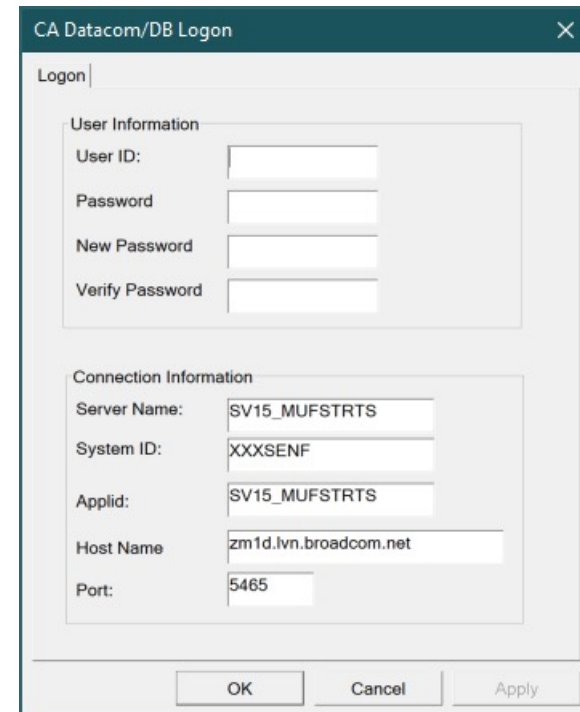


## Using MS Excel with Datacom Server - cont'd

13. The Import Data panel allows you to choose how to view the data.
14. MS Query opens a new connection to the database to retrieve the data. Again. Enter your credentials in the Datacom Logon panel.



The 'Import Data' dialog box is shown. It has a title bar with a question mark and a close button. The main text says 'Select how you want to view this data in your workbook.' There are four radio button options: 'Table' (selected), 'PivotTable Report', 'PivotChart', and 'Only Create Connection'. Below this, it asks 'Where do you want to put the data?' with two radio button options: 'Existing worksheet:' (selected) and 'New worksheet'. Under 'Existing worksheet:', there is a text box containing '=\$A\$1' and a small icon. At the bottom, there is a checkbox labeled 'Add this data to the Data Model' which is unchecked. There are three buttons at the bottom: 'Properties...', 'OK', and 'Cancel'.



The 'CA Datacom/DB Logon' dialog box is shown. It has a title bar with a close button. The main text says 'Logon'. There are two sections: 'User Information' and 'Connection Information'. The 'User Information' section has four text boxes: 'User ID:', 'Password', 'New Password', and 'Verify Password'. The 'Connection Information' section has five text boxes: 'Server Name:' (containing 'SV15\_MUFSTRTS'), 'System ID:' (containing 'XXXSENF'), 'Applid:' (containing 'SV15\_MUFSTRTS'), 'Host Name' (containing 'zm1d.lvn.broadcom.net'), and 'Port:' (containing '5465'). At the bottom, there are three buttons: 'OK', 'Cancel', and 'Apply'.



# Using MS Excel with Datacom Server - cont'd

| DEPT_ID | DIV_CODE | DEPT_NAME                |
|---------|----------|--------------------------|
| 1100    | D02      | PURCHASING - USED CARS   |
| 1110    | D04      | PURCHASING - NEW CARS    |
| 1120    | D06      | PURCHASING - SERVICE     |
| 2200    | D02      | SALES - USED CARS        |
| 2210    | D04      | SALES NEW CARS           |
| 3510    | D02      | APPRAISAL - USED CARS    |
| 3520    | D04      | APPRAISAL NEW CARS       |
| 3530    | D06      | APPRAISAL SERVICE        |
| 4200    | D04      | LEASING NEW CARS         |
| 4500    | D09      | HUMAN RESOURCES          |
| 4600    | D06      | MAINTENANCE              |
| 4900    | D09      | MIS                      |
| 5000    | D09      | CORPORATE ACCOUNTING     |
| 5100    | D06      | BILLING                  |
| 5200    | D09      | CORPORATE MARKETING      |
| 6000    | D09      | LEGAL                    |
| 6200    | D09      | CORPORATE ADMINISTRATION |