
**Teradata Consulting, Professional Services
and Training**

LEADING EDGE >

Affordable, Experienced, Certified

**Teradata Training Courses Overview
(Basics, SQL and Boot Camp)**

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Teradata Basics, SQL and Boot Camp

Bringing Choice To Teradata Training

The Teradata consultants at Leading Edge have been delivering quality Teradata solutions since the 1980s. In fact, several of our consultants have experience dating back to almost the arrival of Teradata in Europe. We are firmly committed to NCR Certification and boast four Certified Teradata Masters (as of July 2005).

Through feedback from clients we increasingly recognised the need for an alternative Teradata training offer in the European marketplace.

Rather than 'reinvent the wheel' and develop our own courseware from scratch, we are delighted to have teamed up with Coffing Data Warehousing (CDW) from the US. This strategic alliance brings quality, tried and trusted Teradata courseware to the European Teradata market.

Finally, there is a real choice in the Teradata training market.

What makes our courses special?

We are committed to a teaching style that is interactive, fun, and easy to understand. The important content is emphasised so it becomes extremely clear. Our materials are brilliantly written with all the latest and greatest Teradata content.

We promise not to stand at the front and simply read notes at the students. In our opinion that approach is simply not training!

Why do customers love to deal with us?

We cover the entire Teradata syllabus from Teradata Basics through to the most advanced subject matter. All courses can be tailored to your exact requirements.

We don't publish a schedule in advance – our courses are tailored to your specific requirements, including the timing, location and the number of students.

All courses are based on the highly acclaimed series of Teradata books published by Coffing Data Warehousing. The examples we work through in class are those in the relevant book. Each student keeps the book(s) used during the class to take away and use for future reference.

Teradata Boot Camp

Uniquely, we combine a series of courses in a one-week "boot camp", covering Teradata Basics, SQL and Utilities. This is a popular course designed to allow students to become very productive after only 5 days.

Teradata Basics – Overview

Prerequisites	There are no prerequisites for this course
Duration	This is a one-day lecture course.
Courseware	“Tera-Tom on Teradata Basics”.
Audience	The audience will normally consist of a mix of beginners and experienced Teradata users.
Objectives	<p>Designed to get students “Teradata ready”, Teradata Basics is extremely important to everyone involved with the Teradata data warehouse.</p> <p>Key terms and critical points to understand will allow everyone to be on the same page when discussing or working with the Teradata data warehouse.</p> <p>Quite often companies feel a need to have students self-study this material. In our opinion that is a big mistake. Students can get lost, can’t ask questions to clarify, and make false assumptions.</p> <p>A one-day commitment sets the tone for continued Teradata education.</p>

Teradata Basics – Content

Module 1 - Teradata Basics

Uni, Multi, and Parallel Processing
 Major Components of the Teradata Database
 Rows and Columns
 Primary Keys
 Foreign Keys
 Relational Concepts
 Teradata Scalability
 Role of the Parsing Engine (PE)
 Teradata Optimiser
 Role of the Access Module Processor (AMP)
 Logical View of Teradata
 Primary Indexes
 Automatic Data Distribution
 Hash Map
 How the Hash Distributes Data
 How the Hash is used to Locate Data Rows
 Review of the Primary Index

Module 2 - Teradata Architecture

Teradata Hardware Evolution
Teradata Nodes
Virtual Processors
The BYNET
LAN Connection to Teradata
Mainframe Connection to Teradata
AMPs Connected to their Disks
Row ID

Module 3 - Data Protection

Transactions
Transient Journal
Fallback Protection
Clustering
Down AMP Recovery Journal
RAID
Cliques
AMP Limitations
Permanent Journal
Fallback Vs Permanent Journaling
Backing Up the Data
Locking Modes
Row Hash Lock

Module 4 - Teradata Space and Objects

Secondary Indexes
When you first receive the Teradata Database
SYSDBA
Databases and Users
Permanent, Temp and Spool Space
Teradata Objects
What is a View?
What is a Macro?
Triggers
Data Dictionary/Directory
Teradata Utilities Overview

Teradata SQL – Overview

Prerequisites	There are no prerequisites for this course, although we do recommend the Teradata Basics prior to Teradata SQL.
Duration	This is a 4 day hands-on interactive course.
Courseware	“Tera-Tom on Teradata Basics” and “Teradata SQL - Unleash the Power”.
Audience	The audience will normally consist of a mix of beginners and experienced Teradata users.
Objectives	<p>Students will learn Teradata SQL to a sufficient standard to allow them to confidently query the Teradata database.</p> <p>From a gentle start students will soon be performing joins, subqueries, date functions, OLAP functions and onto more complex queries.</p> <p>Students will be encouraged to write and execute many queries as part of this course.</p>

Teradata SQL – Content

Module 1 - Teradata Parallel Architecture

Teradata Introduction, Architecture and Components
 Parsing Engine Processor (PE)
 Access Module Processor (AMP)
 Message Passing Layer (BYNET)
 Database and Users
 Primary and Secondary Indexes

Module 2 - Fundamental SQL

Basic SELECT Command
 WHERE Clause
 Compound Comparisons (AND / OR)
 Impact of NULL on Compound Comparisons
 Using NOT in SQL Comparisons
 Multiple Value Search (IN)
 Using NOT IN
 Using Quantifiers Versus IN
 Multiple Value Range Search (BETWEEN)
 Character String Search (LIKE)
 Derived Columns
 Creating a Column Alias Name (AS and NAMED)
 ORDER BY
 DISTINCT Function

Module 3 - On-line HELP and SHOW Commands

HELP and SHOW commands
EXPLAIN
Adding Comments (ANSI and Teradata)
User Information Functions
ACCOUNT Function
DATABASE Function
SESSION Function

Module 4 - Data Conversions

Data Types and Conversions
CAST
Formatted Data
TITLE Attribute for Data Columns
Transaction Modes
Case Sensitivity of Data
CASESPECIFIC
LOWER and UPPER Functions

Module 5 – Aggregation

The SUM Function
The AVG Function
The MIN Function
The MAX Function
The COUNT Function
Statistical Aggregates
Aggregates and Derived Data
Limiting Output Values Using HAVING
Using GROUP BY
Use of HAVING
Using the DISTINCT Function with Aggregates
Aggregates and Very Large Data Bases (VLDB)
GROUP BY versus DISTINCT
Performance Opportunities

Module 6 – Subquery Processing

Using NOT IN
Using Quantifiers
Qualifying Table Names and Creating a Table Alias
Qualifying Column Names
Creating an Alias for a Table
Correlated Subquery Processing
EXISTS

Module 7 – Join Processing

Join Syntax
Product Join
INNER JOIN
OUTER JOIN
LEFT OUTER JOIN
RIGHT OUTER JOIN
FULL OUTER JOIN
CROSS JOIN
Self Join
Alternative JOIN / ON Coding
Adding Residual Conditions to a Join
OUTER JOIN Hints
Parallel Join Processing
Join Index Processing

Module 8 – Date and Time Processing

ANSI Standard DATE Reference
INTEGERDATE
ANSIDATE
DATEFORM
System Level Definition
User Level Definition
Session Level Declaration
DATE Processing
ADD_MONTHS
ANSI TIME
EXTRACT
Implied Extract of Day, Month and Year
ANSI TIMESTAMP
TIME ZONES
INTERVAL Arithmetic with DATE and TIME
CAST Using Intervals
OVERLAPS
System Calendar

Module 9 – Character String Processing

CHARACTERS Function
CHARACTER_LENGTH Function
OCTET_LENGTH Function
TRIM
SUBSTRING
SUBSTRING and Numeric Data
POSITION
INDEX
SUBSTRING and POSITION or INDEX Used Together
Concatenation of Character Strings

Module 10 – OLAP Functions

OLAP Functions

- Cumulative Sum Using the CSUM Function
- Generating Sequential Numbers with CSUM
- Moving Sum Using the MSUM Function
- Moving Average Using the MAVG Function
- Moving Difference Using the MDIFF Function
- Cumulative and Moving SUM Using SUM / OVER
- SUM Using SUM and OVER / PARTITION BY
- Moving Average Using AVG / OVER
- Using AVG and OVER / ROWS and PARTITION BY
- Moving Linear Regression Using the MLINREG Function
- Partitioning Data Using the QUANTILE Function
- QUALIFY to Find Products in the top Partitions
- Ranking Data using RANK
- QUALIFY to Find Top Best or Bottom Worse
- RANK with Reset Capabilities
- Using RANK with GROUP BY
- Internal RANK operations
- Sampling Rows using the SAMPLE Function
- RANDOM Number Generator Function

Module 11 – SET Operators

Considerations for Using Set Operators

- INTERSECT
- UNION
- EXCEPT
- MINUS
- Using Multiple Set Operators in a Single Request

Module 12 – Data Manipulation

Considerations for Data Maintenance

- Safeguards
- INSERT Command
- Using Null for DEFAULT VALUES
- INSERT / SELECT Command
- Fast Path INSERT / SELECT
- UPDATE Command
- Fast Path UPDATE
- DELETE Command
- Fast Path DELETE
- UPSERT
- ANSI Vs Teradata Transactions
- Performance Issues With Data Maintenance
- Impact of FALLBACK on Row Modification
- Impact of PERMANENT JOURNAL Logging on Row Modification
- Impact of Primary Index on Row Modification
- Impact of Secondary Indices on Row Modification

Module 13 – Data Interrogation

NULLIFZERO
NULLIF
ZEROIFNULL
COALESCE
CASE
Flexible Comparisons within CASE
Comparison Operators within CASE
CASE for Horizontal Reporting
Nested CASE Expressions
CASE used with the other DML
Using CASE to avoid a join

Module 14 – View Processing

Creating and Using VIEWS
Deleting Views
Modifying Views
Modifying Rows Using Views
DML Restrictions when using Views
INSERT using Views
UPDATE or DELETE using Views
WITH CHECK OPTION
Locking and Views

Module 15 – Macro Processing

CREATE MACRO
REPLACE MACRO
EXECUTE MACRO
DROP MACRO
Generating SQL from a Macro

Module 16 – Transaction Processing

What is a Transaction
Locking
Transaction Modes
Setting the Transaction Mode
Teradata Mode Transactions
ANSI Mode Transactions
Aborting Teradata Transactions
Aborting ANSI Transactions

Module 17 – Reporting Totals and Subtotals

Totals and Subtotals
Totals (WITH)
Subtotals (WITH...BY)
Multiple Subtotals on a Single Break
Multiple Subtotal Breaks

Module 18 – Data Definition Language

- CREATE TABLE
- Column Data Types
- PRIMARY INDEX considerations
- SET and MULTISET Tables
- FALLBACK
- Permanent Journal
- BEFORE Journal
- AFTER Journal
- DATABLOCKSIZE
- FREESPACE PERCENTAGE
- UNIQUE Constraint
- CHECK Constraint
- Referential Integrity (RI) Constraint
- Defining Constraints at the Column level
- Defining Constraints at the Table Level
- Utilizing Default Values for a Table
- CREATE TABLE to Copy an existing table
- Altering a Table
- Dropping a Table
- Dropping a Table versus Deleting Rows
- Renaming a Table
- Using Secondary Indices
- Join Index
- Collecting Statistics
- Hash Functions

Module 19 – Temporary Tables

- Temporary Table Choices
- Derived Tables
- Volatile Temporary Tables
- Global Temporary Tables
- General Practices for Temporary use Tables

Module 20 – Trigger Processing

- Terminology
- Logic Flow
- CREATE TRIGGER Syntax
- Row Trigger
- Statement Trigger
- 'BEFORE' Trigger
- 'AFTER' Trigger
- 'INSTEAD OF' Trigger
- Cascading Triggers
- Sequencing Triggers

Module 21 – Stored Procedures

CREATE PROCEDURE
Stored Procedural Language (SPL) Statements
BEGIN / END Statements
DECLARE Statement to Define Variables
SET to Assign a Data Value as a Variable
Status Variables
Assigning a Data Value as a Parameter
Additional SPL Statements
CALL Statement
IF / END IF Statement
LOOP / END LOOP Statements
LEAVE Statement
WHILE / END WHILE Statement
FOR / END FOR Statements
ITERATE Statement
PRINT Statement
DECLARE HANDLER Statement
DML Statements
Using Column and Alias Names
Comments and Stored Procedures
HELP on a Stored Procedure
HELP on Stored Procedure Language (SPL)
REPLACE PROCEDURE
DROP PROCEDURE
RENAME PROCEDURE
SHOW PROCEDURE
Considerations When Using Stored Procedures
Compiling a Procedure
Temporary Directory Usage

Teradata Boot Camp - Overview

Prerequisites	There are no prerequisites for this course
Duration	This is a 5-day course designed to be highly interactive with the audience. There will be hands-on training on days 2-5.
Courseware	“Tera-Tom on Teradata Basics”, “Teradata SQL - Unleash the Power” and “Teradata Utilities – Breaking the Barriers”.
Audience	The audience will consist of a mix of beginners and experienced Teradata users.
Objectives	<p>This course combines Basics, SQL and Utilities and was originally designed for Southwestern Bell Communications (SBC), which is one of the largest data warehouses in the world. In one week students can go from being a Teradata newbie to Teradata savvy.</p> <p>Day 1 consists of the Basics course, days 2-4 consist of the SQL course and day 5 consists of the Utilities overview.</p> <p>Note that this course will normally be taught by a Certified Teradata Master.</p>

Day 1

Teradata Basics

Days 2-4

Teradata SQL

Day 5

Teradata Utilities overview:

BTEQ import

BTEQ export

FastLoad

MultiLoad insert

MultiLoad update

MultiLoad delete

FastExport

TPump

Further Information

Courses are normally run on client premises.

Clients are expected to provide the following:

- Teradata server on which we can load the training database.
- PC workstation for each student.
- QueryMan and ODBC software installed, configured and tested.
- Network connectivity from student workstations to Teradata server.
- DBA resource for training database setup.
- PC compatible projector device.

We will supply the following:

- Training database setup script and instructions.
- Student reference books which each student keeps.
- Courseware.
- Trainer(s).
- Training certificates.

At the end of each course all students are required to complete a course evaluation. We are happy to make copies of each evaluation available to the client.

Please note that all courses are taught in English only. The instructor(s) for each course will be confirmed once dates are agreed.