



Multiple Data Warehouses in One System

Gain business agility, organizational efficiency and alignment with the push of a button using the Teradata Software-Defined Warehouse.

by Youko Watari

You manage your company's Teradata system and receive a phone call: "We are adding a new subsidiary, so get ready!" You are told that the data for this subsidiary needs to be hosted on your Teradata system right away, but the data must be completely secured and isolated from the rest of the company's information. In fact, even *you* are not supposed to be able to view it. Your Teradata system is already scaled to accommodate additional data, but you are not sure how you can tackle the data security requirement. Ordering a new server would be an easy choice, but that is neither timely enough nor cost-effective.

You know that the Teradata® Software-Defined Warehouse with a new Teradata Database feature, Teradata Secure Zones, is an ideal solution for utilizing your existing Teradata system while hosting a completely isolated environment for a set of data and specific users. When you decide to give it a go, you research best practices and come up with a set of guidelines to ensure success. Here are the steps you'll need to follow.

Establish a Game Plan

Before creating zones in the Teradata system, first evaluate your

fundamental requirements and plan accordingly with consideration for:

- > **Zone modeling.** How many zones are needed and which data should be included in each?
- > **Zone administration.** Who should be responsible for the DBA tasks? Should that individual be inside or outside the zones?
- > **Zone users and guests.** Who should have what level of access, both inside and outside the zones?
- > **Workload management.** What level of business priority or service level expectation do the zone workloads have? What is the

impact of the existing I/O, CPU and priority management model? Should virtual partitions be used in conjunction with the zones to manage the system resources?

- > **Data loading.** How, when and which data should be loaded into the zone?

Establish a New Zone

Your current system has a Corporate database with objects such as tables, views, DBAs, users and roles for your company. The new zone for the recently purchased subsidiary, Acme Company, is created directly

HANDS ON

under the Corporate database. (See figure.) The process requires you to:

1. Create a zone administrator.

The DBC user creates a zone administrator for you (using the name Mike), Mike_ZoneAdmin, under the Corporate database with necessary privileges:

```
CREATE USER Mike_ZoneAdmin
  FROM Corporate
AS
  PERM = 1000000,
  PASSWORD =
  Mike_ZoneAdmin;
```

```
GRANT DATABASE ON Corporate
  TO Mike_ZoneAdmin;
GRANT ZONE TO Mike_
  ZoneAdmin WITH GRANT
  OPTION;
```

2. Create a zone, assign a database as a zone root and create a primary zone DBA.

You, as Mike_ZoneAdmin, create a zone, Acme_Zone, and a database, Acme_Database. You then alter the zone to assign the database as the root. You also create a primary zone DBA, Acme_DBA:

```
CREATE ZONE Acme_Zone;
```

```
CREATE DATABASE Acme_
  Database FROM Corporate
AS PERM = 5000000;
```

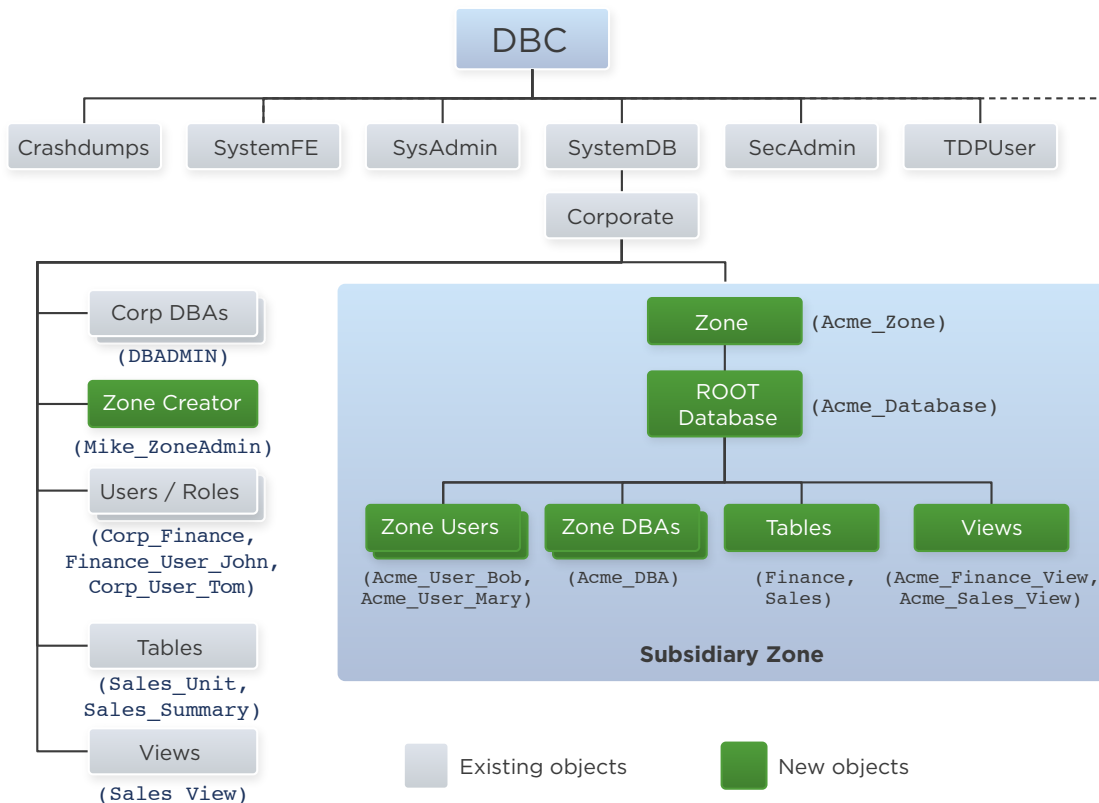
```
ALTER ZONE Acme_Zone ADD
  ROOT Acme_Database;
```

```
CREATE USER Acme_DBA FROM
  Acme_Database
AS
  PERM = 1000000,
  PASSWORD = Welcome1;
```

3. Create users, tables and views.

Acme_DBA creates zone users (e.g. Acme_User_Bob) within

FIGURE Teradata® Database Object Hierarchy



This figure illustrates the objects and hierarchy within the Teradata system after a zone and zone-related objects are created.

the Acme_Database and grants privileges:

```
CREATE USER Acme_User_Bob
  FROM Acme_Database
AS
  PERM = 1000000,
  PASSWORD = Welcome2;
GRANT ALL ON Acme_Database
  TO Acme_User_Bob WITH
  GRANT OPTION;
```

Zone user Bob can create additional zone users. For example, he can create a user Mary, who has read-only access to Acme data by using `GRANT SELECT ON` syntax. Since Bob has the privilege to create databases and other objects within the zone, he can create tables and views for Acme's finance (`Acme_Database.Finance` and `Acme_Database.Acme_Finance_View`) and sales (`Acme_Database.Sales` and `Acme_Database.Acme_Sales_View`) data.

4. Grant privileges to zone guests.

You are notified that the users who are assigned to the corporate finance role (`Corp_Finance`) should have a `SELECT` privilege to the `Acme_Database.Finance` table within the zone.

For the `Corp_Finance` role, you as the zone administrator grant access to the `Acme_Zone`. This makes the role a zone guest:

```
GRANT ZONE Acme_Zone TO
  Corp_Finance;
```

Then a zone user with a grant privilege, like Bob, grants a read-only privilege to the zone guest, `Corp_Finance` role:

SEPARATE AND SECURE

The *Teradata® Software-Defined Warehouse*, which is an enhancement to the Teradata Database, allows organizations to maintain multiple but separate data warehouses without sacrificing security or service level agreements. Companies can securely isolate data and users by creating “secure zones,” each of which appears to users as if it's the only database in the system. Businesses can also manage system resources such as I/O, CPU and priorities for each zone. Plus, all this is possible through software controls.

```
GRANT SELECT ON Acme_
  Database.Finance TO
  Corp_Finance;
```

Finalize the Implementation

Once all zone-related administration tasks are complete, you update the workload management settings in order to manage the system resource allocations and priorities of your existing and new workloads. You do this through software controls within the Workload Management capabilities in the Teradata Software-Defined Warehouse.

For testing, a series of queries validates the privileges granted to various users. For example:

- > Zone user Mary can run `SELECT` queries against all tables and views within the `Acme_Database`, but `SELECT` queries against any tables or views in the `Corporate` database will fail because she was not granted a privilege outside the zone.
- > Users who belong to the `Corp_Finance` role can run `SELECT` queries against the `Acme_Database.Finance` table. But `SELECT` queries against the `Acme_Database.Sales`

table or other tables/views will fail because they are not granted that privilege.

- > You can try to make yourself a zone guest of `Acme_Zone`. However, it will fail because a zone administrator cannot grant a zone to himself or herself.
- > The primary zone DBA (`Zone_DBA`) can try to grant a `SELECT` privilege to a `Corporate` user who is not a zone guest. This will also fail because non-zone guests cannot have privileges within a zone.

Mission Accomplished

Using the Teradata Software-Defined Warehouse, you just created a secure environment for the new subsidiary without going through the lengthy process of procuring and configuring a new server or managing consistent system performance. You achieved timeliness and cost-effectiveness all through software control—your ultimate goal! **T**

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