



Analysis Services Security

Granting permissions to access and manage Analysis Services

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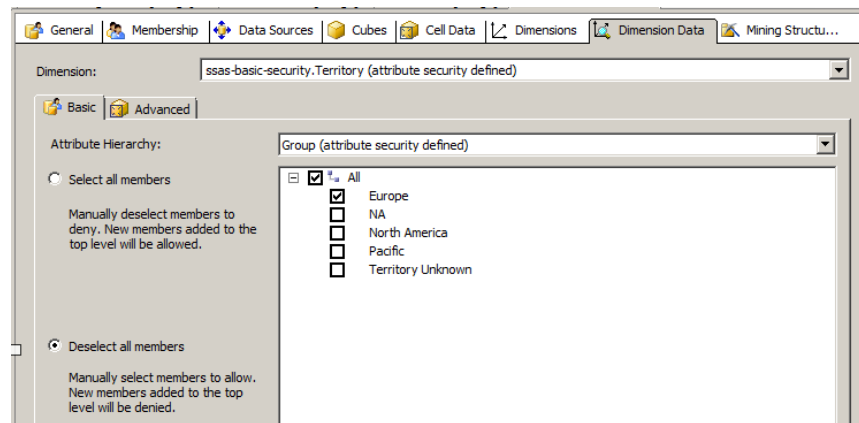
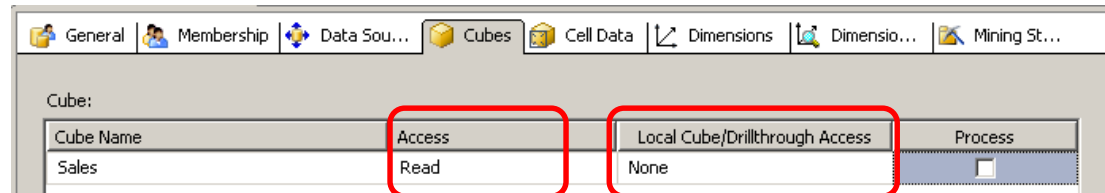


Overview

- User Security
- Dynamic Security
- Parent-Child Hierarchy Security
- Writeback Security
- Administrator Security
- Service Account Configuration

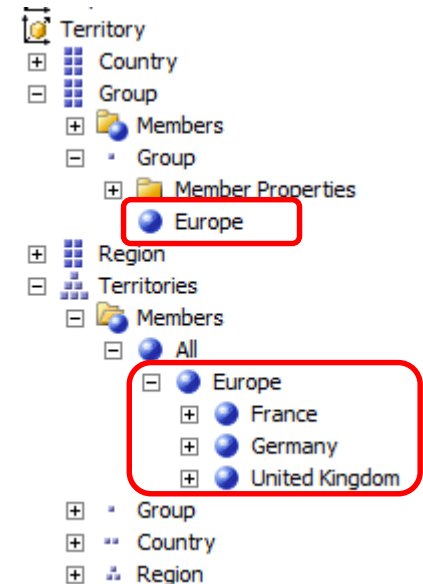
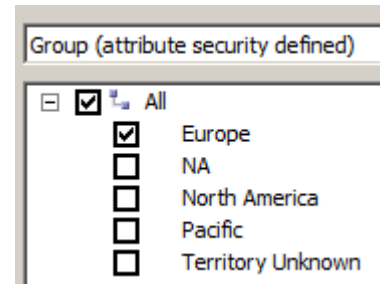
User Security

- Add security roles to cube using Windows groups
- Grant permissions
 - Cube
 - Drill-through
 - Creation of local cube
- Apply granular security, if necessary
 - Dimension level
 - Cell level



Dimension Security

- Allowed set or denied set
 - Restricts access to members
- Default member
 - Automatic filter
- Visual totals
 - Filters grand total when enabled



Group	Sales Amount
Europe	\$19,800,577.06
Grand Total	\$109,809,274.20

Enable Visual Totals

Group	Sales Amount
Europe	\$19,800,577.06
Grand Total	\$19,800,577.06

Enable Visual Totals

Cell Security

Boolean
expression

General Membership Data Sources Cubes Cell Data Dimensions Dimension Data Mining Structu...

Cube: Sales [Test cube security](#)

Enable read permissions

Allow reading of cube content: Edit MDX: ...

NOT [Measures].[CurrentMember IS [Measures].[Cost]

Enable read-contingent permissions

Allow reading of cell content contingent on cell security: Edit MDX: ...

Enable read/write permissions

Allow reading and writing of cube content: Edit MDX: ...

Dynamic Security

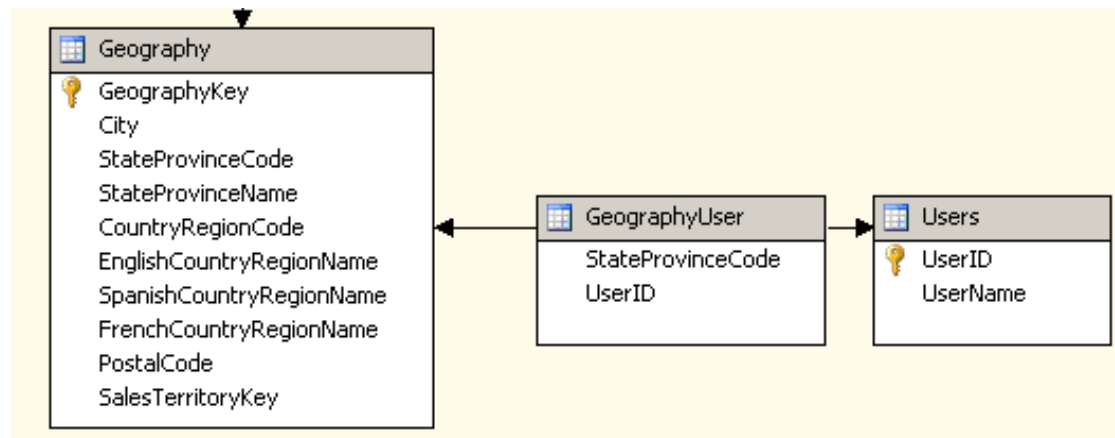
Users Dimension

	UserID	UserName
1	1	AdventureWorks\Stacia
2	2	AdventureWorks\John
3	3	AdventureWorks\Brian

Bridge Table

	StateProvinceCode	UserID
1	NV	1
2	BC	1
3	WA	1
4	ID	1
5	CA	2
6	NM	2
7	TX	3

Data Source View Relationships



Dynamic Security

Users Dimension



Measure Group



		Measure Groups ▼		
Dimensions ▼		Finance	Internet Sales	Geography User
Account		Account		
Date		Date	Date	
Scenario		Scenario		
Geography			Customer	State Province
Customer			Customer	
Users				User

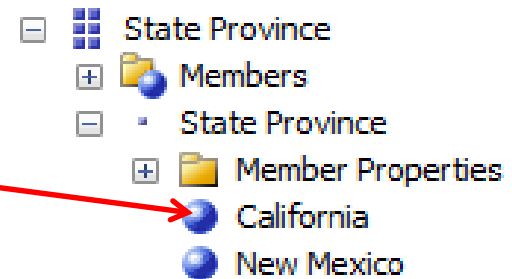
Dynamic Security

```
NonEmpty(  
  [Geography].[State Province].Members,  
  (StrToMember("[Users].[User].[" + UserName() + "]"),  
  [Measures].[Geography User Count])  
)
```

[Users].[User].[Adventureworks\John]


Adventureworks\John

		Geography User Count
AdventureWorks\John	California	1
AdventureWorks\John	Colorado	(null)
AdventureWorks\John	Connecticut	(null)
AdventureWorks\John	England	(null)



Parent-Child Hierarchy Security

```
NonEmpty(  
  [Account]. [Accounts]. Members,  
  (StrToMember("[Users]. [User]. [" + UserName() + "]")),  
  [Measures]. [Account User Count])  
)
```



Net Income
Operating Profit
Gross Margin
Net Sales
Gross Sales
Trade Sales
Total Cost of Sales
Standard Cost of Sales
Units
Average Unit Price

All accounts visible



	Amount
Net Income	28,978,370.86
Operating Profit	36,171,224.41
Gross Margin	86,226,249.61
Net Sales	127,234,148.59
Gross Sales	133,841,108.97
Trade Sales	128,104,718.19
Intercompany Sales	5,736,390.78
Returns and Adjustments	4,090,742.23
Discounts	2,516,218.15
Total Cost of Sales	41,007,898.98
Standard Cost of Sales	36,359,191.61
Variances	4,648,707.37
Operating Expenses	59,855,821.20

Parent-Child Hierarchy Security

```
Generate( NonEmpty(
    [Account].[Account].[Account].Members,
    (StrToMember("[Users].[User].[" + UserName()
+ "]")),
    [Measures].[Account User Count])
),
{
    LinkMember(
    [Account].[Account].CurrentMember,
    [Account].[Accounts]
)
}
)
[Account].[Account].&[101]
[Account].[Accounts].&[101]
```

Key attribute
Parent-child

Parent-Child Hierarchy Security

Authorized Accounts Ancestors & Associated Custom Rollups

	Amount
Net Income	92,833,209.99
Operating Profit	92,833,209.99
Gross Margin	92,833,209.99
Net Sales	133,841,108.97
Gross Sales	133,841,108.97
Trade Sales	128,104,718.19
Total Cost of Sales	41,007,898.98
Standard Cost of Sales	36,359,191.61
Statistical Accounts	(null)
Units	201,323.00
Average Unit Price	664.81

Writeback Security

Step 1: Enable Read/Write Access on

Account.role [Design]

General Membership Data Sources Cubes Cell Data Dimensions Dimension ...

Cube:

Cube Name	Access	Local Cube/Drillthrough Access	Process
AdventureWorks	Read/Write	None	<input checked="" type="checkbox"/>

And grant
Process
Database
Permission!

Account.role [Design]

General Membership Data Sources Cubes Cell Data Dimensions

Dimension: 07-ssas-adv-security.Account (attribute security defined)

Basic Advanced

Attribute: Accounts (attribute security defined)

Allowed member set:

```
Generate(  
  NonEmpty(  
    [Account].[Account].[Account].Members,  
    (StrToMember("[Users].[User].[User] + UserName() + "]"),  
    [Measures].[Account User Count])  
  ),  
  LinkMember(  
    [Account].[Account].CurrentMember,  
    [Account].[Account]  
  )  
)
```

Account.role [Design]*

General Membership Data Sources Cubes Cell Data

Select Dimension Set: All database dimensions

Dimensions:

Dimension Name	Access
Account	Read
Date	Read
Scenario	Read/Write
Geography	Read
Customer	Read
Users	Read

Writeback Security

Account.role [Design]

General Membership Data Sources Cubes Cell Data Dimensions Dimension ... Mining Stru...

Cube: AdventureWorks [Test cube security](#)

Enable read permissions

Allow reading of cube content: Edit MDX: ...

Enable read-contingent permissions

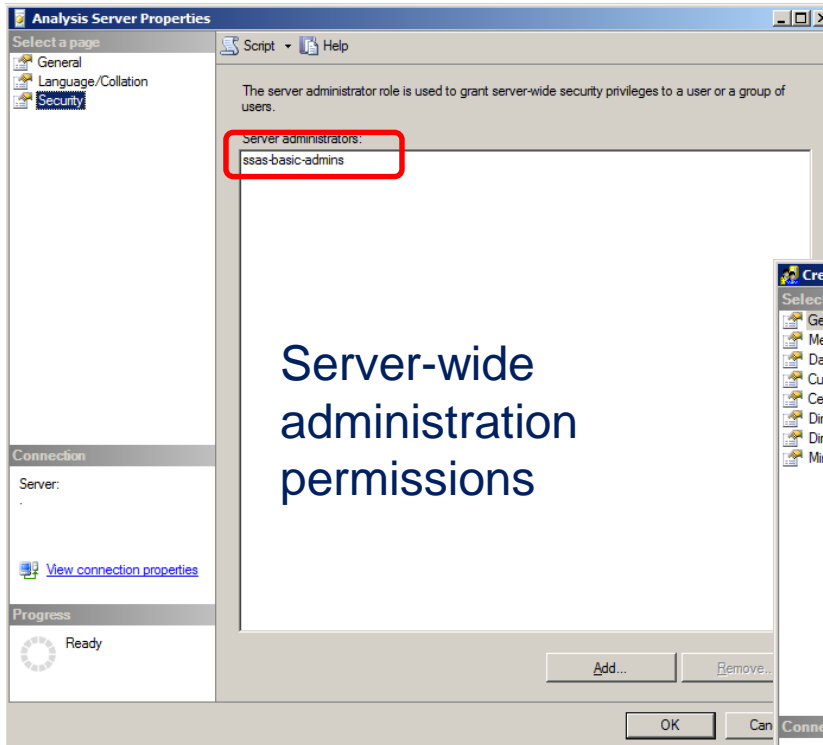
Allow reading of cell content contingent on cell security: Edit MDX: ...

Enable read/write permissions

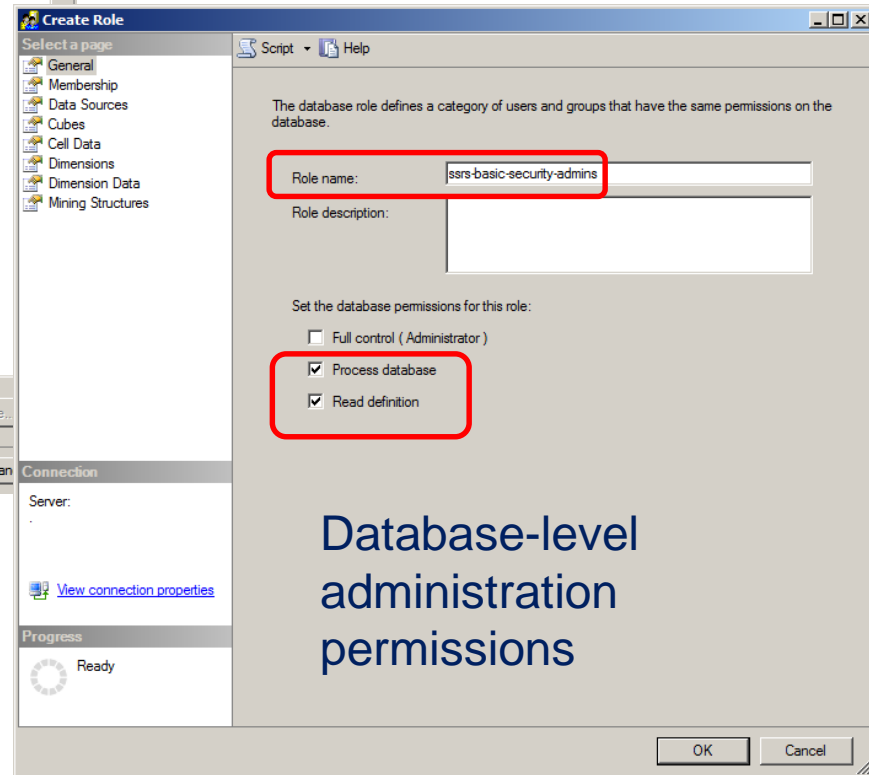
Allow reading and writing of cube content: Edit MDX: ...

Measures.CurrentMember is [Measures].[Forecast Amount]

Administrator Security



Built-in admins automatically have server administration permissions



Service Account Configuration

- Account
 - Local user account
 - Domain user account
 - System account
- Data Source Permissions
 - MOLAP, HOLAP – Read
 - ROLAP – Read and Write
- File System Permissions
 - Backup files
- Database Permissions
 - Query log tables
 - Writeback tables

Use
SQL Server
Configuration Manager
to change service account
or passwords



Summary

- User Security
 - Cube security at minimum, dimension security, visual totals, cell security
- Dynamic Security
 - Users dimension, bridge table, NonEmpty function for allowed member set
- Parent-Child Hierarchy Security
 - Generate function, NonEmpty function, LinkMember function
- Writeback Security
 - Cube read/write, Process Database permission, dimension security, dimension read/write, cell data read/write
- Administrator Security
 - Server-wide, database-level
- Service Account Configuration
 - Dedicated low-privilege account, read permissions except ROLAP, writeback, or query log require write permissions



References

- User Access Security Architecture
 - <http://tinyurl.com/nrvk8t4>
- Granting Administrative Access
 - <http://tinyurl.com/pu7h8cb>
- SSAS: Setup dynamic dimension security in Analysis Services
 - <http://tinyurl.com/bnvjhze>
- Enabling and Security Data Entry with Analysis Services Writeback
 - <http://tinyurl.com/cqoxgmd>