

Partitioning Tables, Views, and Indexed Views in SQL Server

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Agenda

§ Partitioned Views

§ Partitioned Tables

§ Hash Partitioning for OLTP

§ Partition Aligned Indexed Views

Introduction

§ Andrew Novick – Novick Software, Inc.

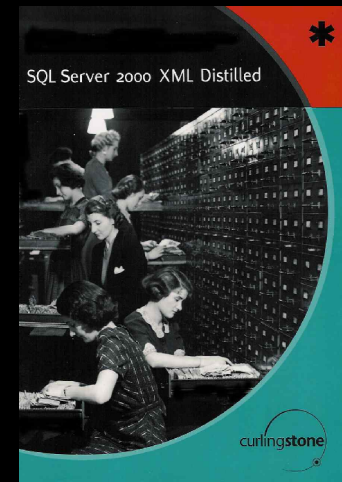
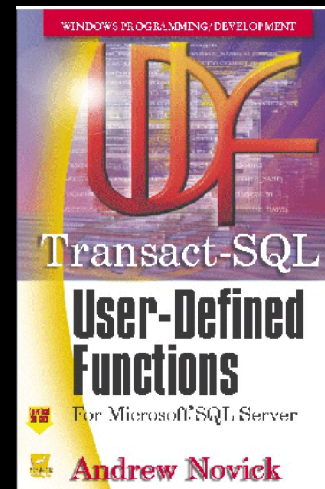
§ Business Application Consulting

- SQL Server
- .Net

§ www.NovickSoftware.com

§ Books:

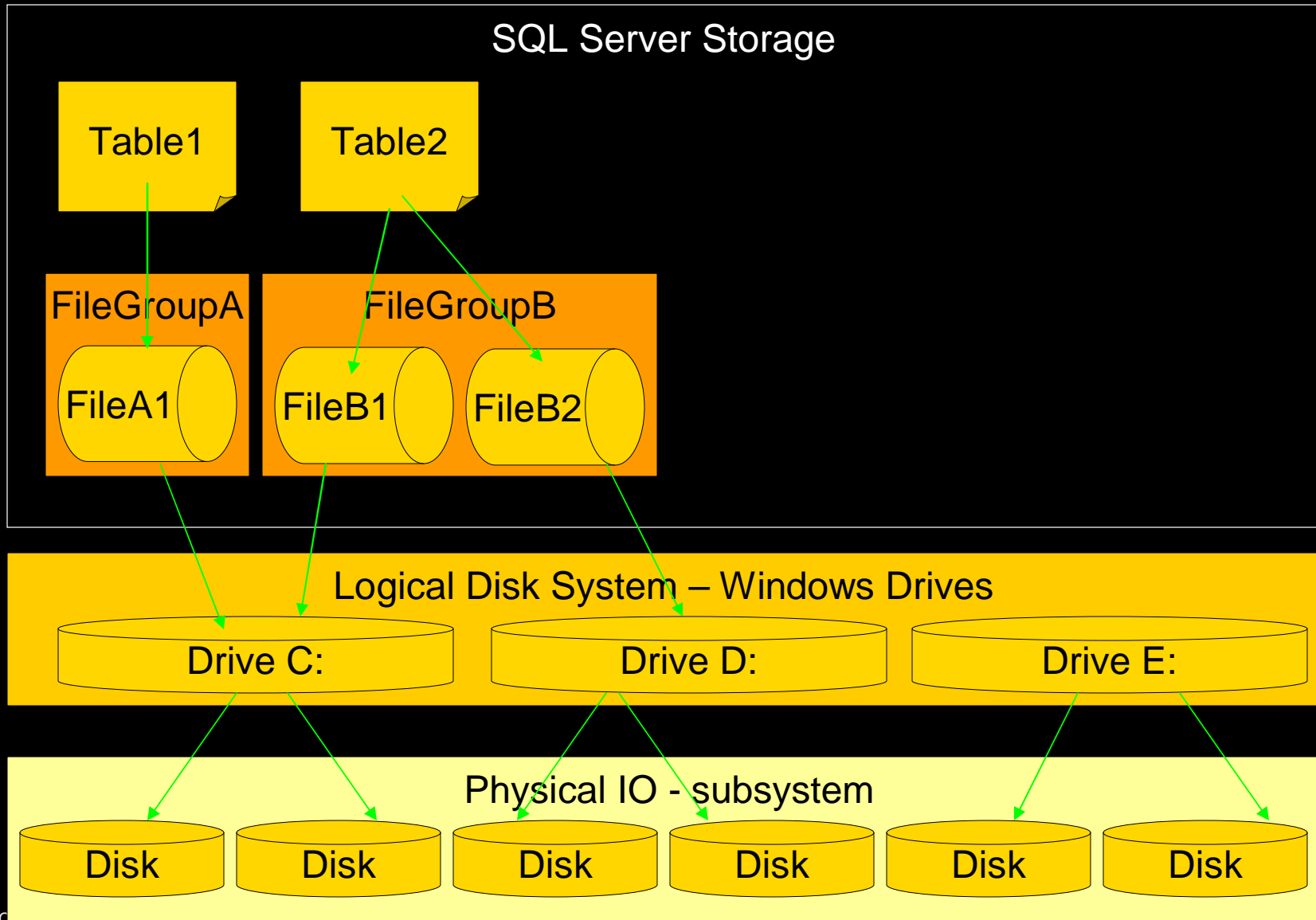
- Transact-SQL User-Defined Functions
- SQL 2000 XML Distilled



Architecture

What do we have to work with?

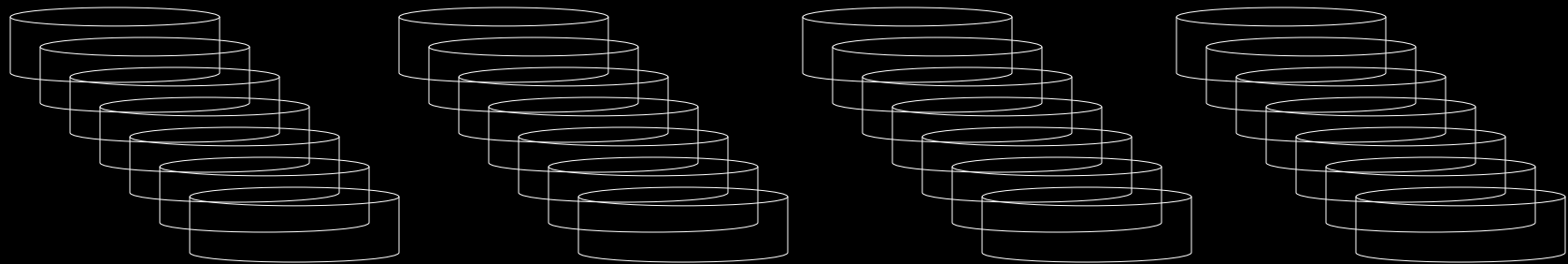
SQL Server Storage Architecture



At 3 PM on the 1st of the month:

**Where do you want your
data to be?**

Spread to as many disks as possible



I/O Performance

§ Little has changed in 50 years (YET! But it will soon)

**I/O throughput is a function of
the number of disk drives.**

§ Watch out for bottlenecks in the I/O Path

§ Memory reduces the need for I/O

Partitioning

Partitioning Goals

§ Adequate Import Speed

§ Maximize Query Performance

– Make use of all available resources

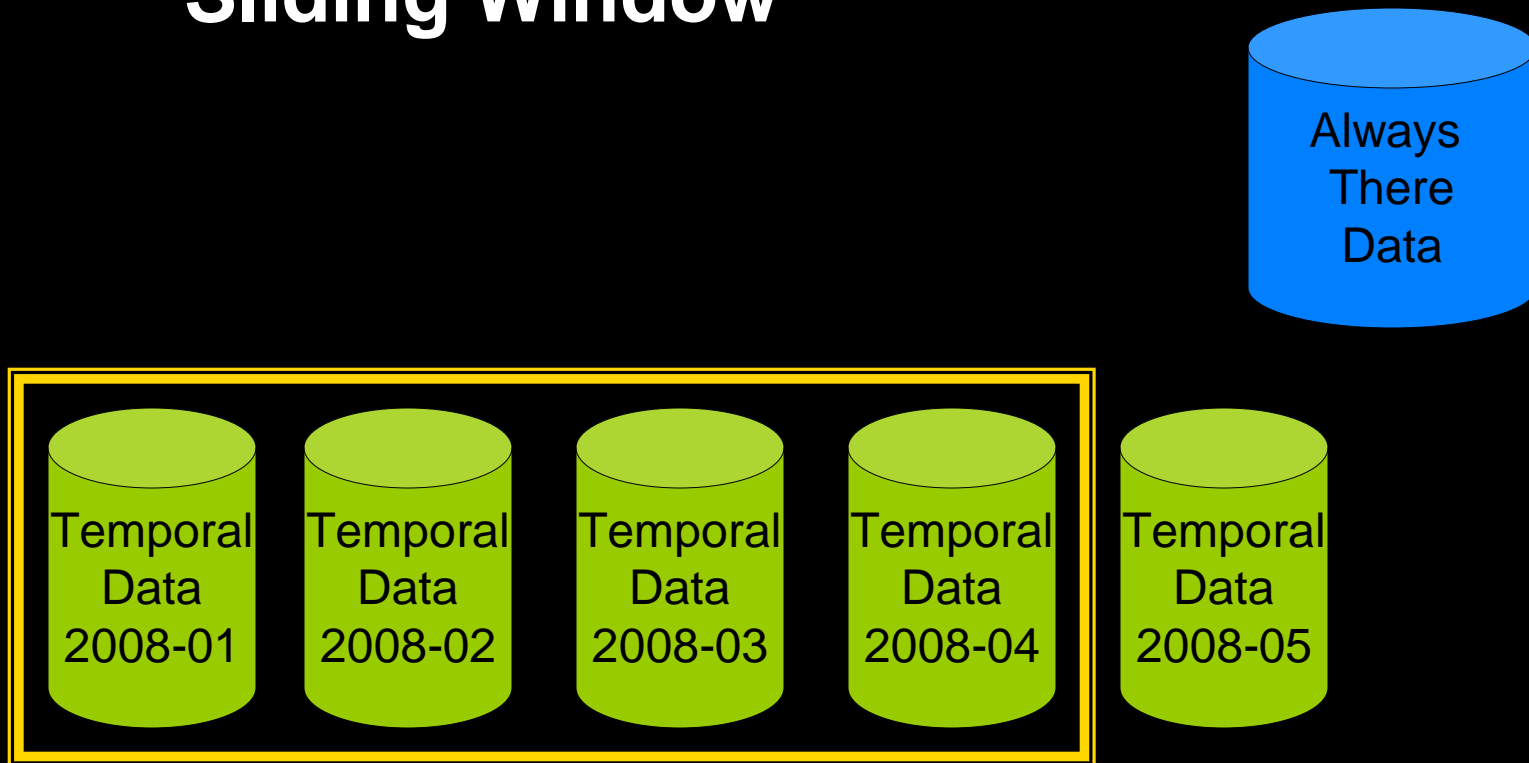
§ Data Management

– Migrate data to cheaper resources

– Delete old data easily

– Minimize maintenance tasks

Sliding Window



Partitioned Views

Created like any view

```
CREATE VIEW Fact AS
    SELECT * FROM Fact_20080405
UNION ALL SELECT * FROM Fact_20080406
```

Partitioned Views: Check Constraints

§ Check constraints tell SQL Server which data is in which table

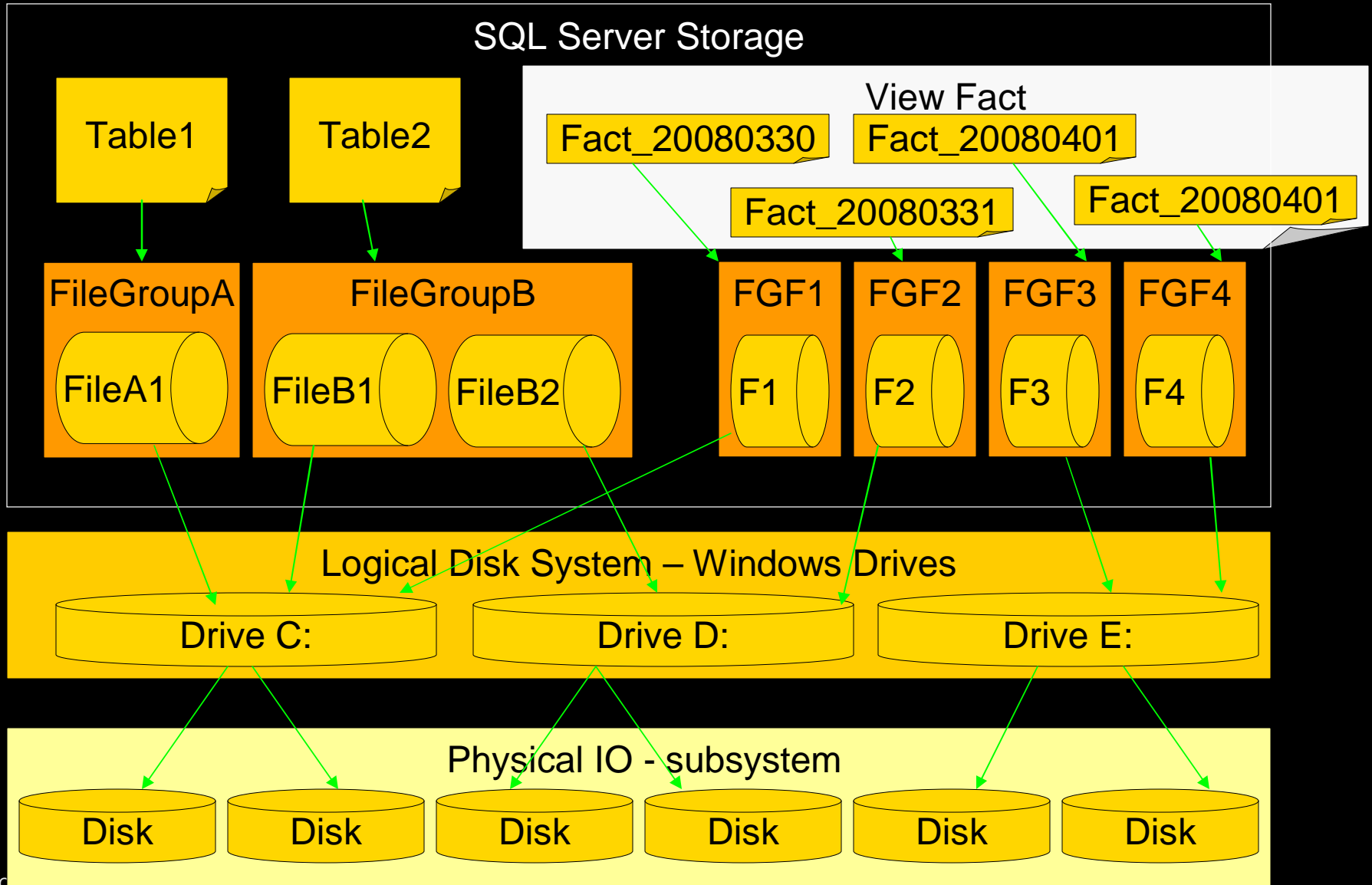
```
ALTER TABLE Fact_20080405
  ADD CONSTRAINT CK_FACT_20080405_Date
  CHECK (FactDate >= '2008-04-05'
         and FactDate < '2008-04-06' )
```

Partitioned View - 2

§ Looks to a query like any table or view

```
SELECT FactDate, .....  
FROM Fact  
WHERE CustID=334343  
AND FactDate = '2008-04-05'
```

Partitioned View



Partition Elimination

- § The query compiler can eliminate partitions from consideration in the plan
- § Partition elimination happens at query compile time.
- § It is not necessary to make parameters strings, but it looks like it does.

Demo 1 – Partitioned Views

Partitioned Tables

§ SQL Server Enterprise/2005

§ Require a non-null partitioning column

§ Check constraints tell SQL Server what data is in each partition

§ All tables are partitioned!

Partitioned Function

§ Defines how to split data

```
CREATE PARTITION FUNCTION
```

```
Fact_PF (small datetime)
```

```
RANGE RIGHT FOR VALUES
```

```
( ' 2001-07-01' , ' 2001-07-02' )
```

Partition Scheme

§ Defines where to store each range of data

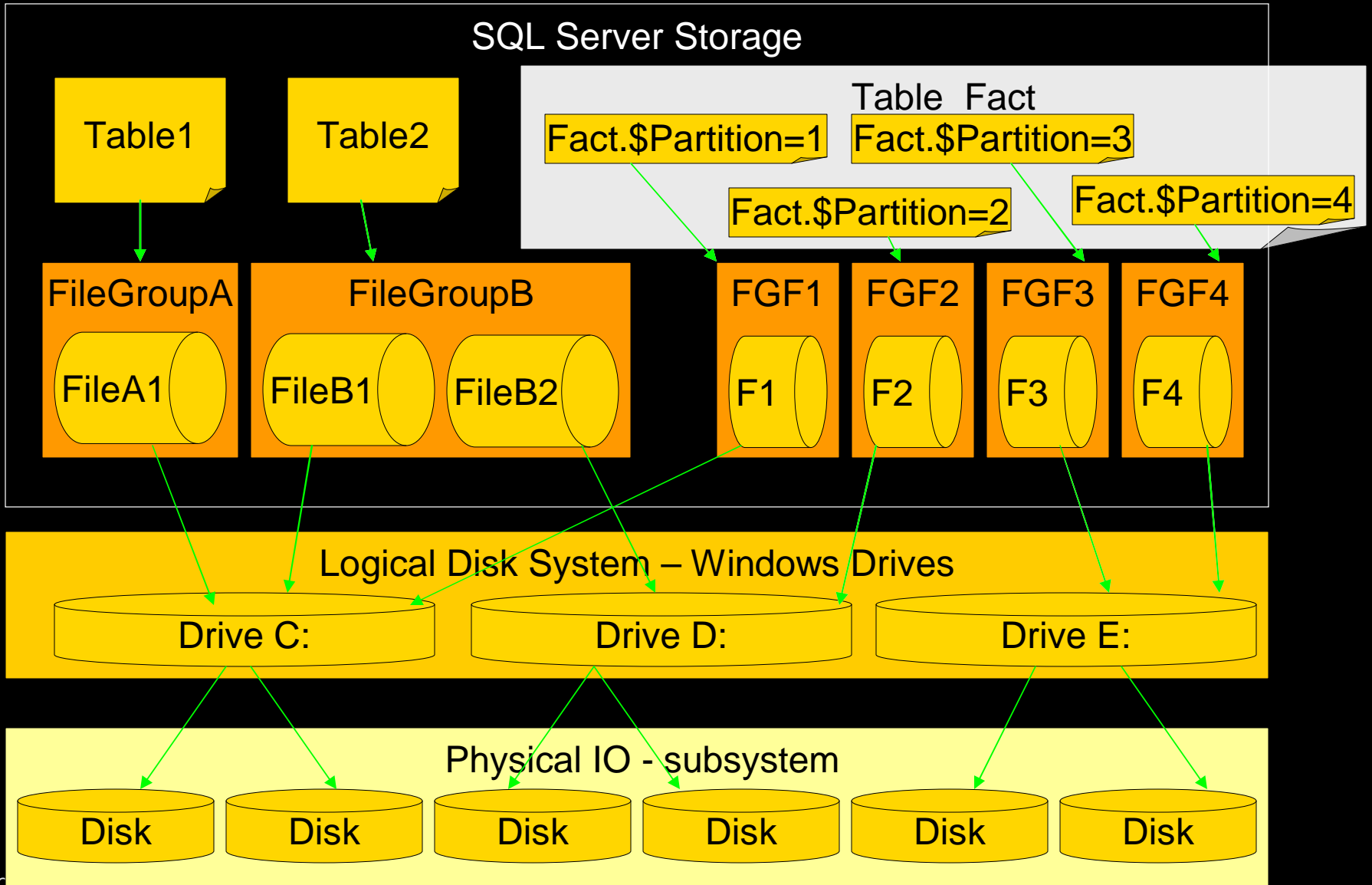
```
CREATE PARTITION SCHEME Fact_PS  
  
    AS PARTITION Fact_pf  
  
    TO (PRIMARY, FG_20010701, FG_20010702)
```

Creating a Partitioned Table

§ The table is created ON the Partitioned Scheme

```
CREATE TABLE Fact (Fact_Date smalldatetime  
                    , all my other columns)  
  
ON Fact_PS (Fact_Date)
```

Partitioned Table



Demo 2 – Partitioned Tables

Issues with Partitioning

- § No foreign keys can reference the Partitioned Table (if you want to switch in partitions)
- § Can't use an identity column
- § UPDATES on partitioned tables with part of the table in READ_ONLY filegroups must have partition elimination that restricts the updates to READ_WRITE filegroups.
- § INSERTs into partitioned views require all columns and face additional restrictions.

Hash Partitioning for OLTP

§ Not directly supported

§ Use a NOT NULL PERSISTED computed column

§ Reduces index depth and contention.

Demo 3 – Hash Partitioning

Partition Aligned Indexed Views

§ What are indexed Views

§ Why indexed views on partitioned tables aren't very useful

§ What do partition aligned indexed views do?

Partition Aligned Indexed Views

§ Allows ALTER TABLE SWITCH
when indexed view is defined

§ Uses same filegroups as the Partitioned Table

§ No special syntax

Demo 4 – Partition Aligned Indexed Views

SQL Server 2008 – What's New

- § Partition Aligned Indexed Views
- § Partition Level Lock Escalation
- § More than one processor allocated to searching a partition
- § Filegroup Read/Write transitions don't require exclusive access to the database.

New England Visual Basic Pro

§ Feb 5th Joe Hill of Novell on Visual Basic for Linux, Boo

§ March 5 Igor Moochnick on ASP.Net Data Services
(Astoria)

§ April 2nd : Tom Schwartzman, ESRI GIS in .Net

§ MPR C - 6:15 PM to 8:30

SQL Server Loadfest

§ Full day of free instruction on the SQL Server install process

§ March 27th 9:00 to 5:00

Microsoft Office
201 Jones Rd., Waltham, MA

§ Registration at

<https://www.clicktoattend.com/invitation.aspx?code=134471>

Thanks for Coming

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