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Millions of Data Points at your Service

What's New with the PI Server?

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PI Server Directions

- Platform Release 1 (PR1)
  1. High Availability PI
- Upcoming Releases (PR1+/PR2)
  2. Windows Security
  3. HA Enhancements
  4. Future Data
- Scalability Update
  5. Partitioning and 64-bit PI

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Platform Release 1

Replication and High Availability

Released 12/2006

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PI Server in PR1

- Major Features
  - N-Node PI Server Replication of All Metadata
  - HA Services through the PI SDK
  - Easier Deployment, Configuration, and Maintenance
- Behind the S
  - New Metada
  - New Interfac
  - Enhanced B
  - New and Im

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PR1 Numbers So Far

Number of Systems Due to Complete 4/1/07

As of July 25, 2007

Bridge Release (PR1+)

Windows Integrated Security (WIS)

Target: Q4/07

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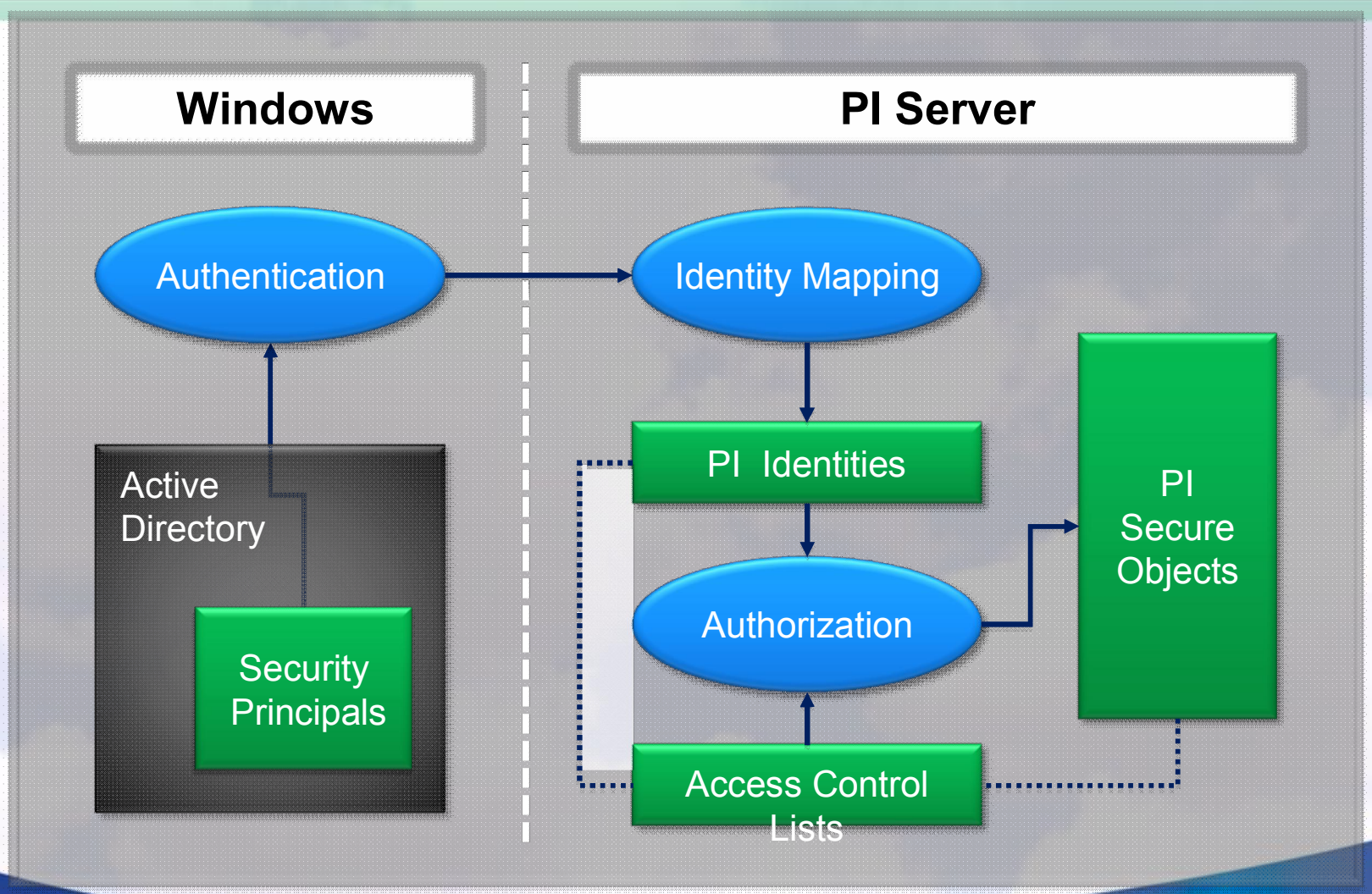
WIS: General Design

- Goals
  - Reduce TCO, simplify configuration and maintenance
  - Increase the PI Server overall security
  - Rely on directory service for user/group associations
  - Maintain backward compatibility
- Features
  - Single sign-on (SSO) for PI users, without PI trusts
  - Windows authentication (e.g. Kerberos, NTLM)
  - No more PI user and password management

WIS: Implementation

- Authentication
  - Based on security principals (Windows user accounts)
  - Managed by the operating system
- PI Identities
  - Principals map to PI Identities
  - PI Identities have access rights to PI secure objects
  - Flexible associations between principals and objects
- Authorization
  - Each PI secure object has an access control list (ACL)
  - Implemented internally for high performance

WIS: Simplified Diagram



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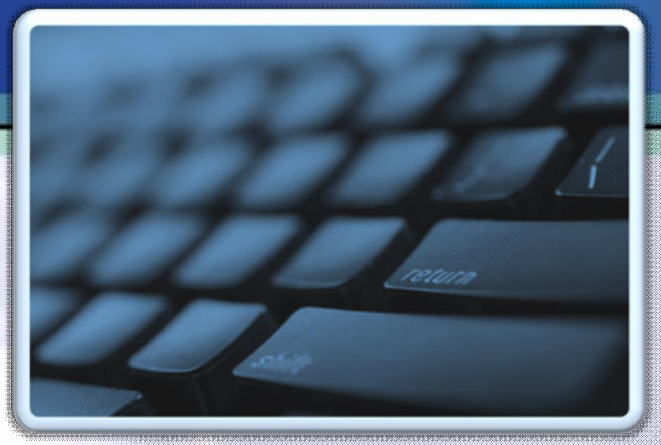

Windows Integrated Security

Identity Mapping

Windows Integrated Security

Identity Mapping means flexibility:

Nearly all security configurations supported!

Bridge Release (PR1+)

High Availability Enhancements

Target: Q4/07

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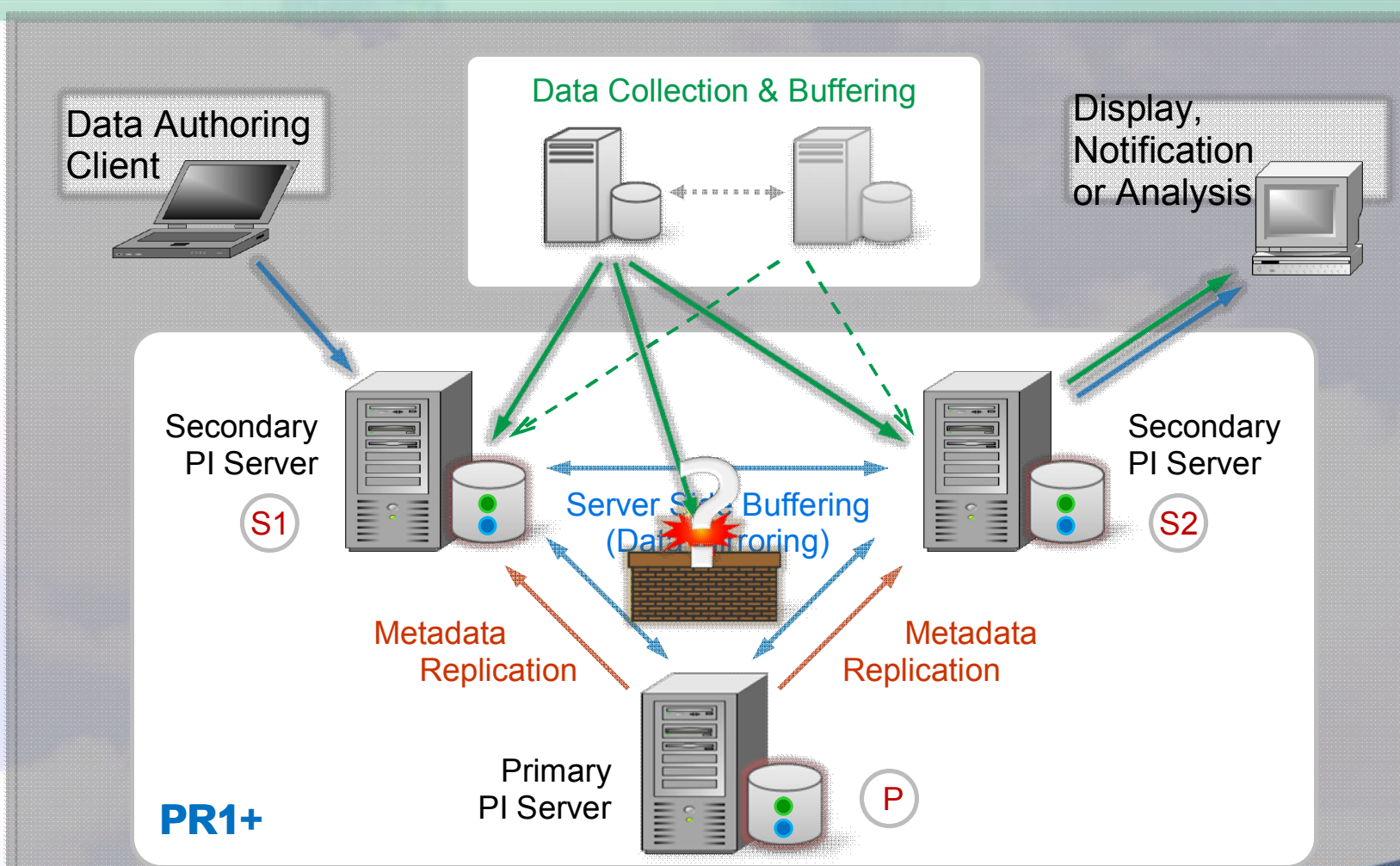
Architecture Evolutions

- PR1 Limitations…
  - Manual Data Entry, “PI SDK Buffering”
  - Batch Replication (Batch Database)
  - N-Way Buffering Requirements
- Solution: Server-Side Buffering (SSB)
  - Similar to the Buffer Subsystem
  - Hosted by the Snapshot Subsystem
  - Transparent to End Users and Applications
  - Near-Zero Configuration

Replication & Data Mirroring



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SSB and Data Mirroring

HA PR1+

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Platform Release 2

Point Partitioning & Future Data

Target: H2/08

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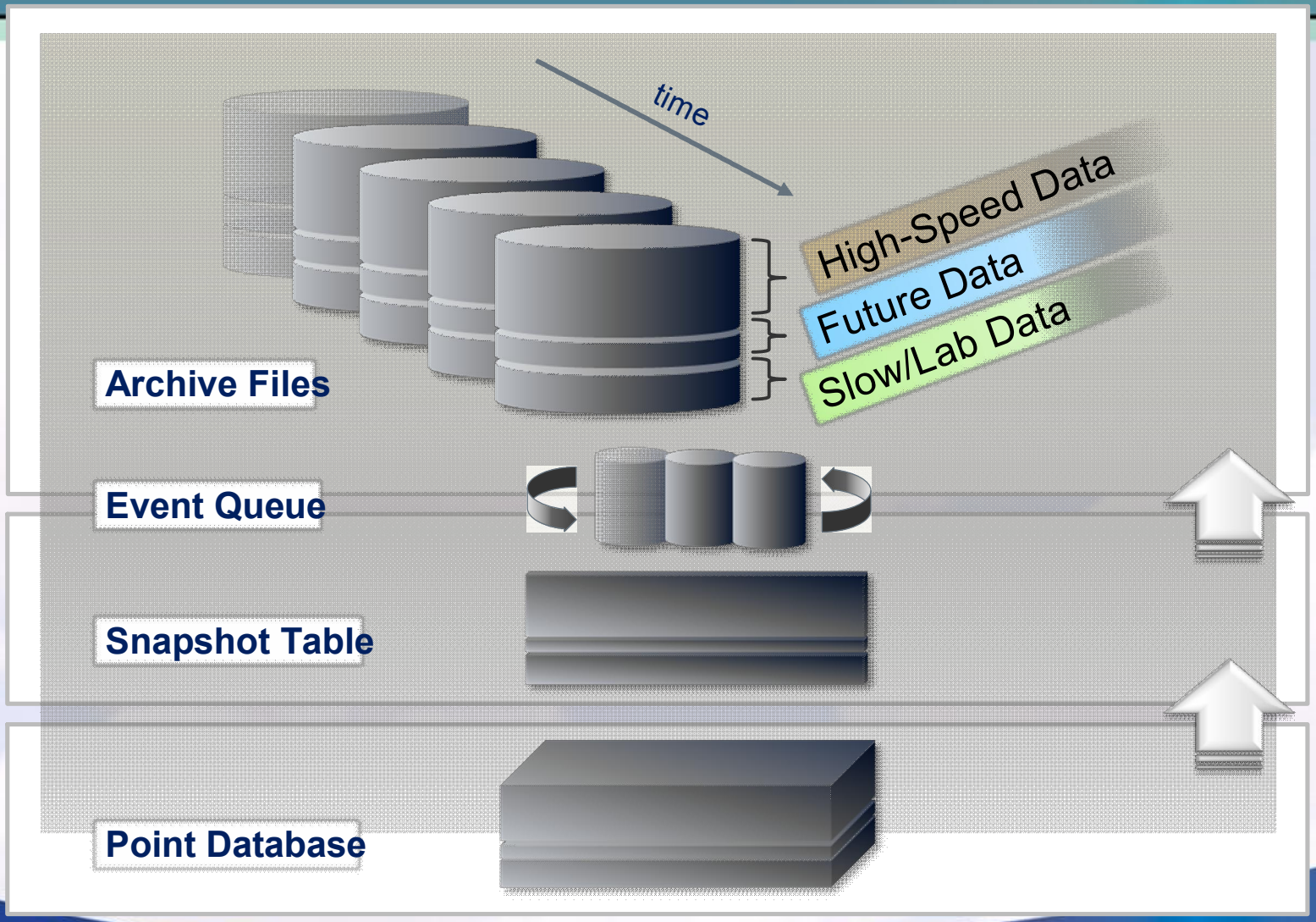
Point Partitioning

- Main Use Cases
  - Future Data (Forecast, Predictive Modeling)
  - Different Storage Requirements
  - Better Archive Management
  - Higher Scalability
- Architecture
  - PI Server Today = 1 Partition
  - (Partition = Archive Set)

PI Server Core Today



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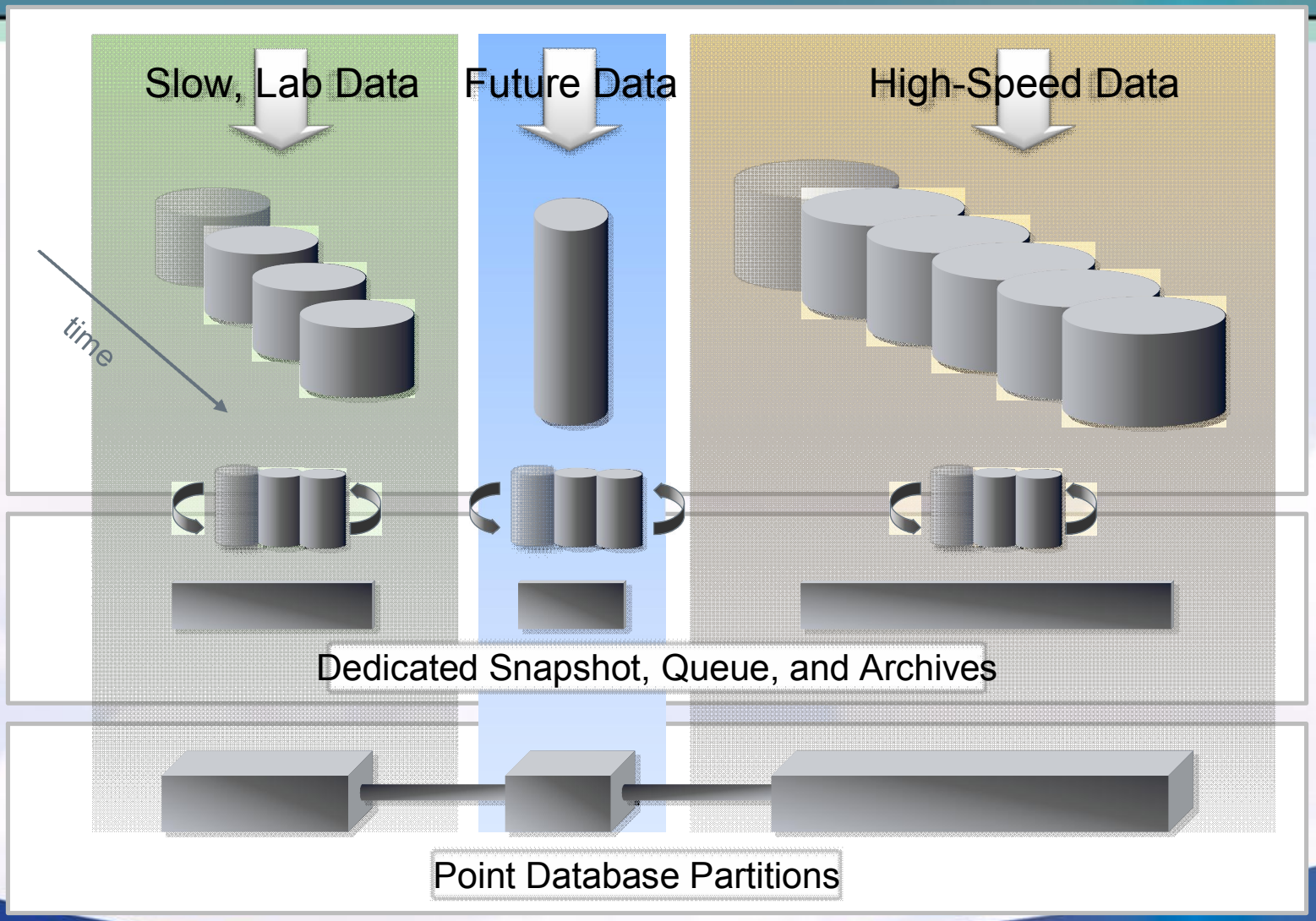
PI Server Core with Partitioning



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Future Data

- Steps to Enable:
  1. Create Point Partition (Archive Set)
     - Choose time range and other parameters
  2. Create New Points
     - Existing points are migrated via offline processing
  3. Use Points in Any Clients
     - ProcessBook, DataLink, WebParts, OLEDB, etc.

- Future Points are like Regular Points

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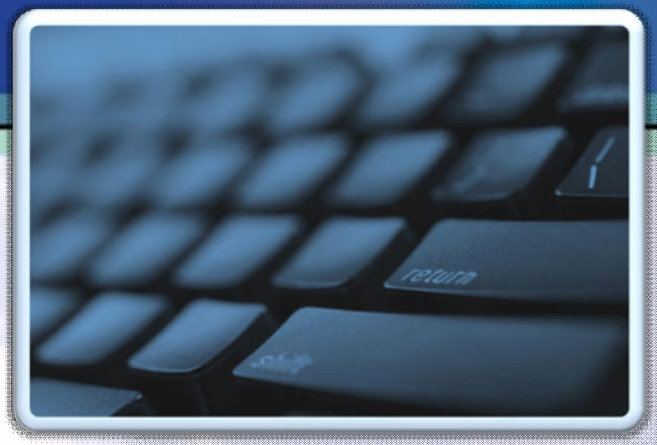

Future Data in PI

Storage and Visualization

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Scalability

Partitioning and 64-bit

Next Generation PI Server

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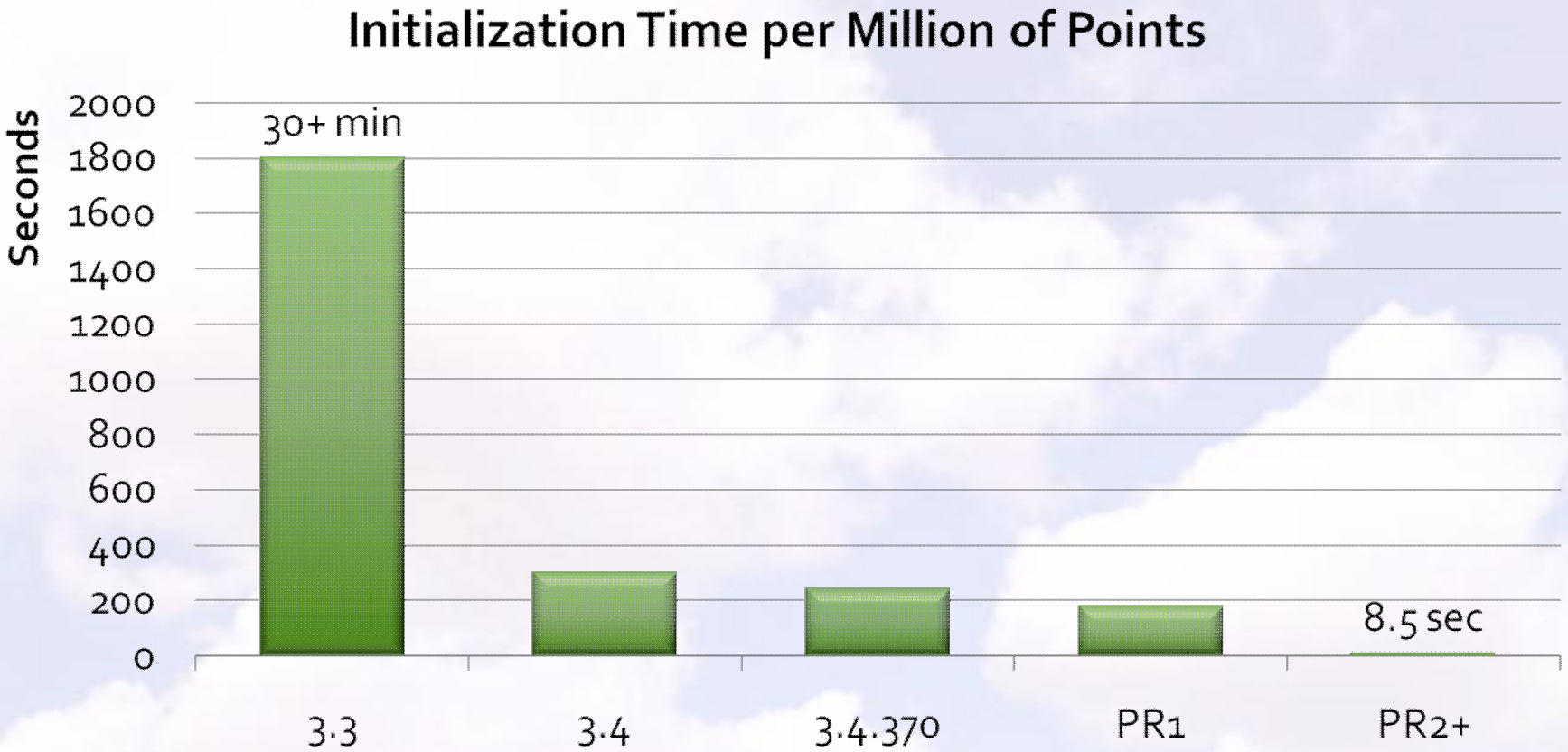
Point Count

In Other Words...

PI 3.3 → 3.4 → 3.5

>100X

Startup Time



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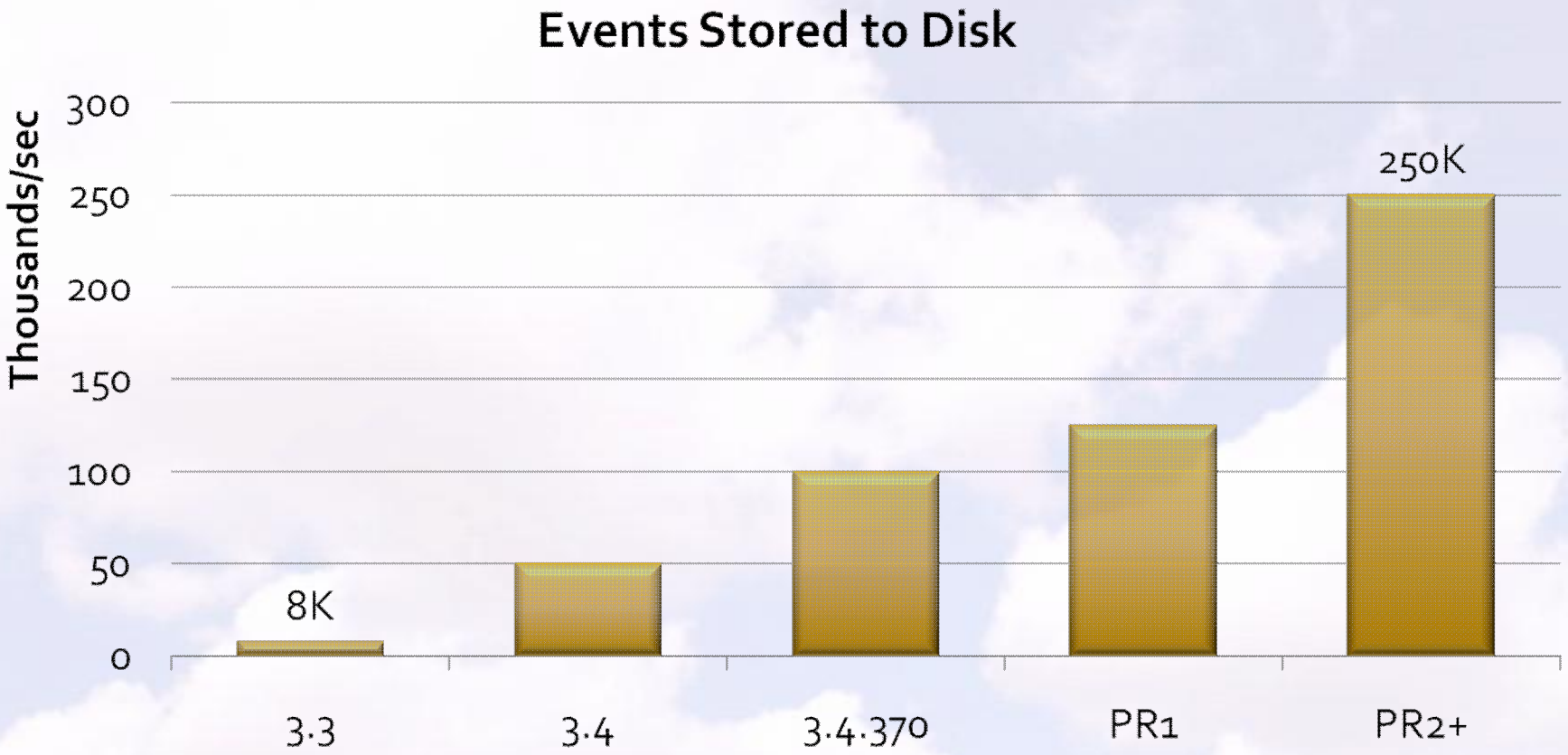
Archiving Rate



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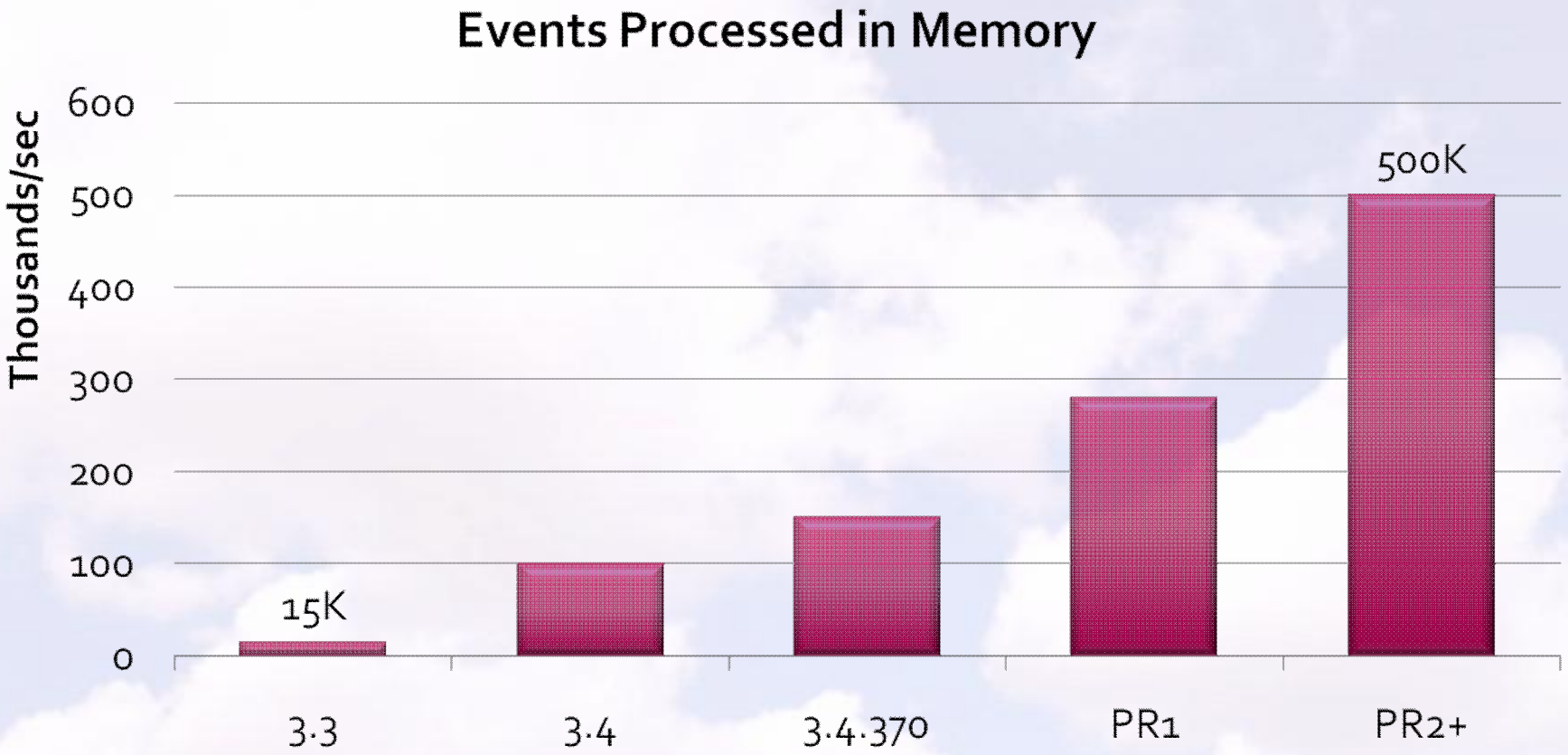
Snapshot Rate



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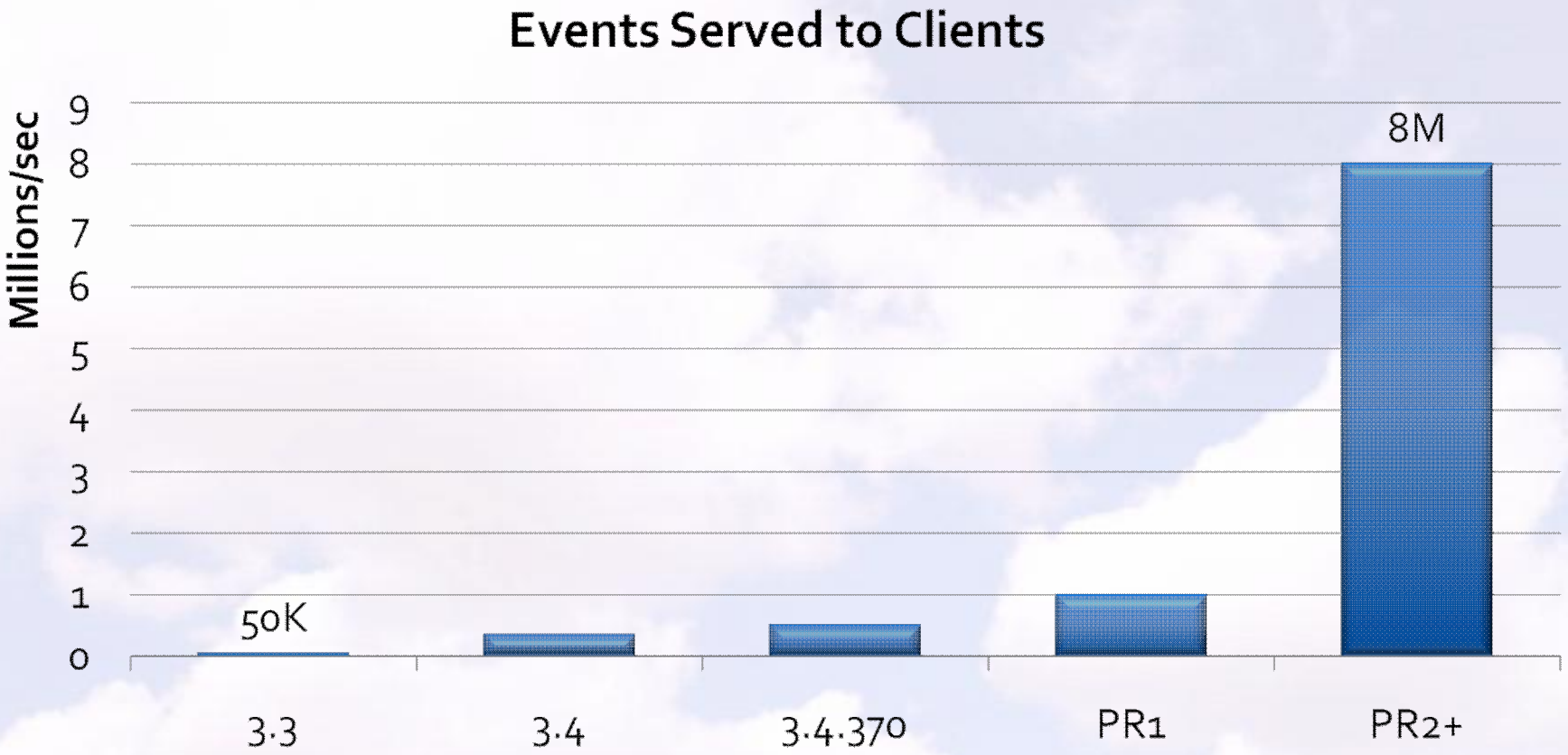
Archive Query Rate



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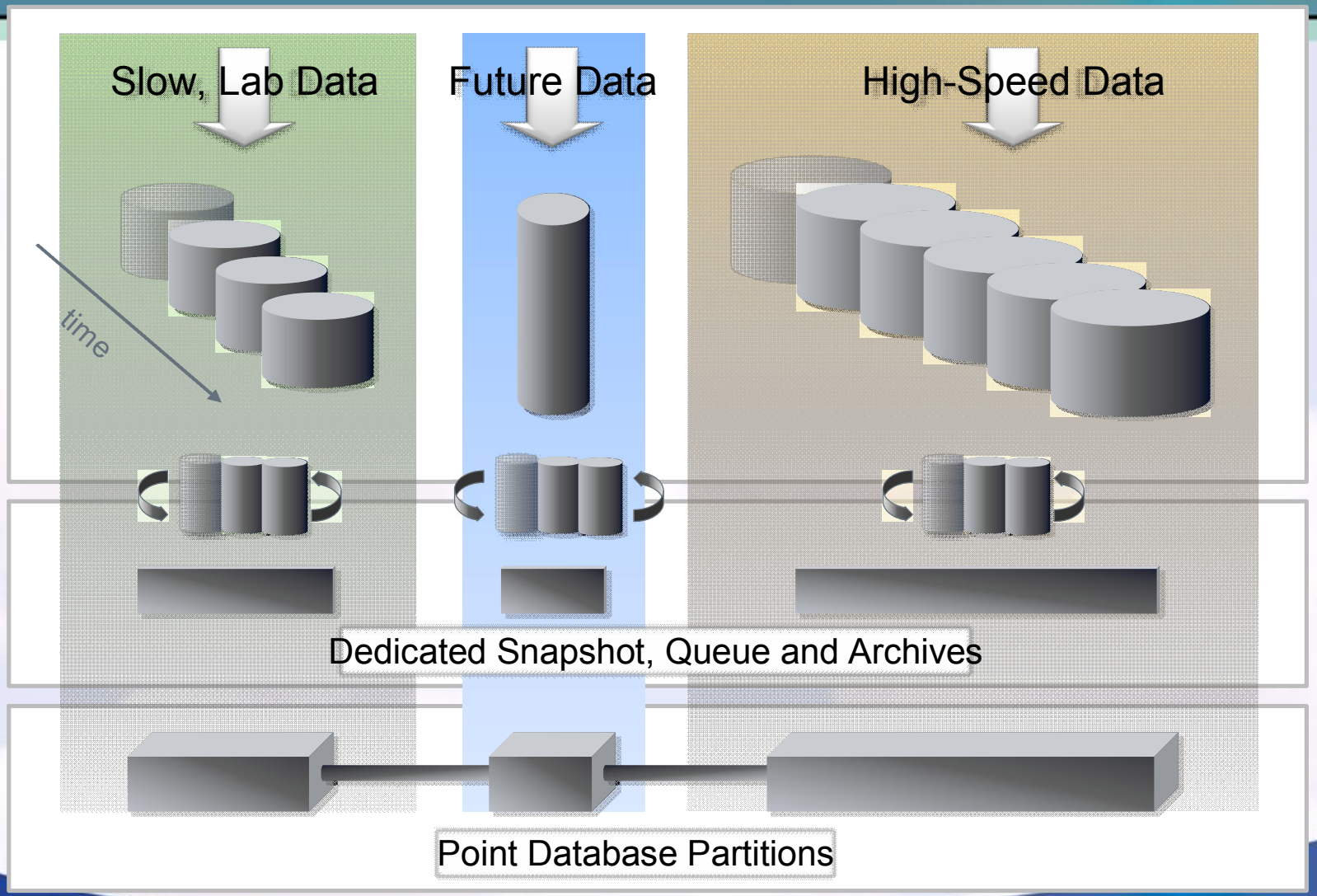
PI Server with Partitioning



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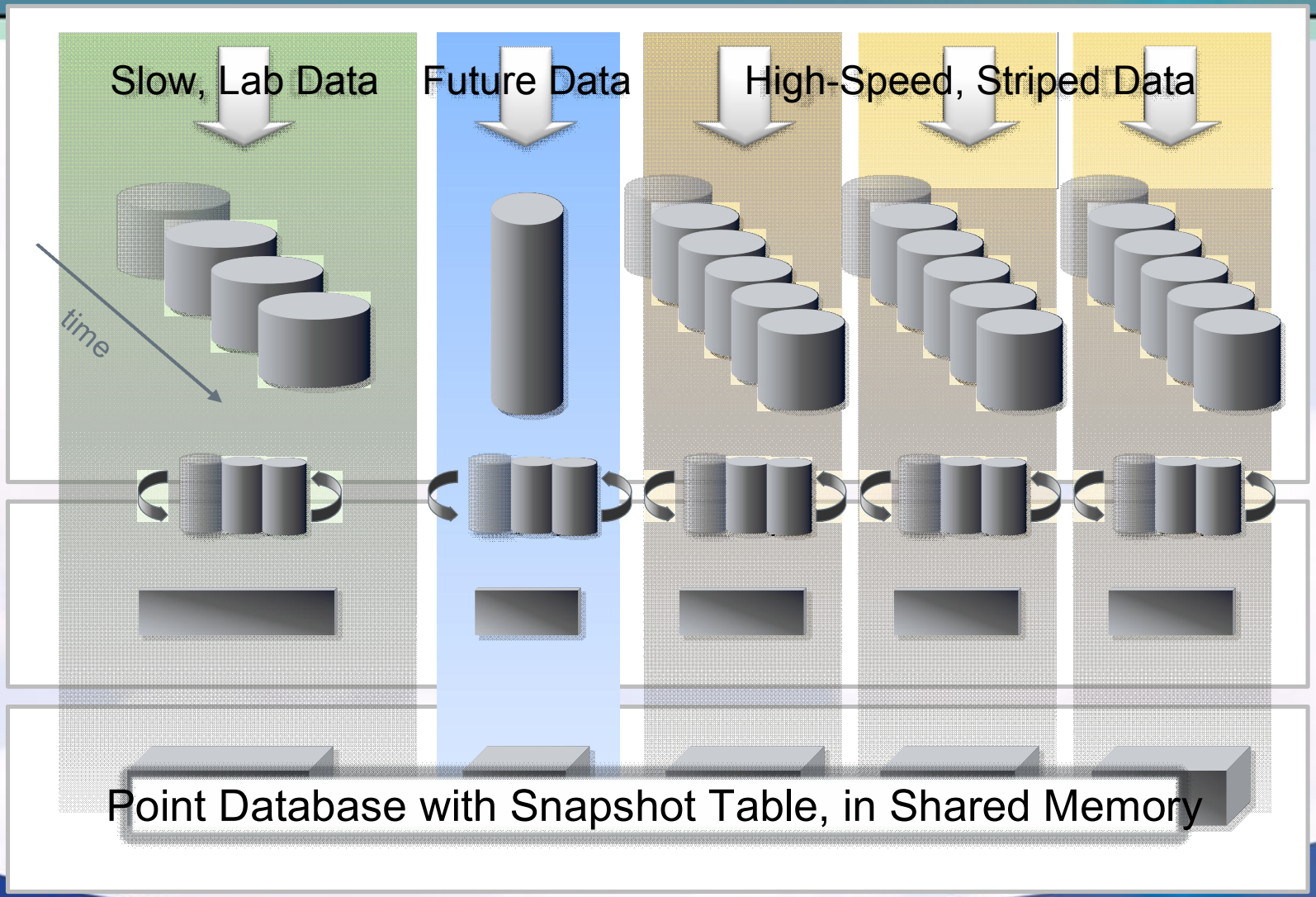
PI Server with More Partitioning



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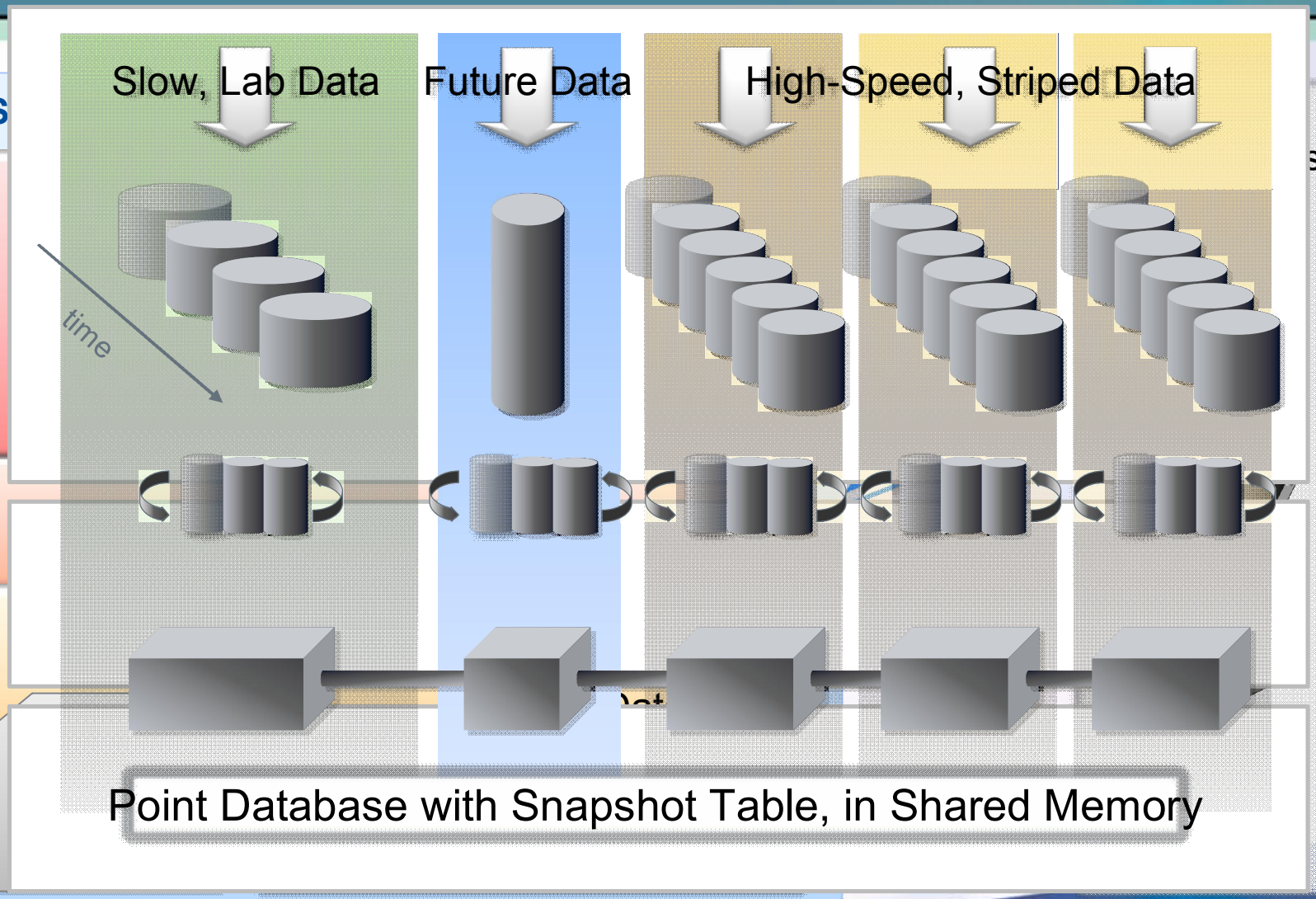
From the Outside



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64-bit PI

~~20~~ 1 Million-Point System

Demo Hardware

Dell PowerEdge 2900	Components	Configuration
Processors	2 x Intel QuadCore 2.66GHz, 1333MHz FSB, 4MB L1 Cache	Total: 8 CPU Cores
Memory	8 x 4GB DIMMs 667MHz	Total: 32GB
Controller	PERC 5/I Dual Backplane	RAID-0 (6 Disks + 4 Disks)
Hard Disks	10 x 300GB SAS 15K RPM	Total: 3TB
Network	Broadcom NetXtreme 5708	Gigabit Ethernet
Operating System	Windows Server 2003 R2 Enterprise	X64 Edition
Virtualization Host	Microsoft Virtual Server R2 SP1 (x64)	Windows Server 2003 SP2 Windows XP Professional SP2 Windows Server Core 2008 (June 2007 CTP)
List Price	USD $32,000 (July 2007)	

Summary

- PI Server Tenets
  - Simplicity, Scalability & Performance
  - Enterprise Integration, Low Maintenance
  - Availability and Reliability

Your Highly Available Real-Time Infrastructure

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Thank You

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