



vCampus **Live!** 2011

Sneak peek at...

PI Server 2012

Jay Lakumb *Product Manager*

Denis Vacher *Development Lead*

Greg Holt *Senior Developer*

Brian Young *Senior Developer*

WHERE PI GEEKS MEET



1981



2011



1981



2011

Build *software* to help you *identify, solve, and optimize*
the world's most exciting opportunities
in the scientific, industrial, and environmental domains.

*Build software to help you identify, solve, and optimize
the world's most exciting opportunities
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PI SYSTEM 2010^{R3}



COLLECT



HISTORIZE



FIND



ANALYZE



DELIVER

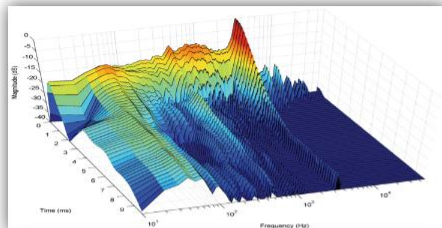


VISUALIZE

COLLECT HISTORIZE FIND ANALYZE DELIVER VISUALIZE
YOUR REAL-TIME DATA



How?



Syncro Phasors

4.8K data streams, 120Hz

3 years online

Unique Events: 55 Trillion

Estimated Data: 430TB



Data Center

100K cells, 2M breakers

10 years online

Unique Events: 105 Trillion

Estimated Data: 840TB



Automated Metering

20M meters, 5-min reads

7 years online

Unique Events: 177 Trillion

Estimated Data: 1,410TB



Fleet Monitoring

1K assets, 1M points

10 years online

Unique Events: 6,307 Tr

Estimated Data: 50,460TB





BIGGER ■ BETTER ■ FASTER

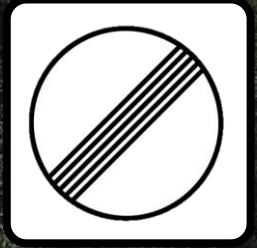
BIGGER ■ BETTER ■ FASTER





1. More **Tags/Points**
2. More **Data** In/Out/Online
3. More Real-time **Updates**
4. Less **Admin** Overhead





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Selecting and implementing the right
PI System **Analytical Tool** for the job
- **Part I**



Selecting and implementing the right
PI System **Analytical Tool** for the job
- **Part II**



POINTS • BACKUPS • UPDATES • WRITES



4
DEMOS



WALLE

PI Server 2010 R3 x64

- **3M** points
- **100K** archive ev/sec
- **25GB** online

VM Specs

- Windows 2008 R2
- 8 CPU Cores
- 30GB RAM
- 2 HDDs SATA/RAID0



EVE

PI Server 2012 x64 beta

- **3M** points
- **100K** archive ev/sec
- **80GB** online

VM Specs

- Windows 2008 R2
- 8 CPU Cores
- 30GB RAM
- 2 HDDs SATA/RAID0



POINTS • BACKUPS • UPDATES • WRITES



DEMO
#1



WALLE

PI Server 2010 R3 x64

- **3M** points
- **100K** archive ev/sec
- **25GB** online

Tasks

1. check startup time
2. create 10K points
3. search 3M points



EVE

PI Server 2012 x64 beta

- **3M** points
- **100K** archive ev/sec
- **80GB** online

Tasks

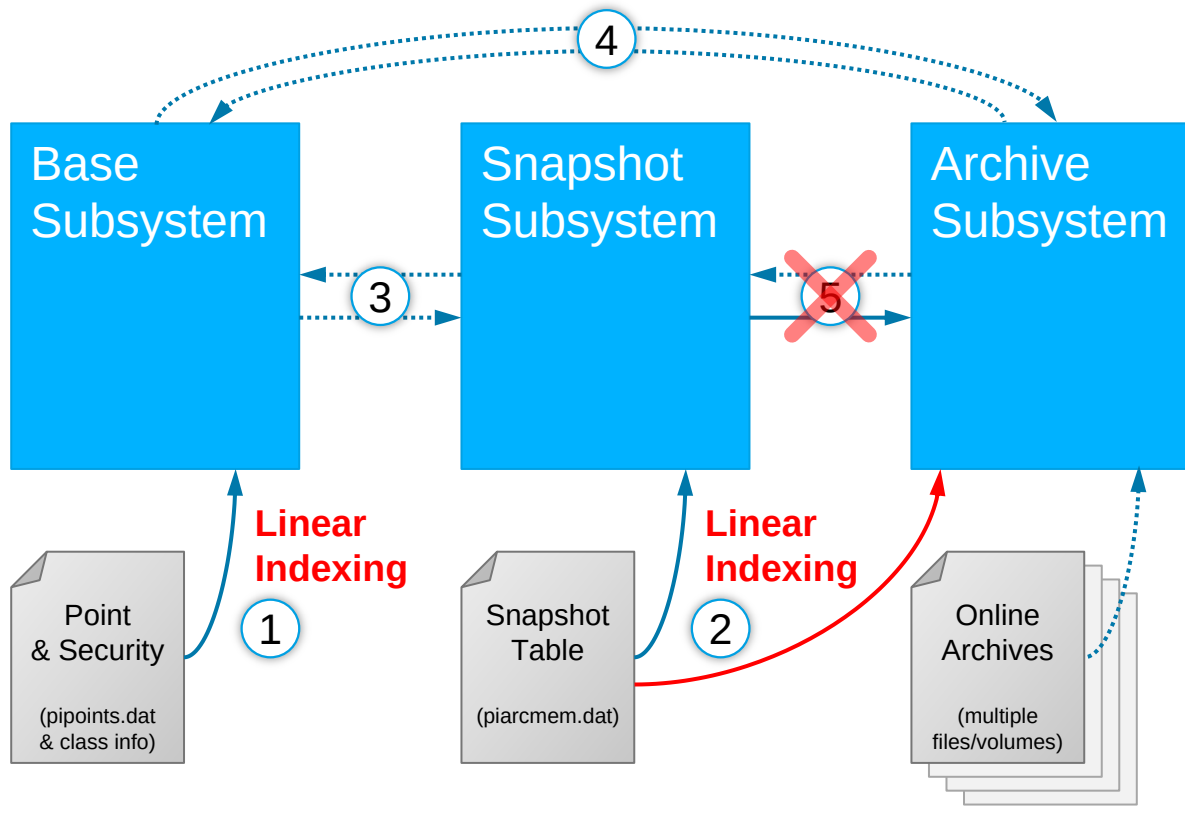
1. check startup time
2. create 10K points
3. search 3M points





UNDER THE HOOD

CORE SYSTEM STARTUP



— PI Server 2012

- 1 Point Attributes
- 2 Snapshot Records
- 3 Snapshot Security
- 4 Archive Security
- ~~5 Archive Cache~~

POINTS • BACKUPS • UPDATES • WRITES



DEMO
#2



WALLE

PI Server 2010 R3 x64

- 3M points
- 100K archive ev/sec
- 25GB online

Tasks

1. relocate archives
2. system backup
+ primary archive



EVE

PI Server 2012 x64 beta

- 3M points
- 100K archive ev/sec
- 80GB online

Tasks

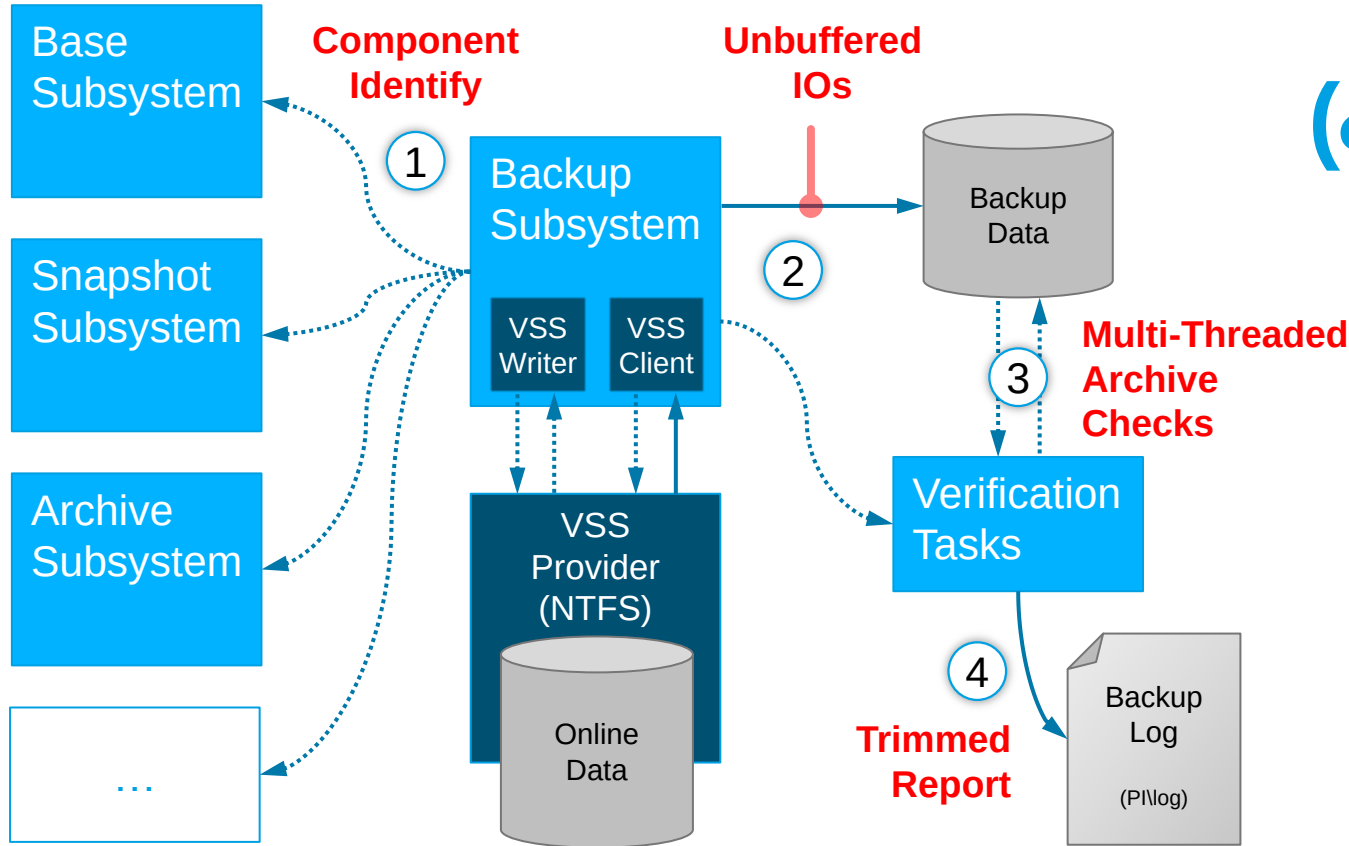
1. relocate archives
2. system backup
+ primary archive





UNDER THE HOOD

BACKUPS (& INTEGRITY CHECKS)



— PI Server 2012

- ① Identify, Freeze, Thaw
- ② File Copy (from VSS Snapshot)
- ③ Backup Verification
- ④ Log Generation

POINTS • BACKUPS • UPDATES • WRITES



DEMO
#3



WALLE

PI Server 2010 R3 x64

- **3M** points
- **100K** archive ev/sec
- **25GB** online

Tasks

1. sign up for <400K points (snapshots)
2. un-signup



EVE

PI Server 2012 x64 beta

- **3M** points
- **100K** archive ev/sec
- **80GB** online

Tasks

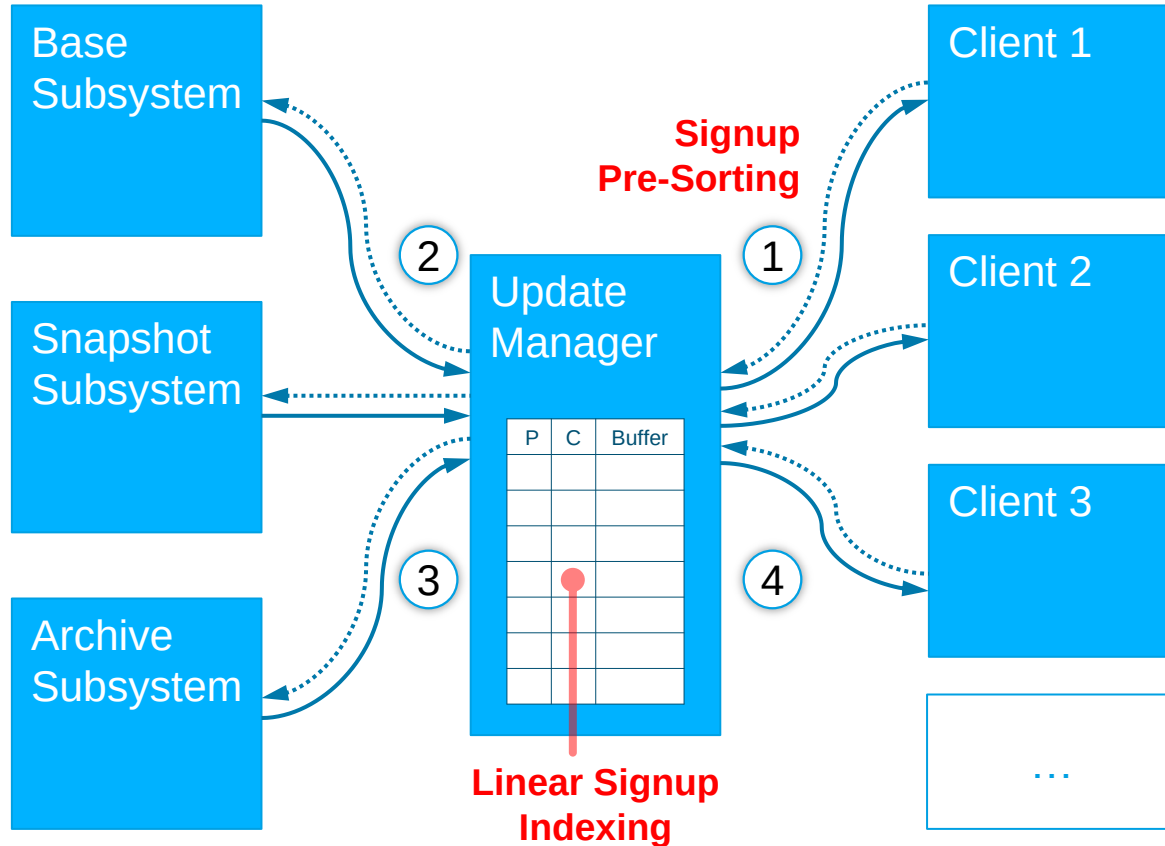
1. sign up for 3M points (snapshots)
2. sign up for more!
3. un-signup





UNDER THE HOOD

REAL-TIME UPDATES



— **PI Server 2012**

- ① Consumer Signups
- ② Authorizations
- ③ Producer Updates
- ④ Update Distribution



POINTS • BACKUPS • UPDATES • WRITES



DEMO
#4



WALLE

PI Server 2010 R3 x64

- **3M** points
- **100K** archive ev/sec
- **25GB** online

Tasks

1. let VM recover



EVE

PI Server 2012 x64 beta

- **3M** points
- **100K** archive ev/sec
- **80GB** online

Tasks

1. backfill 10K new points into uninitialized and/or full archives
2. query new data

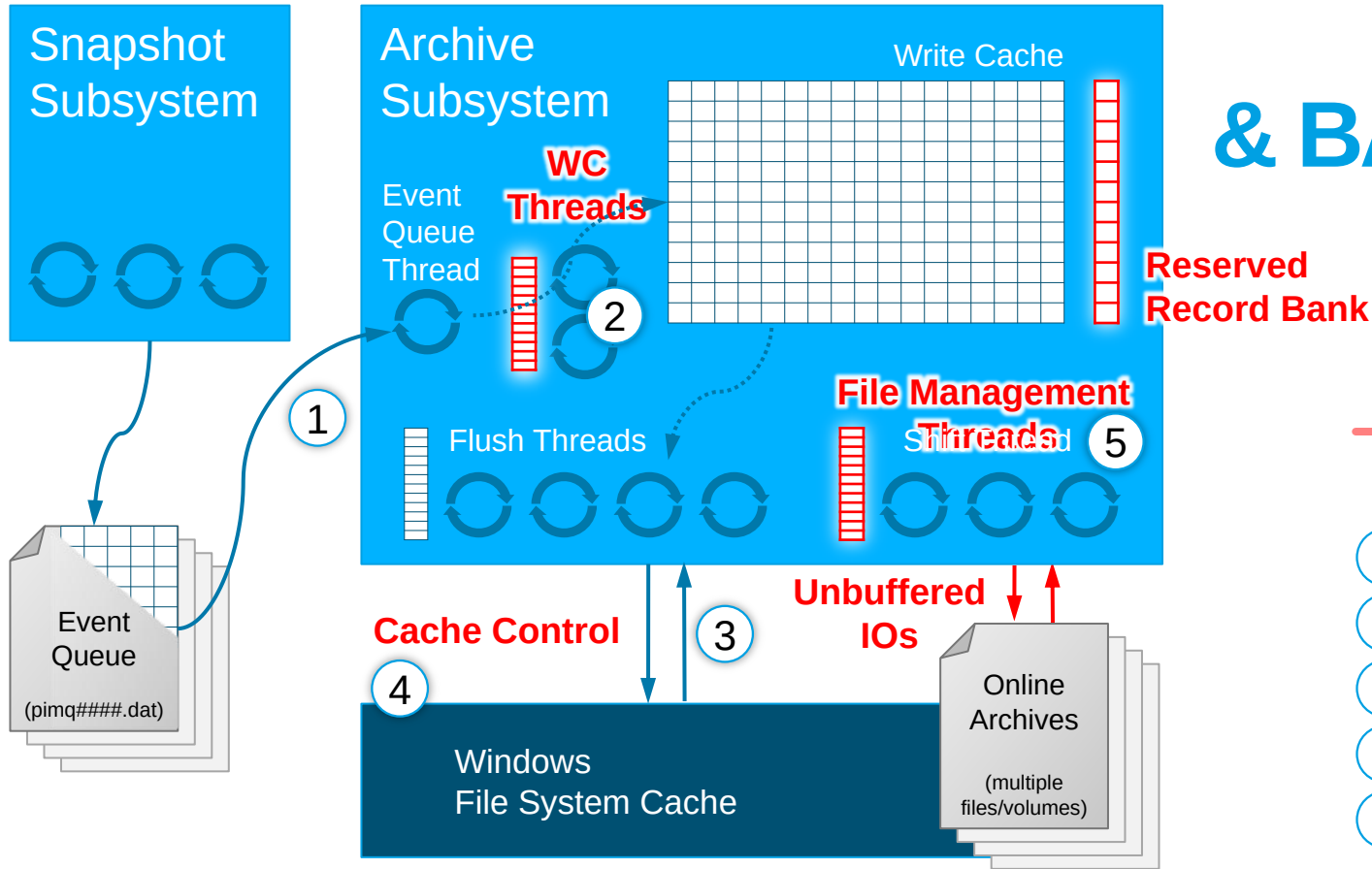




UNDER THE HOOD



ARCHIVING & BACKFILLING



— PI Server 2012

- ① Snapshot Queue
- ② Write Caching
- ③ Disk Reads/Writes
- ④ Memory Management
- ⑤ File Shifting



5x Backup Speed
5x Archiving Rate
10x Point Count
?x Query Throughput
20x Startup Speed
50x Update Signups
+ Magic Point Backfilling





MUCH MUCH MUCH
BIGGER ■ BETTER ■ FASTER
BIGGER ■ BETTER ■ FASTER





Is 2012 FOR ALL SYSTEMS



TECHNOLOGY ADOPTION PROGRAM



Send us an e-mail:

PIServer2012@osisoft.com

*Can I get it,
please?*





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Thank you

Jay jlakumb@osisoft.com
Denis dvacher@osisoft.com
Greg gholt@osisoft.com
Brian byoung@osisoft.com

