High Availability
提高 PI 系统的可用性

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Introduction
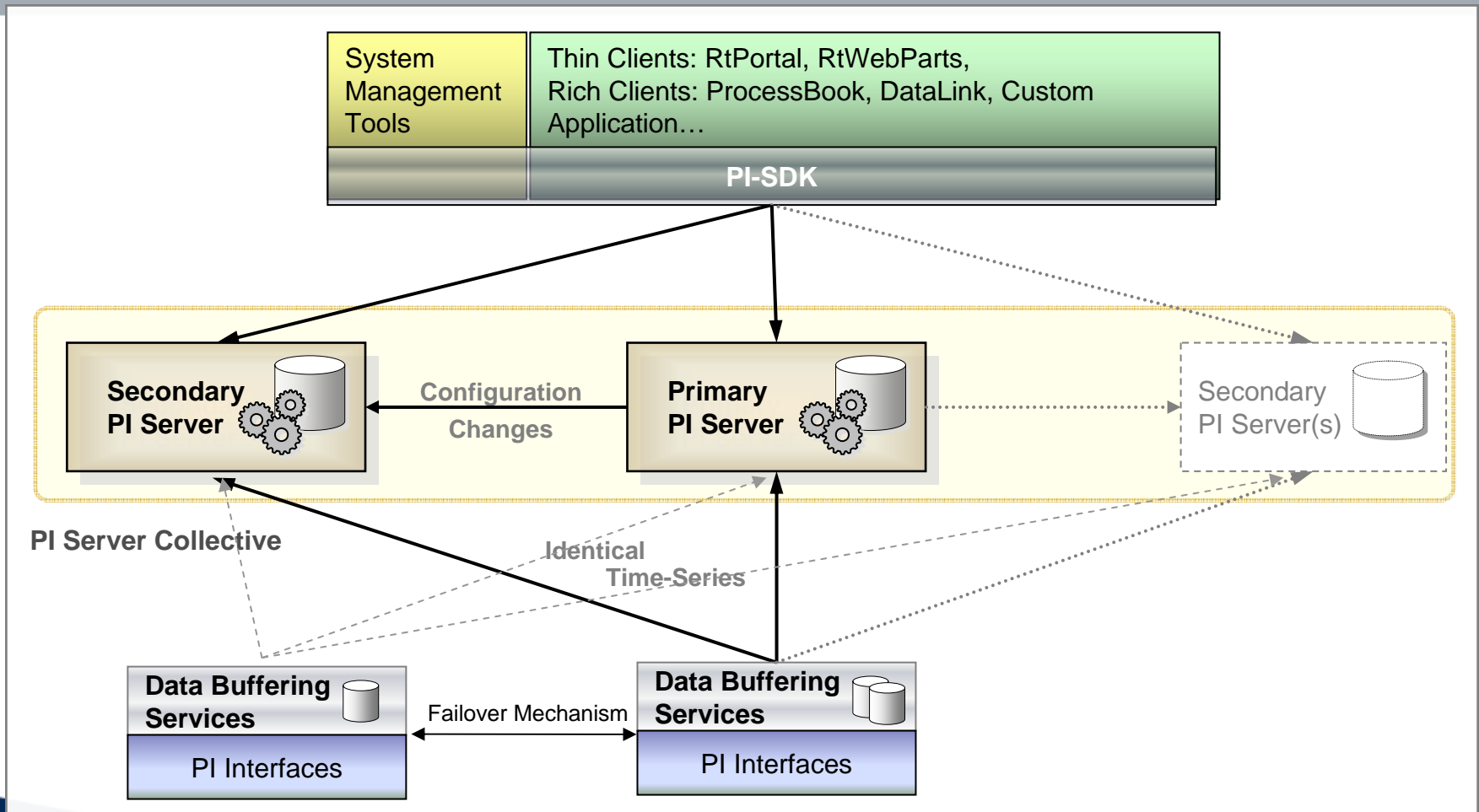
High Availability (HA)

> ***"Ability of a system to tolerate faults and continue to provide service according to its specifications"***

<div align="right">Dr. Kalinsky "Design Patterns for High Availability"</div>

Objective of the Day

- Review the HA architecture
- Benefits and Limitations
- Implementing a HA PI server
- Upcoming Enhancement

HA architecture

Values of HA

- High Availability to your PI System
- Peace of mind for Administrators
- Direct support for existing PI Clients
- Simple, scalable and flexible architecture

Limitations of HA

- No automatic replication of non-interface data

- No replication of batch records

- Post processed data calculated independently

- PI ACE management requires primary

Implementing HA PI system

Implementing a HA system
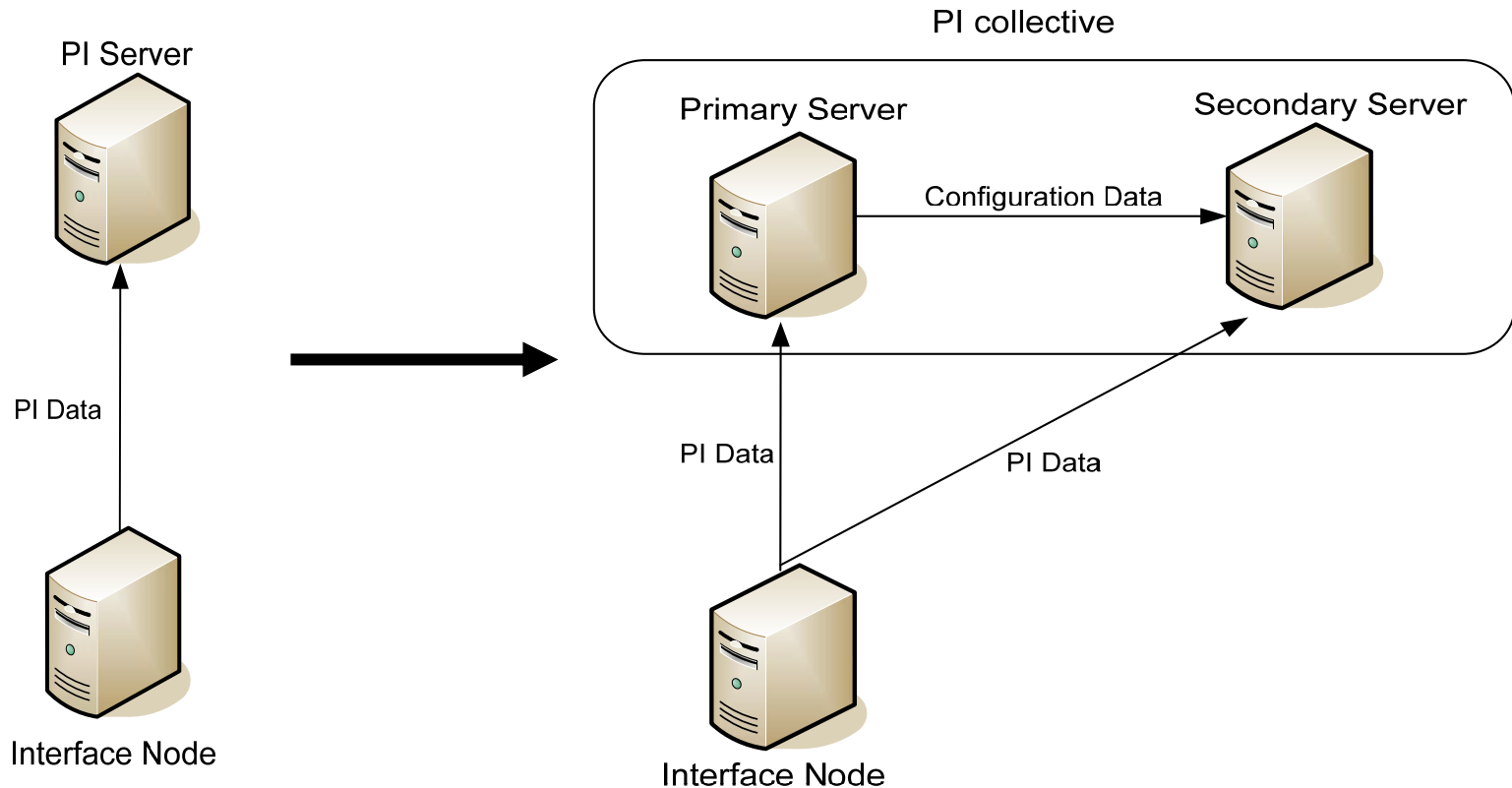
Requirements

- The servers
  - Standard hardware and operating system is all that's required

- Upgrade underlying PI-API & PI-SDK on your interface nodes

- Consider upgrading your interface to the latest version

- Use SMT or ICU on the interface node to setup and monitor the test

Upgrade and Install PI

- Start your upgrades at the PI server
  - Prepare the server (O/S, network, etc)
    - Use documented procedure for moving PI to a new server
  - Upgrade PI to latest version
  - Install latest PI on secondary machine
  - Use PI collective manager to promote your PI clone into a collective with one member

Using Collective Wizard

- Demo Video

Configure Interface

- If the interfaces aren't already on interface nodes, move them off of the PI server

- Upgrade PI-API & PI-SDK

- Optionally upgrade your interface(s) to latest version

- Set up N-Way buffering using latest PI-API Buffering version

Enable Buffer

Choose Buffer Type
Buffering Settings
Buffered Servers
PI Buffer Subsystem Service
    └ Parameter Details
API Buffer Server Service

Buffering allows continuous collection of data on an API Node regardless of the status of the PI server or the network link to the server.

○ Disable buffering

◉ Enable buffering with PI Buffer Subsystem
    Service status: Stopped
    Startup type: Automatic
    Number of dependent services: 1
    Number of running dependent services: 0

○ Enable buffering with API Buffer Server
    Service status: Stopped
    Startup type: Disabled
    Number of dependent services: 0
    Number of running dependent services: 0

OSIsoft.

VALUE NOW, VALUE OVER TIME

Buffer Settings

API Buffer

Choose Buffer Type
Buffering Settings
Buffered Servers
API Buffer Server Service

Buffer and Replicate using the following configuration:

Click once in the Buffered or Replicated column to toggle between On and Off.

Add a server: [   ] [Add Server]

Server	Buffered	Replicated
HANYONGD610	Yes	Yes
congd400	No	No
hycollective2nd	Yes	Yes

PI Buffer Subsystem

Choose Buffer Type
Buffering Settings
Buffered Servers
PI Buffer Subsystem Service
    Parameter Details
API Buffer Server Service

Buffering to collective/server: [hanyongd610   ▼]

☑ Replicate data to all collective member nodes

Buffered Server Names
⦿ Path   ◯ Name   ◯ IP Address

Server	Collective	Member Type
☑ hanyongd610.osisoft.int	hanyongd610	Primary
☑ 192.168.85.47	hanyongd610	Secondary

OSIsoft.

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A Timeline

Obtain & Prepare Test Server(s)																						
Clone existing PI server																						
Install PI on test server																						
Backup Existing PI server																						
Overlay files, run utilities on test server																						
Upgrade test server																						
Create Collective using test server																						
Prepare interface nodes																						
upgrade PI-API & PI-SDK																						
Upgrade interface(s)																						
Set up N-Way Buffering																						
The Test																						
Confirm buffering to both servers																						
copy and test existing applications																						
key users access test server																						
verify local procedures																						
resolve issues with OSI assistance																						
Test Successful? Next steps																						
Uninstall PI from test server(s)																						
Make a new clone from existing server																						
make your collective																						
point users at new collective																						
remove old server from buffering on interface nodes																						

Upcoming enhancement

Data Collection & Buffering

Data Authoring Client
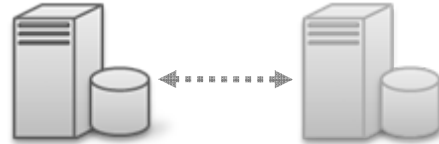
Display, Notification or Analysis

Secondary PI Server

S1

Secondary PI Server

S2

Server Side Buffering (Data Mirroring)

Metadata Replication

Metadata Replication

Primary PI Server

P

BRidged
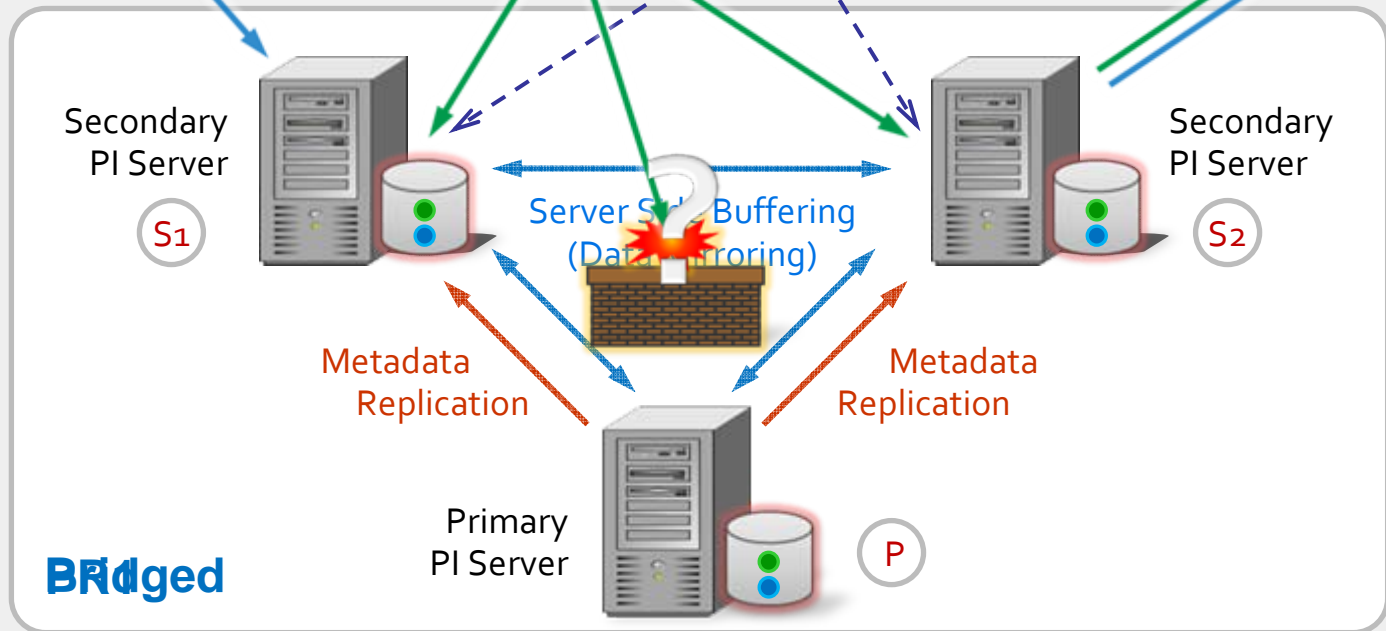
Conclusion

- ## Implement HA for:
  - improve reliability
  - better manageability