Windows Server AppFabric Runtime Services
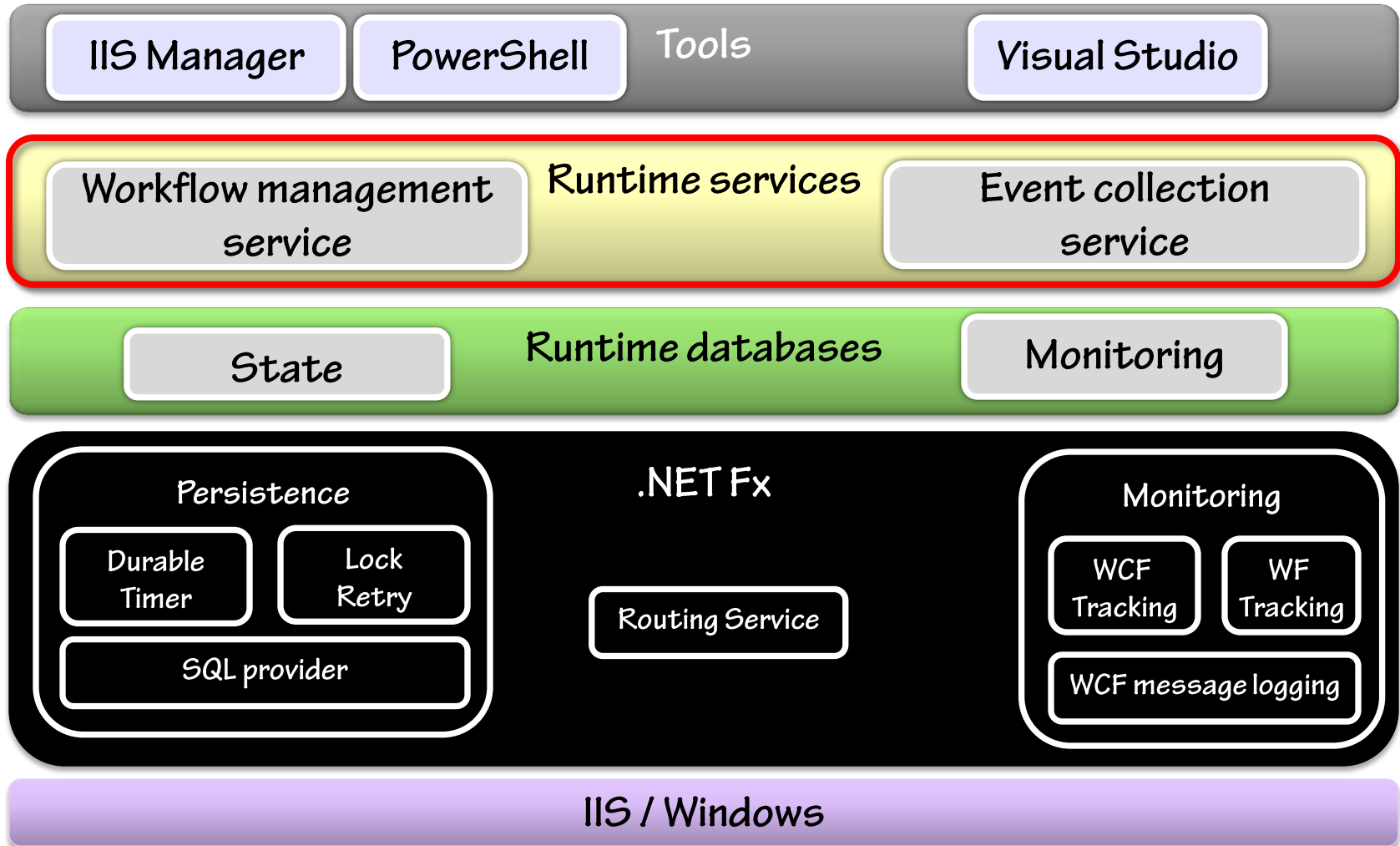
Services for your services

Overview

- **Framework and platform services**
- **Workflow management service**
- **Event collection service**

AppFabric hosting architecture

Tools

IIS Manager | PowerShell | Visual Studio

Runtime services

Workflow management service | Event collection service

Runtime databases

State | Monitoring

.NET Fx

Persistence
- Durable Timer
- Lock Retry
- SQL provider

Routing Service

Monitoring
- WCF Tracking
- WF Tracking
- WCF message logging

IIS / Windows

Sys

pluralsight
see what you can learn

Autostart (WAS)

- **One advantage of Windows Service over WAS**
  - Service can start, opening host when machine starts
  - WAS starts, but your services are activated on first request
- **WAS has been extended to enable starting services on WAS startup**
  - Available on IIS 7.5 only! (Server 2008 R2, Windows 7)
- **Custom code on startup**
  - Create a custom service host factory

Persistence service

- **Responsible for saving workflow state**
  - Saves the in scope variables
- **Enables process agility**
  - Load balancing
- **Includes a locking mechanism to avoid duplicate processing**
  - Data written to persistence store to indicate owning process

Persistence in action
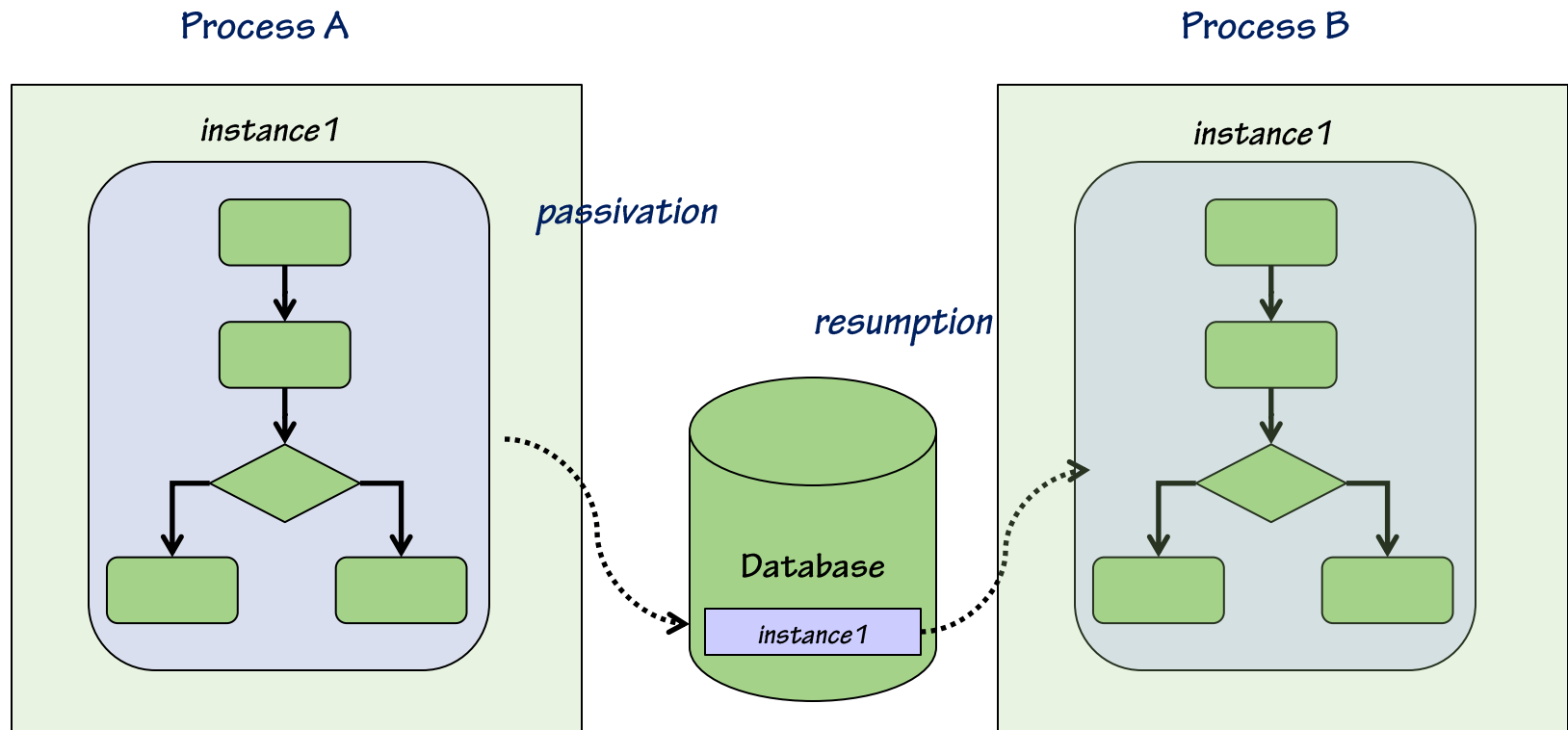
Lock retry behavior (NetFx)

- **Instance locked by a host & message arrives on different host**
  - Normal circumstance results in fault due to locked instance
- **Retry behavior enables configuration to retry loading**
  - How many times to retry
  - How often to retry
- **Client may time out waiting!**

Suspend on error behavior (NetFx)

- **Unhandled exceptions terminate workflows**
    - No chance for recovery
    - Difficult to restart the workflow
- **Suspends workflows that would otherwise terminate**
    - Allows for fix and resume by IT Pro or Dev
    - Does not replace good error handling or retry strategy in your workflows
- **Implemented as a WCF behavior**

Controlling hosted workflows

- **Workflow management controlled via WCF behaviors**
  - ETW Tracking
  - Persistence
  - Unhandled exception behavior
  - Idle behavior
- **Workflow instances controlled via WorkflowControlEndpoint**
  - Standard WCF endpoint (IWorkflowInstanceManagement)
  - Provides control operations – run, suspend, terminate, abandon, cancel
  - WorkflowControlClient = prepackaged client proxy

Workflow management service

- **Windows service installed by AppFabric**
- **AppFabric persistence store**
  - Additional tables added for management service
  - Used for managing commands
- **Activates runnable workflows (when sql instance store does not)**
  - Expired timers
  - Abandoned workflows
  - Expired instance lock
- **Issues user commands**
  - PowerShell or IIS UI commands are queued
  - Service reads work from queue and invokes commands against services
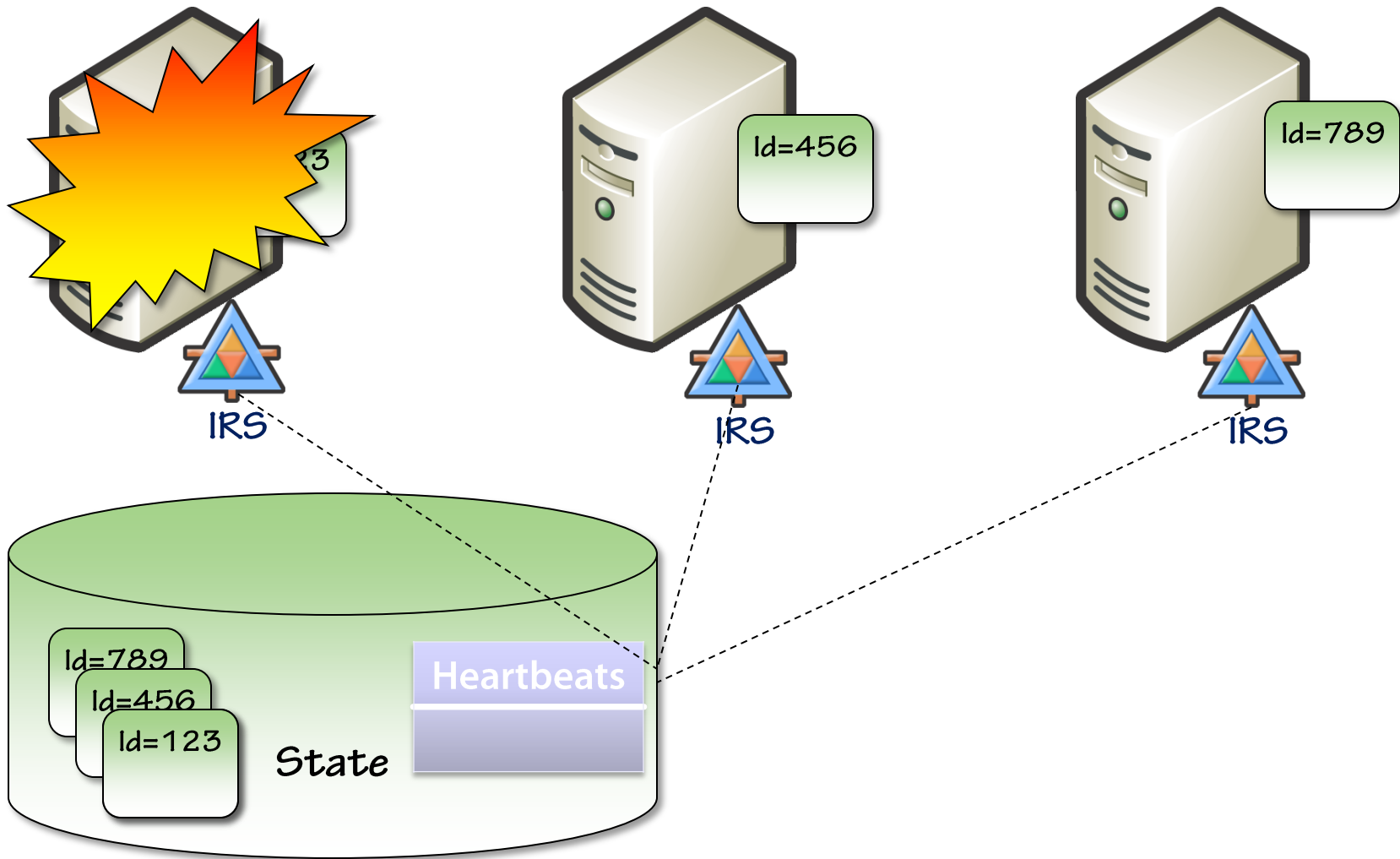 - Commands executed on control endpoint – requires named pipe protocol

Instance recovery

- **Workflow management service starts runnable workflows**
  - Process terminates unexpectedly
  - Runtime shuts down gracefully but with work to do in the instance(s)
  - Workflow may be unloaded based on memory constraints, etc.
- **Resumes instance on a host**
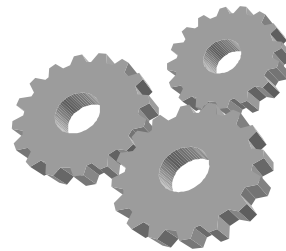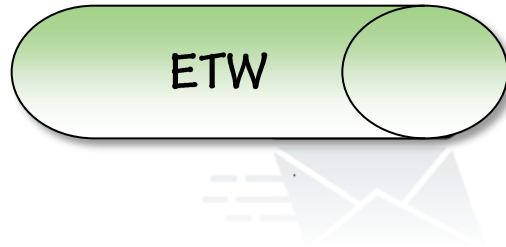 - For farms, may be any host in the farm

Using instance recovery service

- **Make sure you have persistence points in your workflow**
    - Work is resumed at last persistence point
- **Configure HostLockRenewal period on the SqlWorkflowInstanceStore**
    - Writes heartbeat information to the database

Instance recovery

Id=456

Id=789

IRS

IRS

IRS

Id=789
Id=456
Id=123

Heartbeats

State

pluralsight
see what you can learn

Event collection service

ETW

Database

Summary

- **AppFabric services enhance IIS WAS hosting**

- **Workflow management issues commands and provides recovery**

- **Event Collection Service moves ETW data into SQL**

- **WAS Auto-start feature simplified by AppFabric configuration**