Introducing Windows Server AppFabric

Managing and monitoring workflows and services

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Overview

What is AppFabric

What features does AppFabric provide

Comparison with other hosts

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WCF and WF hosting options

WF

- Any .NET appdomain
- Workflow runtime
- Add extensions

WCF

- Any .NET appdomain
- ServiceHost
- Add extensions

Common hosts

- IIS / WAS
- Windows service
- Client applications

IIS/WAS: the preferred host

Activation of worker process / appdomain

Multiple protocol support (http, named pipes, msmq, tcp)
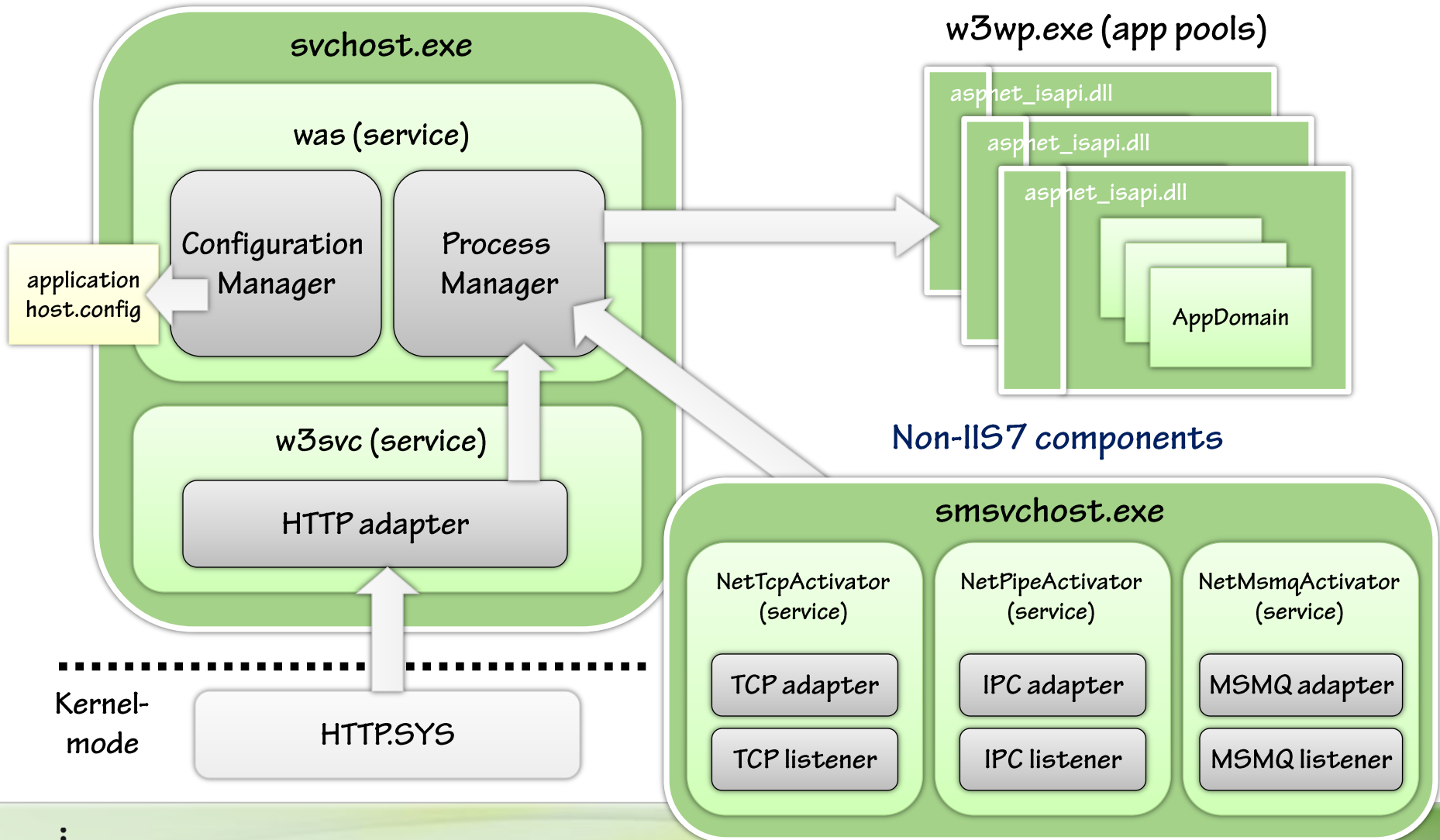
Process isolation through application pools

Throttling

Configurable identity

Health monitoring

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WAS architecture

IIS7 components

svchost.exe

was (service)

| Configuration Manager | Process Manager |

application host.config

w3svc (service)

HTTP adapter

Kernel-mode

HTTP.SYS

w3wp.exe (app pools)

aspnet_isapi.dll

aspnet_isapi.dll

aspnet_isapi.dll

AppDomain

Non-IIS7 components

smsvchost.exe

NetTcpActivator (service)	NetPipeActivator (service)	NetMsmqActivator (service)
TCP adapter	IPC adapter	MSMQ adapter
TCP listener	IPC listener	MSMQ listener

Challenges with hosting

- **WAS is not very service aware**
  - No special tools for managing services and workflows
  - No support for monitoring services as services
- **Services require tooling**
  - Monitoring
  - Configuration
  - Management in isolation and in a farm
  - Rich diagnostic tracing
- **Long running services**
  - Manage instances not just definitions
  - Management of state

Reasons people self-host

- **Need more control over service lifecycle**
  - Start / stop control
- **Direct access to workflow runtime for instance control**
- **Application design**
  - Peer-to-peer application
  - Duplex communication patterns
- **Restrictions on IIS installation**

What is Windows Server AppFabric
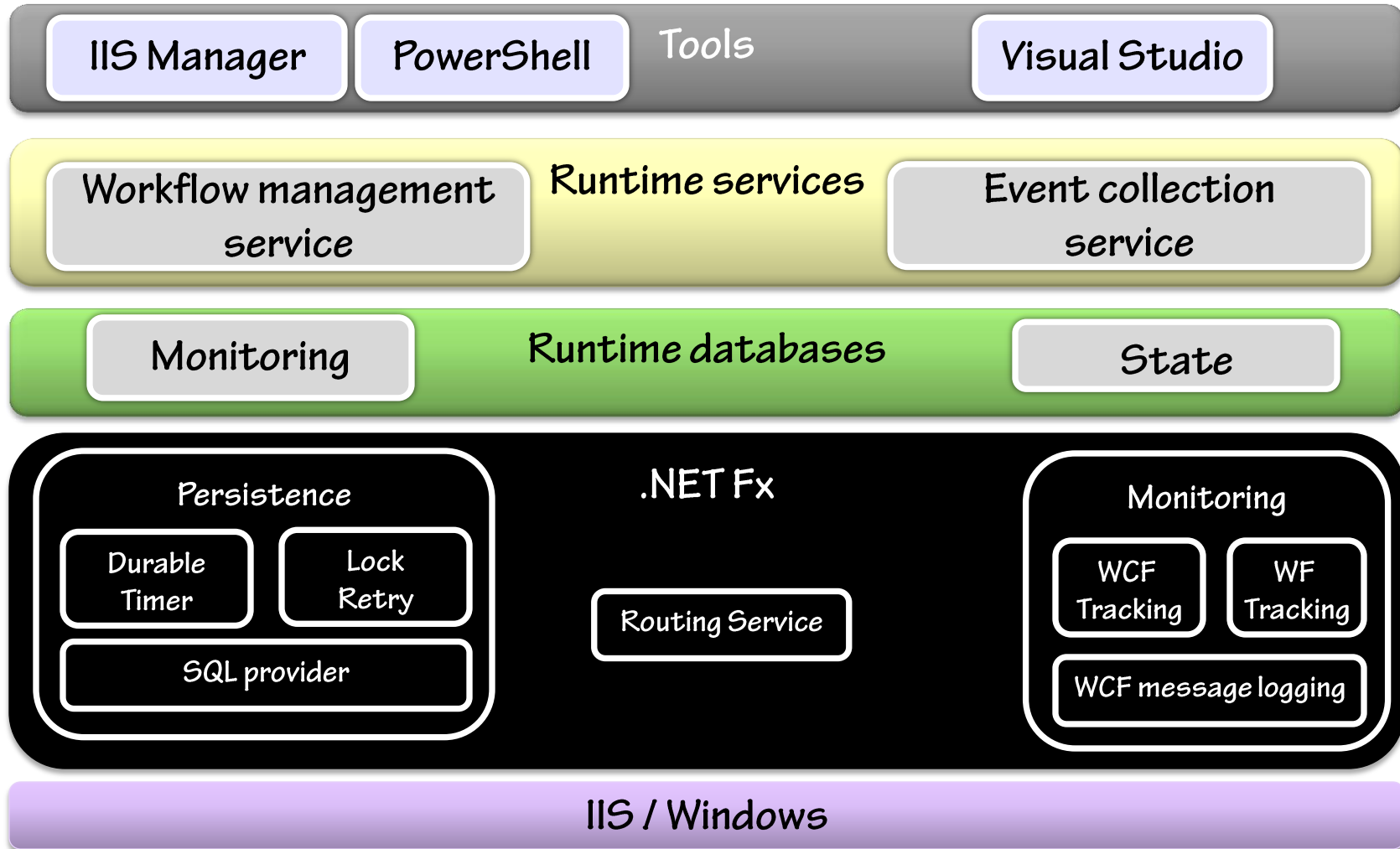
Extends AppServer Role in Win 2008

Tools for WCF / WF

Leverage existing management tools

.NET 4

IIS / WAS is the host

AppFabric hosting architecture

Tools

IIS Manager PowerShell Visual Studio

Runtime services

Workflow management service Event collection service

Runtime databases

Monitoring State

.NET Fx

Persistence

Durable Timer Lock Retry

SQL provider

Routing Service

Monitoring

WCF Tracking WF Tracking

WCF message logging

IIS / Windows

Sys

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Benefits of AppFabric

- **Reliability**
  - Enhanced persistence of service state
  - Recoverable service instances
- **Scalability**
  - Composes with NLB or queues
  - Deployment tools for farm deployments
  - Application load balancing capabilities
- **Manageability**
  - Rich monitoring support
  - Stand – alone or integrated with Systems Center
  - Tooling for service management

What about other tools

SharePoint

BizTalk

Azure

Self Hosting
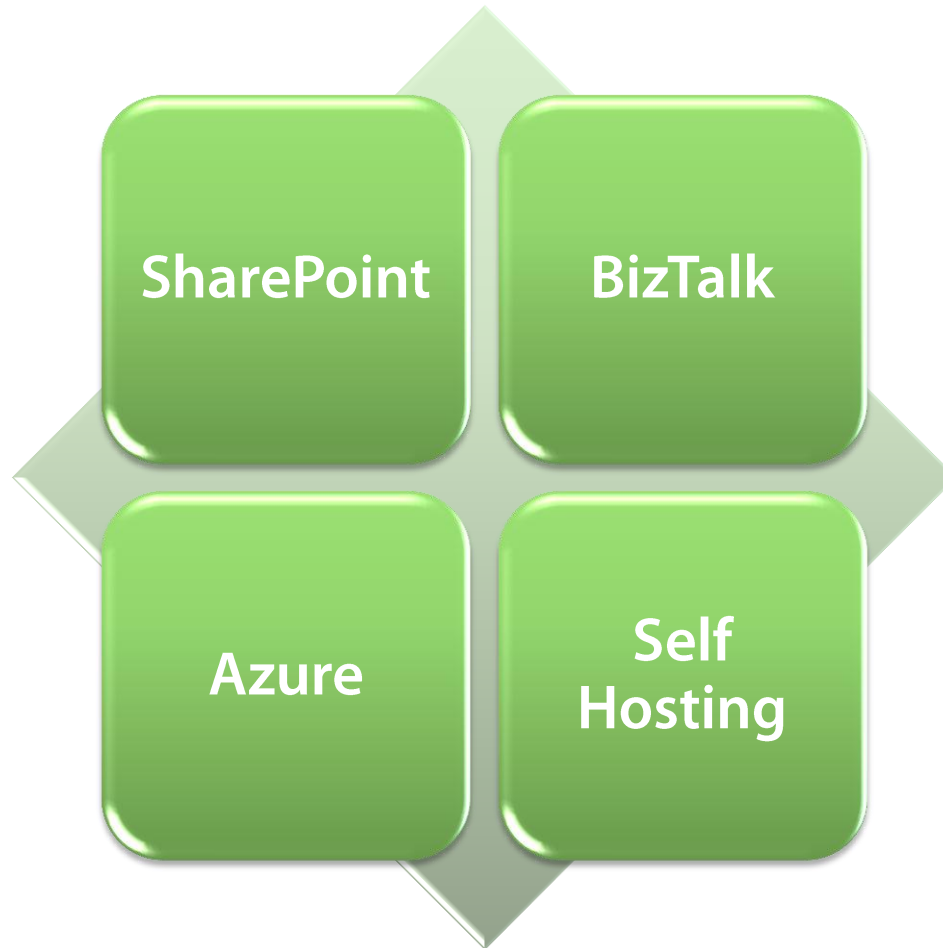
SharePoint

- **Microsoft's collaboration platform and portal server**
- **Specifically for human interaction**
    - Integrates nicely with Office clients
- **Centered on documents or items in SharePoint**
- **Provides tooling for power users to create workflows**
    - SharePoint Designer
- **Not a general purpose workflow host**
    - Limited control over workflows
    - Simplistic manual tracking of data and events
   - SharePoint 2010 uses WF 3.x

BizTalk

- **Microsoft's enterprise SOA and BPM server**
- **Integration server (EDI / AS2, HL7, SWIFT)**
- **Connectivity through adapters**
  - LOB applications such as J.D. Edwards, PeopleSoft, SAP
  - Mainframe systems including COBOL and RPG programs, and databases
- **Accelerators to speed development**
  - Common artifacts and components provided in the accelerator
  - HIPAA, SWIFT, HL7, RosettaNet
- **Enterprise tooling**
  - Management and monitoring
  - Data collection, aggregation and analytics
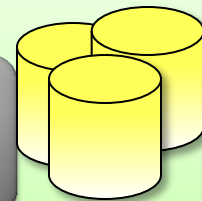
Windows Azure

Windows Azure
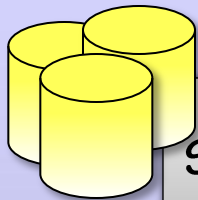
Windows Azure AppFabric Service Bus

- **Cloud services for scale and reduced management**
- **Service Bus is a routing service, not a service host**
- **Workflow is focused on message orchestration**
- **Can be combined with AppFabric**
  - Off-premise and on-premise components
  - Use the Service Bus to expose your AppFabric hosted services

What about self-hosting or using WAS

- **AppFabric addresses problems with current hosting solutions**
  - WAS is not a perfect host, AppFabric makes it better
- **Self-hosting still an option**
  - P2P, Smart client, etc.
- **Workflows without services**
  - Embedding workflow directly in your application
  - Requires more work in managing instances
  - Workflows may still be hosted as services, but for local communication

Summary

- AppFabric addresses many of today's service hosting issues
- Extensions to .NET FX provide reliability, scalability, manageability
- Management tools are familiar to system administrators