Architecture and Deployment of Workflow Manager farms

Paolo Pialorsi – PiaSys.com
paolo@pialorsi.com - @PaoloPia
Paolo Pialorsi

Project Manager, Consultant, Trainer
More than 40 Microsoft certification exams passed, including MC(S)M
Focused on SharePoint since 2002
Author of 10 books about XML, SOAP, .NET, LINQ, and SharePoint
Speaker at main IT conferences worldwide

http://www.piasys.com/
Agenda
- SharePoint 2013: Workflow Architecture
- Workflow Manager Topologies
- High Availability
- DEMO: Workflow Manager Deployment
- Common Issues / Best Practices
Workflow manager architecture
Workflow in SharePoint 2010

- Coupled to SharePoint
- Available both in SP Foundation and Server
- Declarative or code-based

Key missing features:
- Capabilities
- Scalability
- Availability
- Cloud-ready
Workflow in SharePoint 2013

- Decoupled from SharePoint
- Available in SharePoint Server only
- Markup based and declarative only
  - No code, or no “direct” code ...
  - Microsoft SharePoint Designer 2013 improved support
- Cloud-ready/Cloud-based, or on-premises
- SharePoint app-oriented
- Scalable and available
- Secure and safe
- Extensible
What is Workflow Manager?

- Was born as Azure Workflow Server/Services (AWS)
  - The “AWS” name ... was a bad idea! ;-)
  - Still available on Azure, as a service for Office 365/SPO
  - Available on-premises, as well
- Based on Windows Workflow Foundation 4.5
Key features

- High Density & Multi-tenancy
  - Partitioning based on “scopes”
- Elastic Scale
- Activity / Workflow Artifact Management
- Tracking and Monitoring
- Instance Management
- Fully Declarative Authoring
- REST and Service Bus Messaging
Workflow manager topologies
Topologies

- One or three servers
  - Service Bus and quorum implementation

- Each component must run on each server
  - Workflow Manager and Service Bus

- There are NO other supported topologies

- Can be run in co-located environment
  - SharePoint + Workflow Manager
  - But think carefully about this topology …
Single Farm Topology
Federated Farm Topology

- Each SharePoint Farm will have a dedicated Workflow Manager Scope.
- Security, isolation and partitioning are guaranteed.
- This scenario is really complex ... think carefully before using it!
Distributed Farm Topology

- Each SharePoint Farm will have a dedicated Workflow Manager Scope and multiple tenants.
- Security, isolation and partitioning are guaranteed.
- This scenario is really, really 😊 complex ... think carefully before using it! It is mainly for Microsoft Office 365!
Workflow High Availability

- Workflow Manager farm leverages Service Bus farm
- Services Bus farm can be made of 1 or 3 servers
  - «The Service Bus for Windows Server only supports a farm with 1 computer or a farm with 3 computers.»

- In order to have high availability you should have three servers
  - No more, no less!
- Thus, an HA Workflow Manager farm should be made of 3 servers
  - With Workflow Manager and Service Bus installed and configured
- You should also have NLB in front of the WF servers
  - Because SharePoint needs to see the Workflow Farm through a unique URI
Which Workflow Manager version?

- Workflow Manager 1.0 Beta
- Workflow Manager 1.0
- Workflow Manager 1.0 CU1
- Workflow Manager 1.0 CU2
- Workflow Manager 1.0 Refresh
- Service Bus 1.0
- Service Bus 1.0 CU1
- Service Bus 1.1
- What a mess! What can you do?!
Setting up from scratch?

- Setup SharePoint 2013 SP1
- Setup Workflow Manager 1.0 Refresh
  - Which includes Service Bus 1.1
  - Works with Service Bus 1.1 or Service Bus 1.0 CU1
Upgrading from WF Manager 1.0?

Regardless you are using
- Workflow Manager 1.0
- Workflow Manager 1.0 CU1

Apply CU2 to upgrade to 1.0 Refresh
- Works with Service Bus 1.1 (or Service Bus 1.0 CU1)
Hardware Requirements

- Minimum RAM: 2 Gb
- Minimum CPU: 2 GHz Dual Core
- Minimum Disk: 1 Gb Free

On Azure IaaS: A2
Software Requirements

- Windows Server 2008 R2 Service Pack 1 (x64)
- Windows Server 2012 (x64)
- Windows Server 2012 R2 (x64)
  - Only WF Manager 1.0 Refresh or CU2
- Development purposes only:
  - Windows 7 Service Pack 1 (x64)
  - Windows 8 (x64)
- SQL Server 2012 (or Express)
- SQL Server 2008 R2 SP1 (or Express)
Software Pre-requisites

- .NET Framework 4 Platform Update 3
  or
- .NET Framework 4.5
- PowerShell 3.0
- Service Bus 1.0
- Workflow Client 1.0
Installation technique

- Web Platform Installer
  - The easy way

- Manual “offline” installation
  - The complex way
  - Sometime it happens …
Accounts

Service accounts

- Use a setup/configuration account (like the SP one)
  - Local admin on servers
  - DBCreator and SecurityAdmin in SQL (or pre-create databases)

- Define two different service accounts
  - One for Service Bus, and another for Workflow Manager
  - No built-in accounts!
Certificates

- Always use SSL for OAuth 2.0!
- Service Bus: Farm, Encryption
- Workflow Manager: SSL, Encryption, Outbound Signing

Available options
- Auto-generated
- Domain CA Issued <= My best choice
Installation Steps (HA farm)

- Prepare 3 servers to host Workflow Manager and Service Bus farms
- Install Workflow Client 1.0 Refresh on all SharePoint 2013 machines
- Install Workflow Manager 1.0 Refresh on WF servers
  - It will install Service Bus up to date, as well
- Configure Workflow Farm on the first WF server
- Join the Workflow Farm with other two servers
- Register the Workflow Farm in SharePoint 2013 farm using a NLB URI via HTTPS
Validating setup and configuration

Via PowerShell
- Get-SBFarmStatus
- Get-WFFarmStatus

Workflow Service Application Proxy
- Workflow is Connected

SharePoint Designer
- SharePoint 2013 Workflow
Common Issues / Best Practices (1/2)

- WF servers need to have access to SharePoint servers
  - Remember to properly configure DNS records
  - Check network availability
  - Mind Loopback Check issues

- SharePoint servers need to have access to WF servers, as well
  - Same checks/issues as before
Common Issues / Best Practices (2/2)

- WF servers will use an SSL certificate
  - Trust it on SharePoint
  - Or issue the certificate via AD Certification Authority
    - Which is trusted by default

- Create dedicated user accounts for RunAs of Workflow and Service Bus services
  - Mind permissions, in SharePoint, for those accounts
  - Configure «dbo» role on Instance Management DB of Workflow Manager (fixed by 1.0 Refresh)

- Mind HTTP/HTTPS requirements of OAuth in SharePoint 2013
References

Getting started with SharePoint Server 2013 workflow

Configure workflow in SharePoint Server 2013

Workflow Manager Farms for SharePoint 2013 Part One: Core Concepts, High Availability, Certificate and SharePoint considerations
  •  http://www.harbar.net/articles/wfm1.aspx

Setting Up an OAuth Trust Between Farms in SharePoint 2013
Q & A

Questions are guaranteed in life; Answers aren't.