

Level: 400



Conference

SharePoint days 2014

21th & 22nd of October, Portorose

# 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

- ② SharePoint 2013: Workflow Architecture
- ② Workflow Manager Topologies
- ② High Availability
- ② DEMO: Workflow Manager Deployment
- ② 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

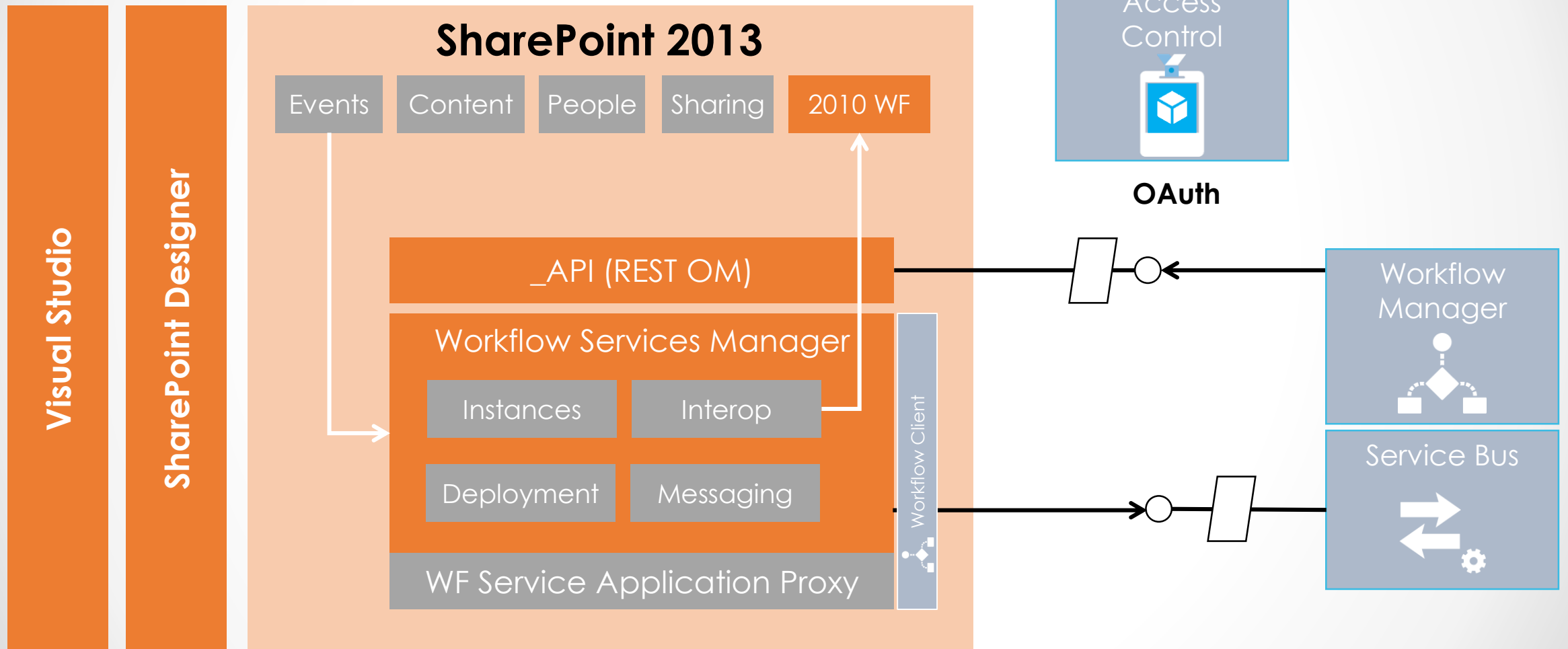
# Key features

- ⦿ 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 Architecture



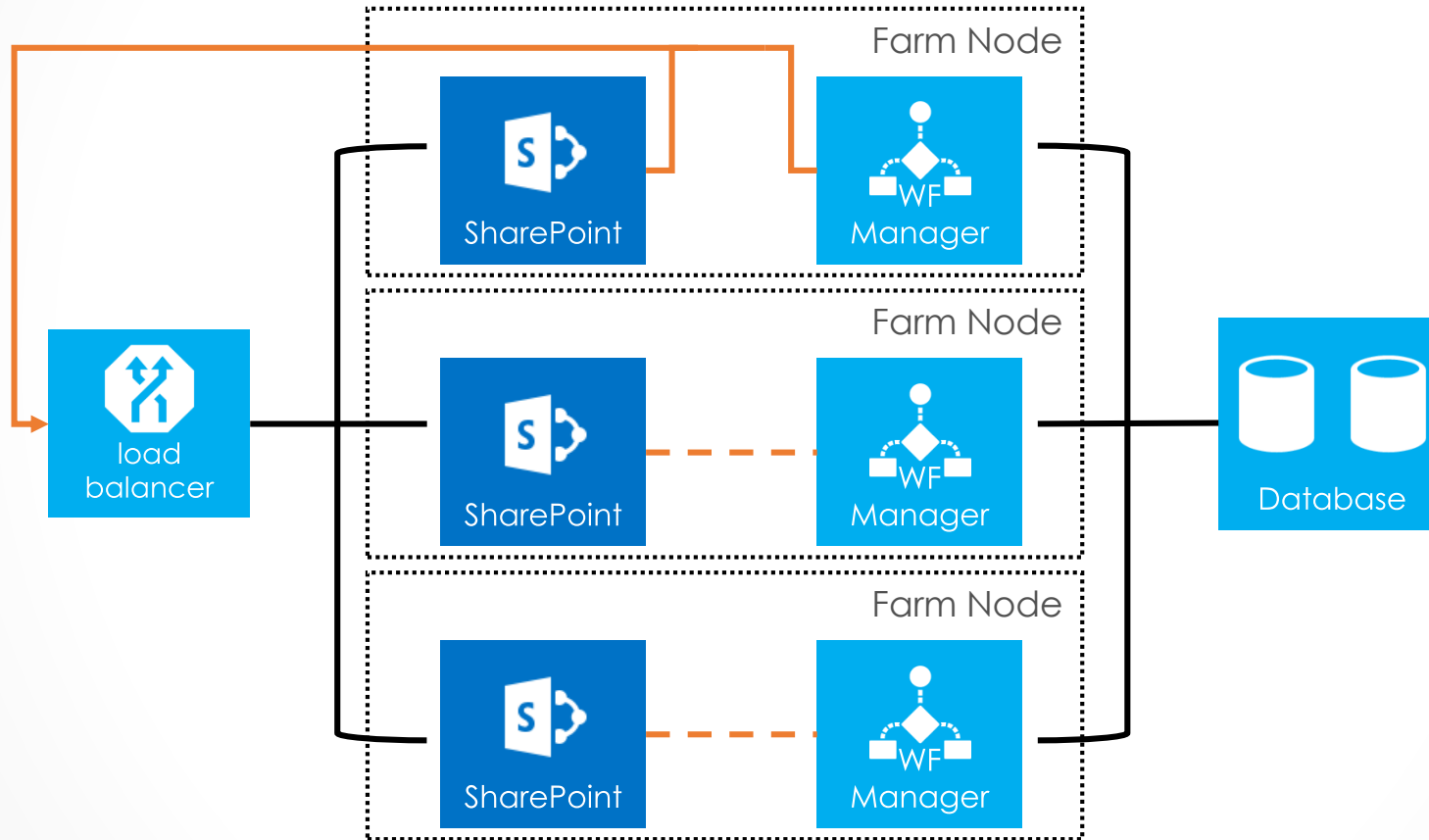
# Workflow manager topologies

...

# Topologies

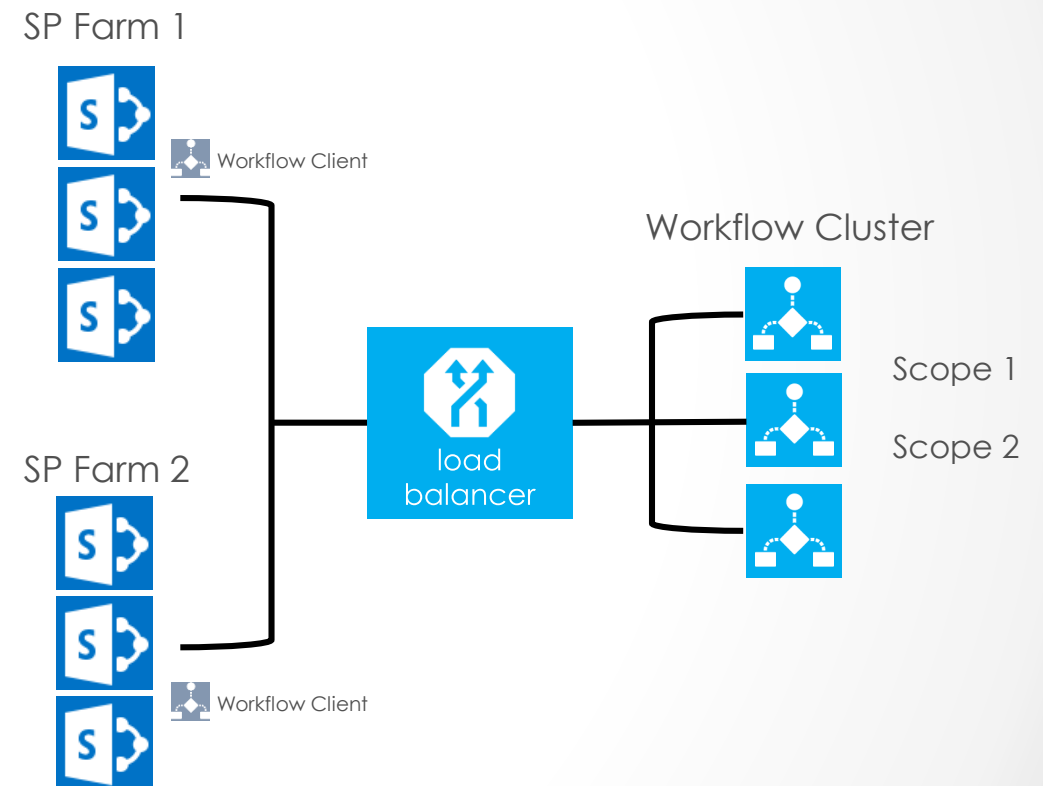
- ⦿ One or three servers
  - Service Bus and quorum implementation
- ⦿ Each component must run on each server
  - Workflow Manager and Service Bus
- ⦿ There are NO other supported topologies
- ⦿ Can be run in co-located environment
  - SharePoint + Workflow Manager
  - But think carefully about this topology ...

# Single Farm Topology



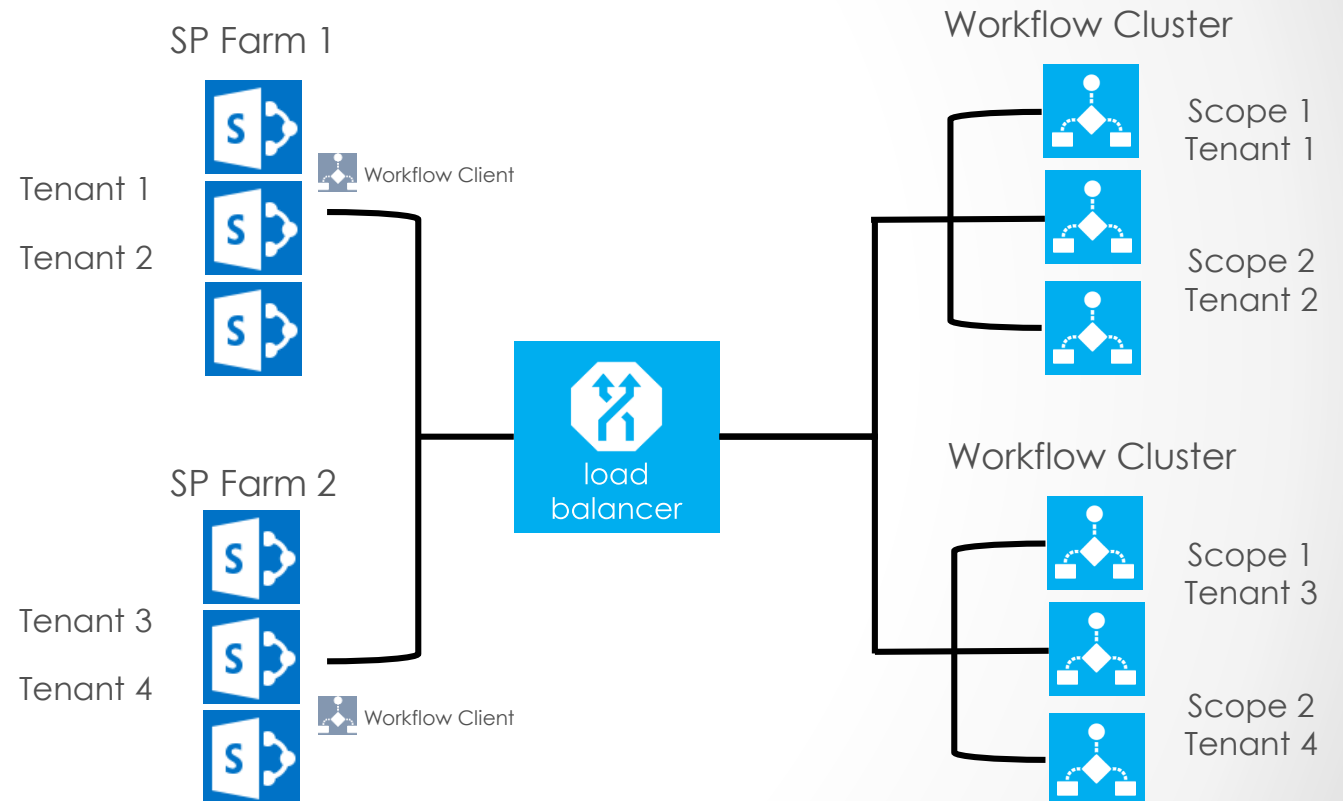
# Federated Farm Topology

- 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 tenant
- 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.»
    - [http://msdn.microsoft.com/en-us/library/windowsazure/jj193010\(v=azure.10\).aspx](http://msdn.microsoft.com/en-us/library/windowsazure/jj193010(v=azure.10).aspx)
- 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

## 🌀 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  $\leq$  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
  - <http://technet.microsoft.com/en-us/library/jj227177.aspx>
- Configure workflow in SharePoint Server 2013
  - <http://technet.microsoft.com/en-us/library/jj658586.aspx>
- 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
  - <http://blogs.technet.com/b/speschka/archive/2012/07/23/setting-up-an-oauth-trust-between-farms-in-sharepoint-2013.aspx>

# Q & A

