



# Scaling SharePoint Farms with MinRole & Other Tools

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#SPSMUC02 October 10<sup>th</sup>, 2015

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# About Spencer Harbar



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Now working mostly with Azure related technologies...  
...but there is no escape from SharePoint!

Technical Director for Fidra Consulting  
Works with Microsoft's largest enterprise customers  
Works with Microsoft Product Groups on product spec and review  
    SharePoint, Azure AD, MIM, PowerShell, Windows Server, RMS  
Works with SharePoint Product Group on Readiness  
Author for MSDN & TechNet



# Agenda

SharePoint Topology Conundrum

MinRole: What's the pitch?

MinRole: What's the reality?

Demonstration



# SharePoint Topology

# SharePoint Topology

Topology is the physical architecture of a farm

Which service(s) run on which server(s)

It would be simple if there was one type of service,  
and a common implementation pattern

But it *\*is\** SharePoint we are talking about... 😊

# Fundamental Truths

SharePoint (any version) is not designed “from the cloud up”

It’s a legacy “Windows DNA” based platform using elements of every Microsoft technology since 1998

Wrappers and patches make it cloud deployable

You can’t put a square peg in a round hole without consequences

# SharePoint Topology Conundrum

Not all "Service Instances" are created equal

Not all "Service Applications" are created equal

Logical decomposition of the product is not feasible

Legacy services

Unmanaged services

As the product grew... Topology became hard



# SharePoint Topology Field Reality

“Best practices” are a myth and even the ones that exist are not applicable to all deployments

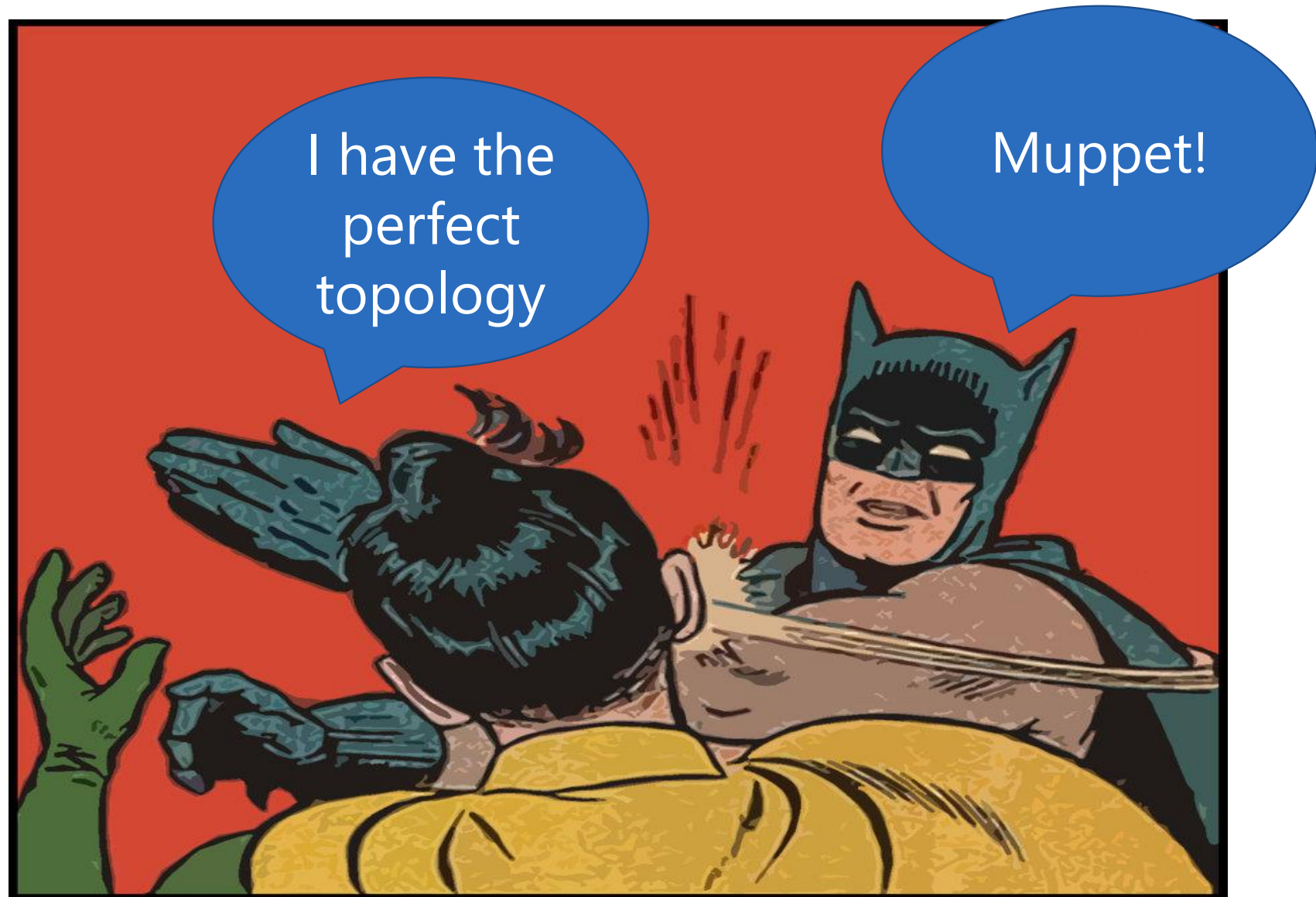
Poor, unpractical guidance and “models” are everywhere

Virtually all health checks (RAP etc) include significant topology flaws for the deployment

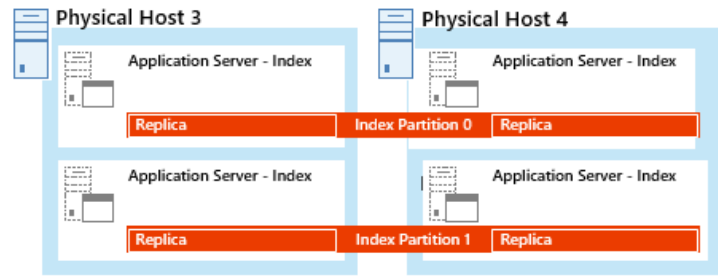
SharePoint Farms almost always require flexibility

“Architects” consuming too much kool aid, or increasing complexity for the sake of it

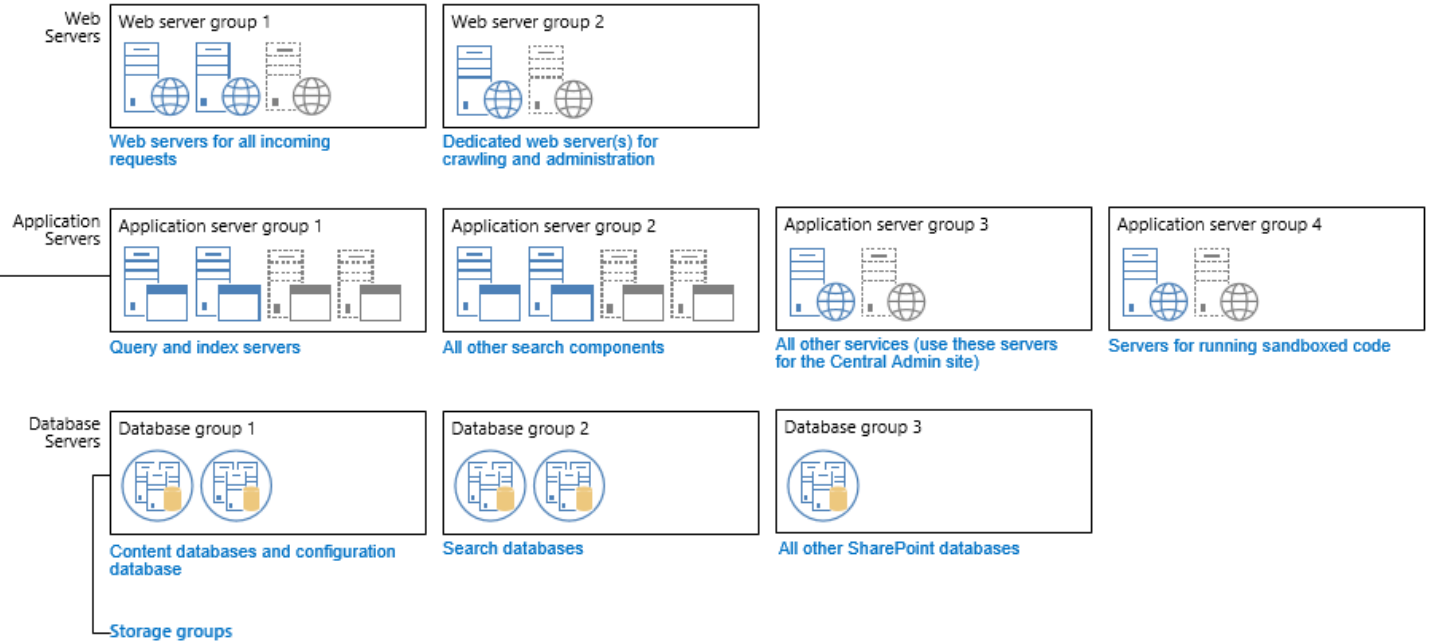
# SharePoint Topology Conundrum



# Marketecture



When scaling out search, typically one index partition is spread across two servers or VMs. In this configuration, a server or VM hosts only one index replica. Index replicas for the same partition must run on separate physical hosts (whether virtualized or not) to achieve fault tolerance. In SharePoint 2013, more index components are required than query processing components.



# Marketeecture

Distributed Cache and Request Management



Front end



Batch processing



Databases



Dedicated search servers



Query



Crawl



Search  
databases

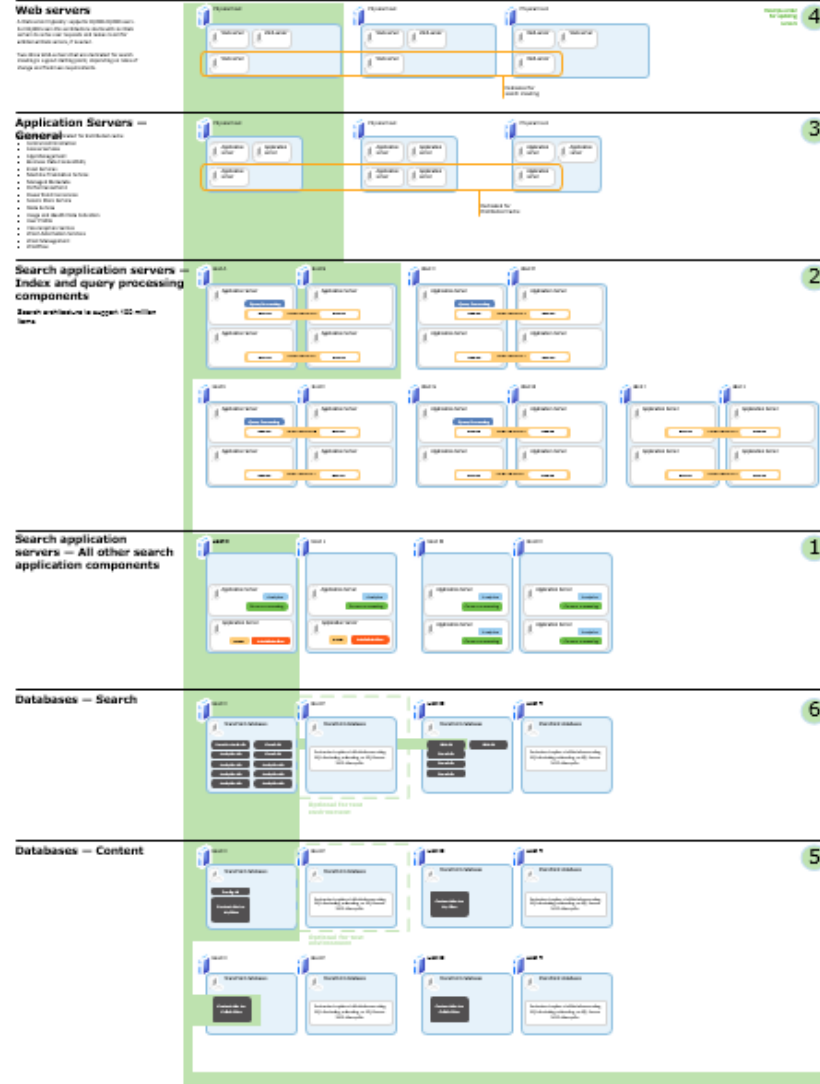
Specialized workloads



# Marketecture

## EXAMPLE ENTERPRISE-SCALE FARM

The architecture represented in this model is an example enterprise-scale farm based on an architecture with 100,000 users and 100 million search items. This architecture can be used as a reference point for planning an enterprise-scale farm. Individual needs of servers and components depends on many variables such as usage, services, size of the company, rates of change and business requirements for search relevancy, and many others.



# SharePoint Topology Conundrum

Strangely enough...

...there's more to deploying and operating a decent farm than drawing boxes on a whiteboard 😊

(waving of hands sometimes helps, but not much)



MinRole

# MinRole: The Pitch

## Simplified Deployment:

You don't need to worry about which services run where

## Improved Performance and Reliability:

services have been optimized for the MinRole topology reduce network latency and increase reliability

## Simpler capacity planning and farm scalability:

"unit of scale" deployment

leverage better predictable and prescriptive capacity planning guidance

# MinRole: The Reality

Codified guidance into implementation

Service instance provisioning

Minor changes in other areas - topology service, timer jobs

# Feature walk thru

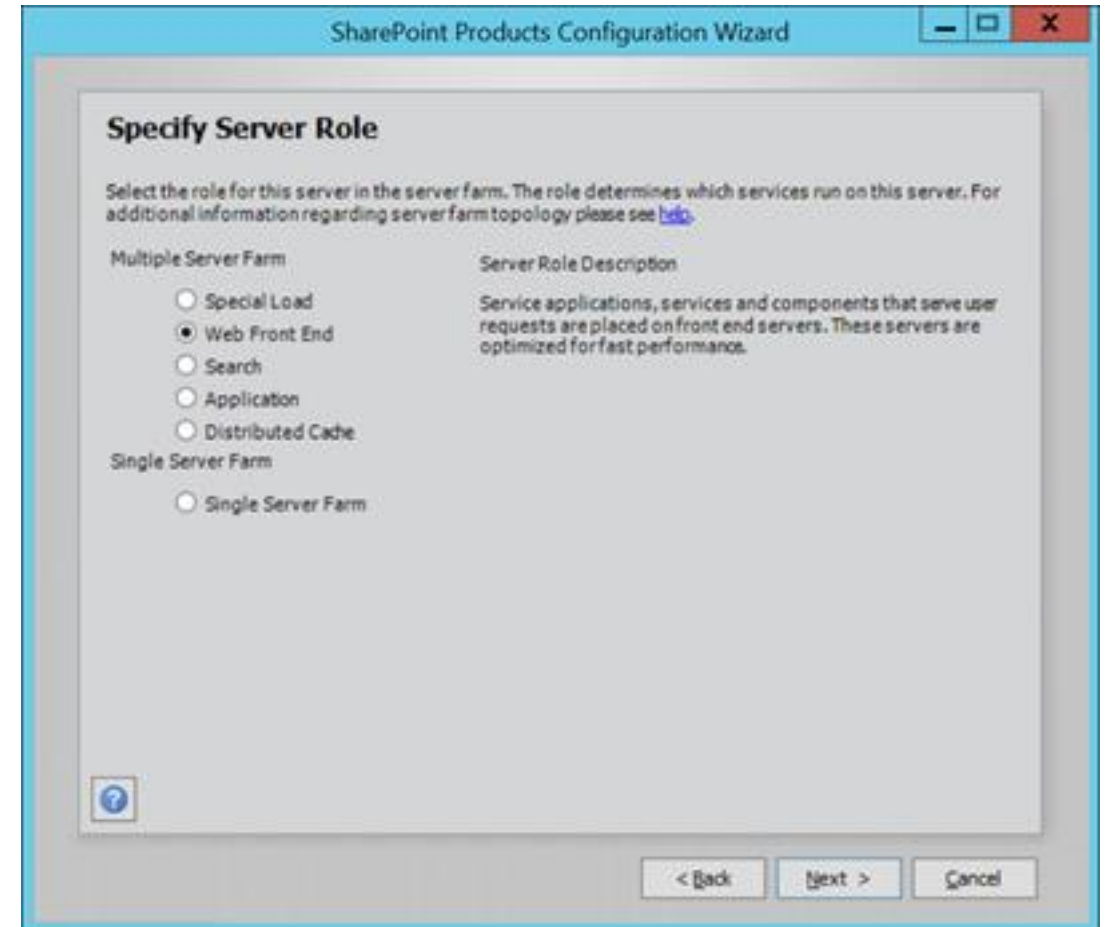
Role Name	Description
<b>Custom</b>	Reserved for services to be isolated from other services, I.e. 3rd party, PerformancePoint, etc.
<b>Web Front End</b>	Services end user requests, optimized for low latency.
<b>Single Server Farm</b>	Provisions all services on the server for a single server deployment. This role is provided for evaluation and development purposes.
<b>Search</b>	Reserved for Search services.
<b>Application</b>	Services the backend jobs or the requests triggered by backend jobs, optimized for high throughput.
<b>Distributed Cache</b>	Services distributed cache for the farm. Optionally, the server assigned to this role can load balance end user requests among the web front ends.

Note: These roles are NOT yet fixed, and neither are the service instances they deploy

# Adding Servers to the Farm

New-SPConfigurationDatabase ....

-localserverrole WebFrontEnd



# MinRole Capability

Manage "AutoProvision" of service instances when Service Applications are created/deleted

Health Rule ensure "compliance"

Updated CA UI for managing MinRole Aspects

Additional PowerShell cmdlets



# Feature walkthrough

Server	SharePoint Products Installed	Role	In Compliance	Services Running	Status	Remove Server
FABSMTP1		External		Not Configured	No Action Required	<a href="#">Remove Server</a>
FABSP01	Microsoft SharePoint Server 2016 Preview	Distributed Cache	✓ Yes	Central Administration Claims to Windows Token Service Distributed Cache Microsoft SharePoint Foundation Web Application	No Action Required	<a href="#">Remove Server</a>
FABSP02	Microsoft SharePoint Server 2016 Preview	Distributed Cache	✓ Yes	Central Administration Claims to Windows Token Service Distributed Cache Microsoft SharePoint Foundation Web Application	No Action Required	<a href="#">Remove Server</a>
FABSP03	Microsoft SharePoint Server 2016 Preview	Front-end	✓ Yes	Access Services App Management Service Business Data Connectivity Service Central Administration Claims to Windows Token Service Machine Translation Service Managed Metadata Web Service Microsoft SharePoint Foundation Subscription Settings Service Microsoft SharePoint Foundation Web Application Secure Store Service User Profile Service Visio Graphics Service	No Action Required	<a href="#">Remove Server</a>
FABSP04	Microsoft SharePoint Server 2016 Preview	Front-end	✓ Yes	Access Services App Management Service Business Data Connectivity Service Central Administration Claims to Windows Token Service Machine Translation Service Managed Metadata Web Service Microsoft SharePoint Foundation Subscription Settings Service Microsoft SharePoint Foundation Web Application Secure Store Service User Profile Service Visio Graphics Service	No Action Required	<a href="#">Remove Server</a>

# Feature walkthrough

View: [Configurable](#) ▾

Service	Auto Provision	Action	In Compliance
Access Services	Yes	<a href="#">Manage Service Application</a>	✓ Yes
Access Services 2010	No	<a href="#">Manage Service Application</a>	✓ Yes
App Management Service	Yes	<a href="#">Manage Service Application</a>	✓ Yes
Business Data Connectivity Service	Yes	<a href="#">Manage Service Application</a>	✓ Yes
Claims to Windows Token Service	Yes	<a href="#">Disable Auto Provision</a>	✓ Yes
Distributed Cache	Yes	<a href="#">Disable Auto Provision</a>	✓ Yes
Document Conversions Launcher Service	No	<a href="#">Enable Auto Provision</a>	✓ Yes
Document Conversions Load Balancer Service	No	<a href="#">Enable Auto Provision</a>	✓ Yes
Lotus Notes Connector	No	<a href="#">Manage Service Application</a>	✓ Yes
Machine Translation Service	Yes	<a href="#">Manage Service Application</a>	✓ Yes
Managed Metadata Web Service	Yes	<a href="#">Manage Service Application</a>	✓ Yes
Microsoft SharePoint Foundation Sandboxed Code Service	No	<a href="#">Enable Auto Provision</a>	✓ Yes
Microsoft SharePoint Foundation Subscription Settings Service	Yes	<a href="#">Manage Service Application</a>	✓ Yes
Microsoft SharePoint Foundation Workflow Timer Service	Yes	<a href="#">Disable Auto Provision</a>	✓ Yes
<a href="#">Microsoft SharePoint Insights</a>	No	<a href="#">Enable Auto Provision</a>	✓ Yes

# Feature walkthrough

Server: <a href="#">FABSP03</a>   Role: Front-end   View: <a href="#">Configurable</a>			
Service	Status	In Compliance	Action
Access Database Service 2010	Stopped	✓ Yes	
Access Services	Started	✓ Yes	<a href="#">Restart</a>
App Management Service	Started	✓ Yes	<a href="#">Restart</a>
Business Data Connectivity Service	Started	✓ Yes	<a href="#">Restart</a>
Claims to Windows Token Service	Started	✓ Yes	<a href="#">Restart</a>
<a href="#">Document Conversions Launcher Service</a>	Stopped	✓ Yes	
<a href="#">Document Conversions Load Balancer Service</a>	Stopped	✓ Yes	
Lotus Notes Connector	Stopped	✓ Yes	
Machine Translation Service	Started	✓ Yes	<a href="#">Restart</a>
Managed Metadata Web Service	Started	✓ Yes	<a href="#">Restart</a>
Microsoft SharePoint Foundation Sandboxed Code Service	Stopped	✓ Yes	
Microsoft SharePoint Foundation Subscription Settings Service	Started	✓ Yes	<a href="#">Restart</a>
<a href="#">Microsoft SharePoint Foundation Workflow Timer Service</a>	Stopped	✓ Yes	
Microsoft SharePoint Insights	Stopped	✓ Yes	

# Feature walkthrough

## Role Conversion

Server	Current Role	New Role
FABSP01	Distributed Cache	<div>Application Front-end Distributed Cache Search Custom Custom</div>
FABSP02	Distributed Cache	
FABSP03	Front-end	
FABSP04	Front-end	Front-end ▼
FABSP05	Application	Application ▼
FABSP06	Application	Application ▼
FABSP07	Search	Search ▼
FABSP08	Search	Search ▼
FABSP09	Search	Search ▼
FABSP10	Search	Search ▼

Apply

Cancel

# demo

SharePoint Server 2016 MinRole

# Key benefits

We no longer have to worry about deploying service instances

Minor improvements to latency and performance

“Unit of Scale” deployment



# Key drawbacks

Is a pseudo-SharePoint Online appropriate for on premises deployments?

Number of machines required in the farm

Not flexible enough for on premises deployment (at present)

A number of deployment gotchas

Significant change in deployment scripts

# Other tools

Load Balancing (NLB, ARR, "Hardware")

Request Management (hopefully not)

Virtual Machine technologies

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