Multi-Tenancy in SharePoint 2010

DD105

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About Spencer

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- General SharePoint Dogsbody
- Microsoft Certified Master | SharePoint 2007
- Microsoft Certified Master | SharePoint Instructor & Author
- Most Valuable Professional | SharePoint Server
- SharePoint Patterns & Practices Advisory Board Member
- 16 years in Enterprise IT
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- Enterprise Architect working with Microsoft's largest customers deploying SharePoint Server.
- Works with SharePoint Product Group on 2010 Readiness
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Agenda

▶ Problem Space

▶ Multi-Tenancy in SharePoint 2010

- Member Sites, Site Subscriptions, Service Applications, Feature Packs, Administration

▶ Demonstrations:

- Configuring Core Multi-Tenancy
- Configuring Partitioned Service Applications
- Configuring Feature Sets

▶ Recommendations

▶ What is Multi-Tenancy?

PROBLEM SPACE

Definition of Multi-Tenancy

▶ Isolation of data, operational services and management

Data	• Partitioning, Physical Location
Usage	• Functionality, services and service data exposed to users
Administration	• Sites and Data, Services and Customisations
Customisations	• Ensuring that Customer A's customisation is not shown to Customer B
Operations	• Reporting, Auditing, Chargeback

What is Multi-Tenancy?

▶ Hosting! ☺

▶ A unique deployment for each customer on a shared set of resources

▶ Scenarios include:
  - "Traditional" Web Hosting Environments
  - SharePoint Online
  - Corporate On Premise Deployments

What is Multi-Tenancy?

▶ Flat/Apartment Building analogy

- Multiple tenants share same infrastructure (the building, the doors)

- Some services are shared but have no data (entry phone, refuse collection)

- Some services are shared (electricity, phone) but data is partitioned (meter readings, billing)

- Some shared services are a free for all (car parking)

Multi-Tenancy in SharePoint 2007

▶ Web Application limitations

▶ Site collections poor for isolation & management

▶ URL Namespace issues

▶ Shared Service Providers

- No true delegated administration
- No data isolation

▶ Customisation challenges

# Goals for SharePoint 2010

► Make hosting a first class citizen in SharePoint

► Deliver features to make the operational service management of SharePoint easier for one or more divisions, organisations, or companies

- Less hardware
- More centralised control over hardware and data storage
- Simplified management and scripting capability
- Support "chargeback"
- Auditing and Reporting
- Block setup of rouge deployments

► Architecture and Features

# MULTI-TENANCY IN SHAREPOINT 2010

Simple Scenario
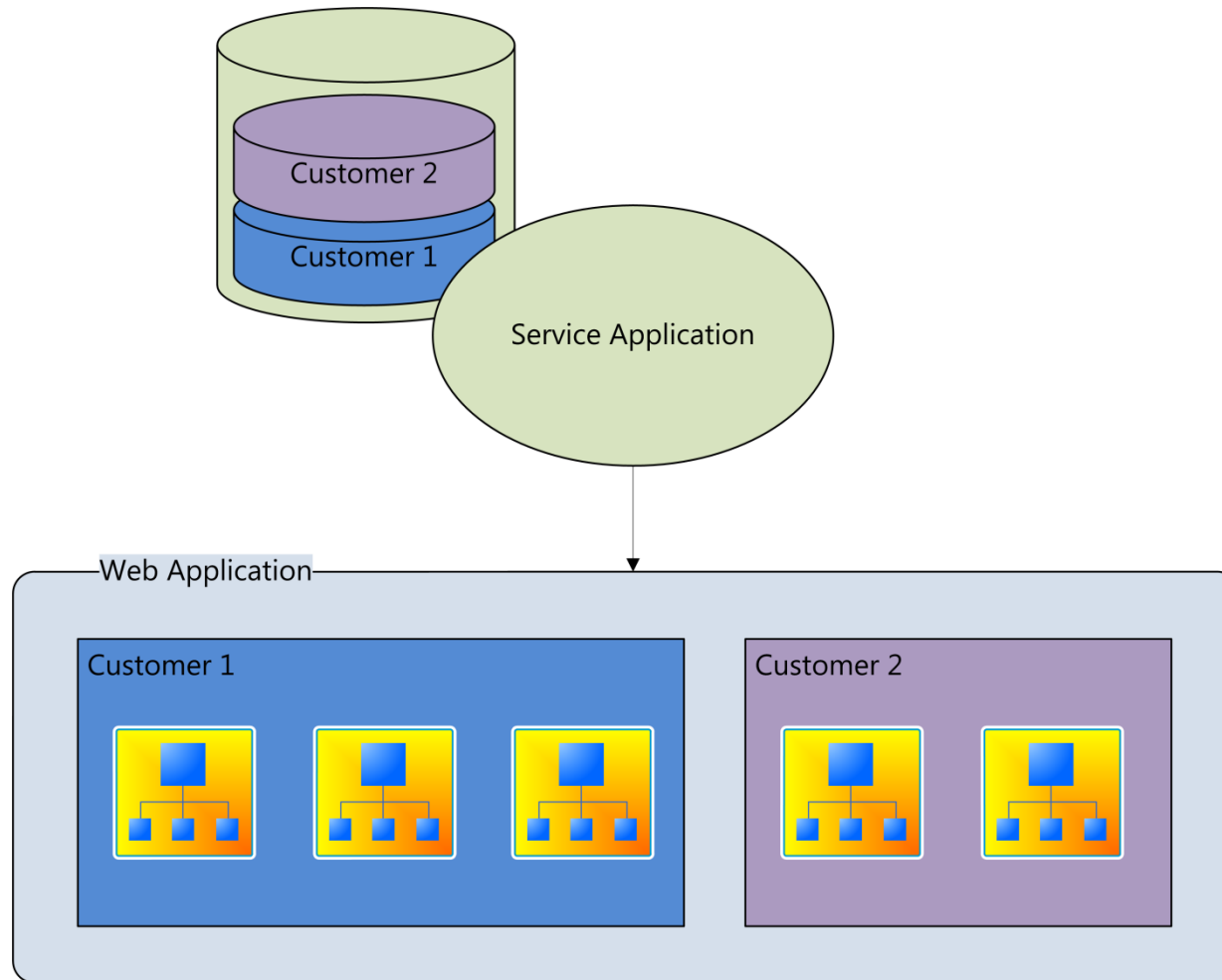
Member Site Options

▶ Each tenant gets their own Web Application

- **Pros**: independent web.config, delegated admin, process isolation
- **Cons**: overhead, difficult to scale

▶ Each tenant gets one or more Site Collections in the same Web Application

- Sites are grouped together via Site Subscriptions
- **Pros**: scalability
- **Cons**: shared web.config

Host Header Site Collections

▶ Multiple root-level Site Collections within a Web Application.

- Allows for "vanity" domain names
- Allows for "mix 'n' match" URL namespaces

▶ Host Header Site Collections now support

- Managed Paths
  companyA.com, companyB.com,
  companyA.com/sites/hr, companyA.com/hr

- SSL Termination
  Browser ⇔ Load Balancer (SSL)
  Load Balancer ⇔ SharePoint (HTTP)

Hybrid Hosting Approach
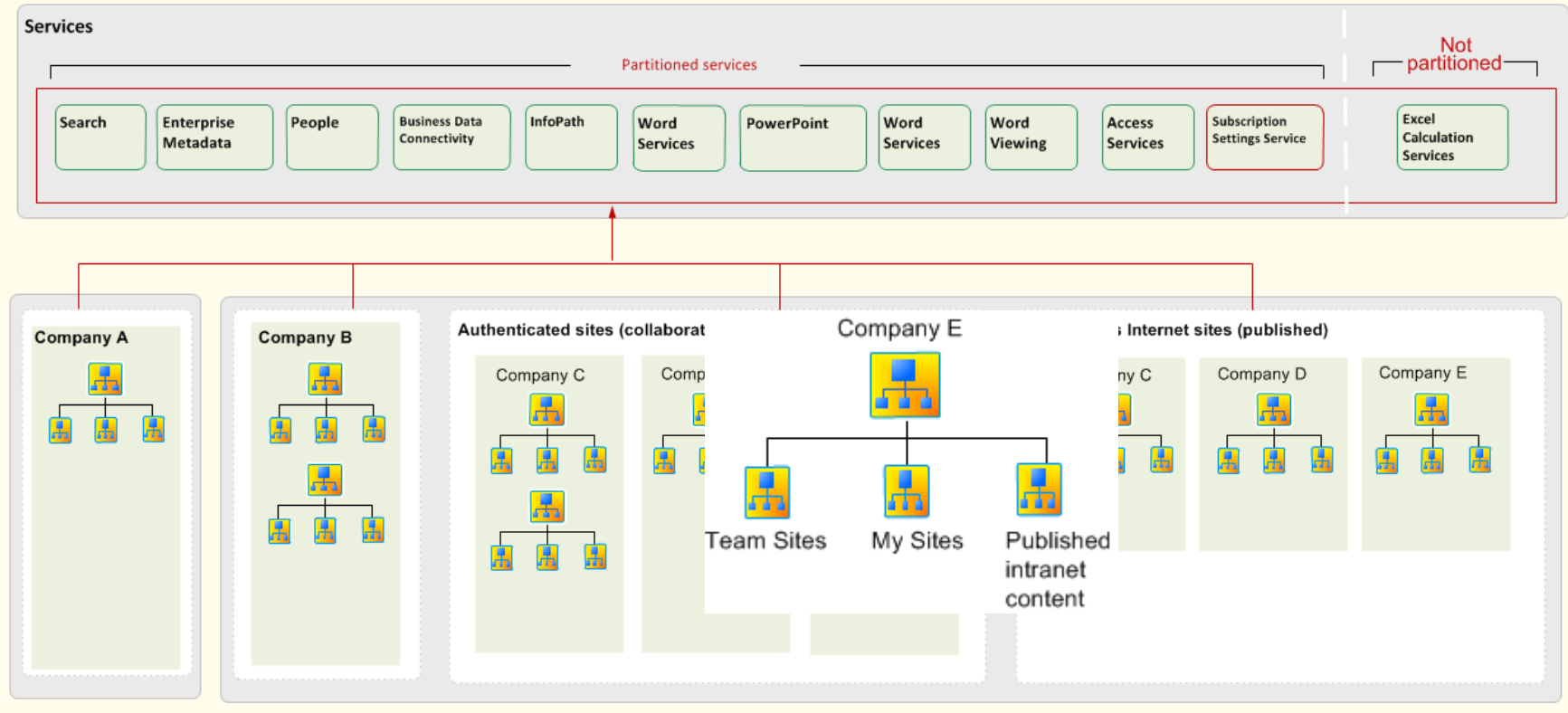
Site Subscriptions

Site Subscription
- logical grouping of site collections that can share settings, features and service data

Subscription ID
- groups site collections for each tenant
- maps features, services and sites to tenants
- partitions service data

Subscription Settings Service
- keeps track of multi-tenant services and subscription IDs

Site Subscriptions

▶ Essentially just a unique ID (a GUID) that identifies a Subscription

▶ Created via PowerShell / Object Model only

▶ Once a Subscription is created, Sites can be added to that subscription

▶ Once a Site is added to a Subscription, it cannot be changed

▶ Sites within the same Subscription can then be managed from a common Site (Tenant Admin)

▶ Sites in the same Subscription can span Web Applications

  ▪ Recommended to keep them together

Service Application Partitioning

► Service Applications can be configured to partition data

- Use the same instance to serve multiple tenants

► Both the Service Application and Service Connection (Proxy) must be configured

► Configured via PowerShell / Object Model only

- -PartitionMode
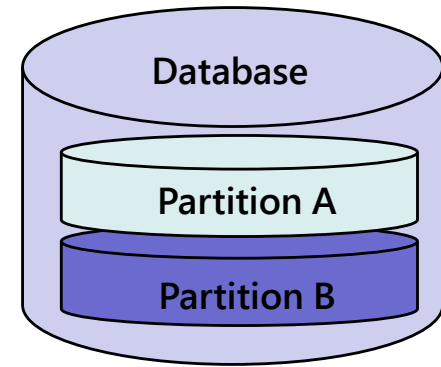
Service Application Partitioning

▶ Cannot be changed after deployment
- Can't go from un-partitioned to partitioned
- Don't use Farm Configuration Wizard!

▶ Tenant specific Service Application and Proxy Properties
- No longer appear in Central Admin UI

▶ Services that do not store tenant data do not need to be partitioned
- External Hosting: Partition anyway for reporting/diagnostics

Service Applications

Store tenant data

- User Profiles
- Managed Metadata
- Business Data Connectivity
- Search
- Secure Store
- Web Analytics
- Usage and Health Data Collection
- Project
- Subscription Settings

Do not store tenant data

- Access
- Visio Graphics
- Word Conversions
- Word Viewing
- PowerPoint

Cannot be partitioned

- Excel Calculation
- FAST for SharePoint

Feature Packs (a.k.a. Sets)

▶ Groups of Site & Web scoped features

▶ Enabled by Farm Administrators

▶ Configured via PowerShell / Object Model only

▶ Site Templates that depend on features that are not activated for a tenant are not exposed

▶ Site templates filter non-dependent features that are not activated

Custom Feature Packs

▶ Useful for Different SLAs

- Charge more for cool stuff!
- Lock down suspicious tenants!
- Evaluation of dodgy ISV solutions ☺

▶ Feature Packs corresponding to SKUs

- Available at RTM +30
- Allows hosting of multiple licensing standards on the same servers

Tenant Administration

▶ Tenant Administrators
  - can manage configuration of administrator-delegated features
  - can manage all Sites for their Subscription from one place

▶ "Tenant Administration" hidden Site Template
  - Extensible just like Central Administration

▶ Self Service Site Creation
  - Required to create new Sites from Tenant Administration Site
  - Web Application scoped!

Administration Roles Example

Role	Description
Hosting company (Farm administrator)	• Manages the farm level settings and hardware • Controls database configurations • Installs all new approved features and solutions • Can brand the Tenant Administrator Site
Hosted company administrator (Tenant administrator)	• Purchases space, features and bandwidth from hosting company • Controls the architecture of customer sites but not the content • Configures per-tenant settings • Reviews usage statistics
Hosted company (Site administrator)	• Owns site collections • Configures site settings that are exposed by features and services • Reviews usage statistics

Customisations

▶ Fully trusted code

- Same challenges as in SharePoint 2007

▶ Sandbox Solutions (Partially trusted code)

- Site Collection administrators can deploy code

- Runs in isolation, and on specific servers

- Flexible resource controls

- Server will not go down due to defective custom code

► How to set it up

CONFIGURING CORE MULTI-TENANCY

Configuring Multi-Tenancy

Create the Subscription Settings SA & Proxy

↓

Create new Site Subscription(s)

↓

Create Tenant Admin Site(s)
associated with a Site Subscription

↓

Create Member Sites(s)
associated with a Site Subscription

↓

(Optional) Enable Self Service Site Creation

Create Subscription Settings SA

http://gallery.technet.microsoft.com/ScriptCenter/en-us/c6598b84-1a58-4d55-ab41-fe7608cb343c

```
Get-SPServiceInstance | where{$_.GetType().Name -eq "SPSubscriptionSettingsServiceInstance"} |
        Start-SPServiceInstance

$acc = Get-SPManagedAccount  "sharepoint\spservices"
$appPool = New-SPServiceApplicationPool -Name SettingsServiceAppPool -Account $acc

$app = New-SPSubscriptionSettingsServiceApplication -ApplicationPool $appPool
        -Name SettingsServiceApp -DatabaseName SettingsServiceDB

$proxy = New-SPSubscriptionSettingsServiceApplicationProxy -ServiceApplication $app
```

Managed Metadata Web Service	Stopped	Start
Microsoft SharePoint Foundation Incoming E-Mail	Started	Stop
Microsoft SharePoint Foundation Sandboxed Code Service	Stopped	Start
Microsoft SharePoint Foundation Subscription Settings Service	Started	Stop
Microsoft SharePoint Foundation Web Application	Started	Stop

Application Discovery and Load Balancer Service Application	Application Discovery and Load Balancer Service Application	Started
Application Discovery and Load Balancer Service Application Proxy_52448ff5-075e-42f6-af30-f125f0a7cf29	Application Discovery and Load Balancer Service Application Proxy	Started
Security Token Service Application	Security Token Service Application	Started
SettingsServiceApp	Microsoft SharePoint Foundation Subscription Settings Service Application	Started
Microsoft SharePoint Foundation Subscription Settings Service Application Proxy	Microsoft SharePoint Foundation Subscription Settings Service Application Proxy	Started
User Profile Service Application	User Profile Service Application	Started
User Profile Service Application	User Profile Service Application Proxy	Started

Create new Site Subscription

http://gallery.technet.microsoft.com/ScriptCenter/en-us/6b012e44-4262-4446-9112-a8b3133c4654

```
$sub = New-SPSiteSubscription
```
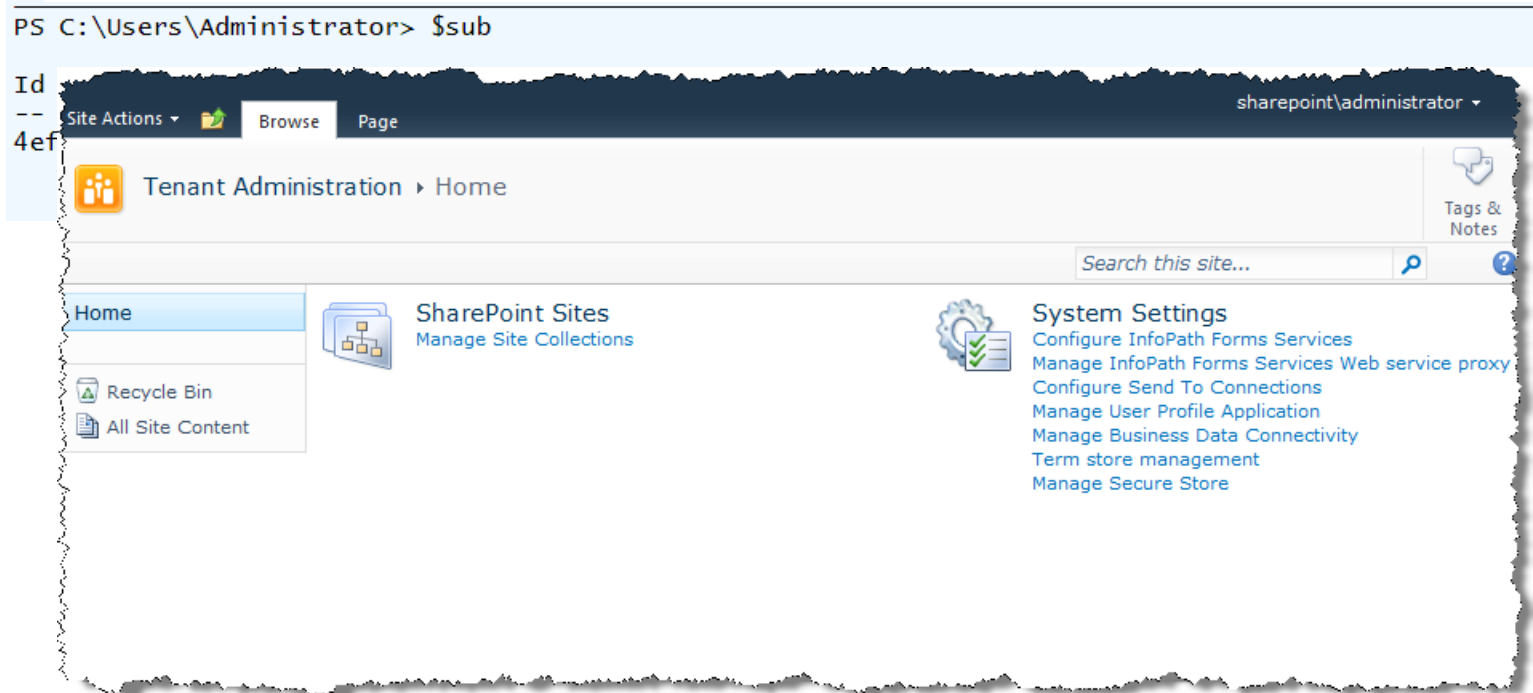
```
PS C:\Users\Administrator> $sub

Id                                      Sites
--                                      -----
4efd2ef1-92f8-446f-acef-e2a7dd66ff2f    {}
```

Create Tenant Admin Site

http://gallery.technet.microsoft.com/ScriptCenter/en-us/6b012e44-4262-4446-9112-a8b3133c4654

```
New-SPSite -url http://sp2010/tenantadmin -owneralias sharepoint\administrator
      -owneremail noone@nowhere.com -template tenantadmin#0
      -SiteSubscription $sub -AdministrationSiteType TenantAdministration
```
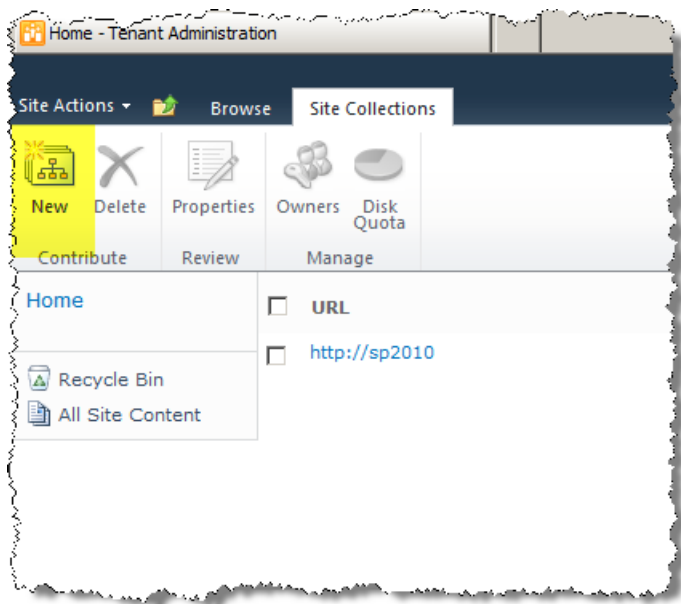
Create Member Site

http://gallery.technet.microsoft.com/ScriptCenter/en-us/6b012e44-4262-4446-9112-a8b3133c4654

```
New-SPSite -url http://sp2010 -owneralias sharepoint\administrator
        -owneremail noone@nowhere.com -template sts#0 -SiteSubcription $sub
```

Requires Self Service Site Creation on Web Application

Create Partitioned Managed Metadata Service App

http://gallery.technet.microsoft.com/ScriptCenter/en-us/3e392a08-b7d9-4664-8c4d-749d50572039

```powershell
Get-SPServiceInstance | where{$_.GetType().Name -eq "MetadataWebServiceInstance"} |
          Start-SPServiceInstance

$pool = Get-SPServiceApplicationPool -Identity 'SharePoint Web Services Default'

$meta = New-SPMetadataServiceApplication -ApplicationPool $pool
          -Name 'Tenant Managed Metadata' -DatabaseName TenantMetadataDB
          -DatabaseServer sp2010 -PartitionMode

$proxy = New-SPMetadataServiceApplicationProxy -PartitionMode
          -ContentTypePushdownEnabled -DefaultKeywordTaxonomy
          -DefaultSiteCollectionTaxonomy -Name 'Tenant Managed Metadata Proxy'
          -DefaultProxyGroup -ServiceApplication $meta

Set-SPSiteSubscriptionMetadataConfig -identity $sub -serviceProxy $proxy
          -hubUri 'http://mdhub'
```

Demo

Multi-Tenancy in SharePoint Server 2010

PARTITIONED SERVICE APPLICATIONS

► Multi-Tenancy in SharePoint Server 2010

CREATING FEATURE PACKS

Create Feature Pack

http://gallery.technet.microsoft.com/ScriptCenter/en-us/d32274d0-e19c-4553-8556-3938671c95d9

```powershell
$sub = Get-SPSiteSubscription -identity 106ccd5a-0181-4363-8d3f-a24bbee7b7cd

$pack = New-SPSiteSubscriptionFeaturePack

Add-SPSiteSubscriptionFeaturePackMember -identity $pack
            -FeatureDefinition eaf6a128-0482-4f71-9a2f-b1c650680e77

$mgr = [Microsoft.SharePoint.SPSiteSubscriptionSettingsManager]::Local
$mgr.AssignFeaturePackToSiteSubscription($pack, $sub)
```

```
FeatureDefinitions                                       Id
------------------                                       --
{FeatureDefinition/eaf6a128-0482-4f71-9a2f-b1c650680e77}  99e6eda5-74e5-4e6d-92ee-8f9d5a93659d
```

Demo

Multi-Tenancy in SharePoint Server 2010

FEATURE PACKS

▶ That's all folks!

WRAP UP

Recommendations

▶ Information Architecture design remains paramount
- Use Host Header Site Collections
  - Allows for "mix 'n' match" URL namespaces
- Don't have Subscribers cross Web Applications
  - Easiest to maintain and operate
  - Avoids security FUD

▶ For external hosting, Partition Service Applications even if they don't store data

▶ Use Claims Authentication
- Support local authentication to cloud resources

▶ SharePoint ISVs: Provide Feature Packs

Summary

▶ Hosting is now a first class citizen in SharePoint ☺

▶ Useful both in On Premise and Classic Hosting deployments

▶ Learn PowerShell, learn to love GUIDs!!

Thank you for attending!

Patrick, we miss you