

Adding

Productivity
Profitability
Simplicity
Creativity

to

Datability

IaaS Usage Metering & Reporting mit SC 2012 R2 & WAP

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FRITZ & MACZIOL group

MVP – System Center Cloud and Datacenter Management



Welche Produkte benötigt man?

System Center 2012 R2:

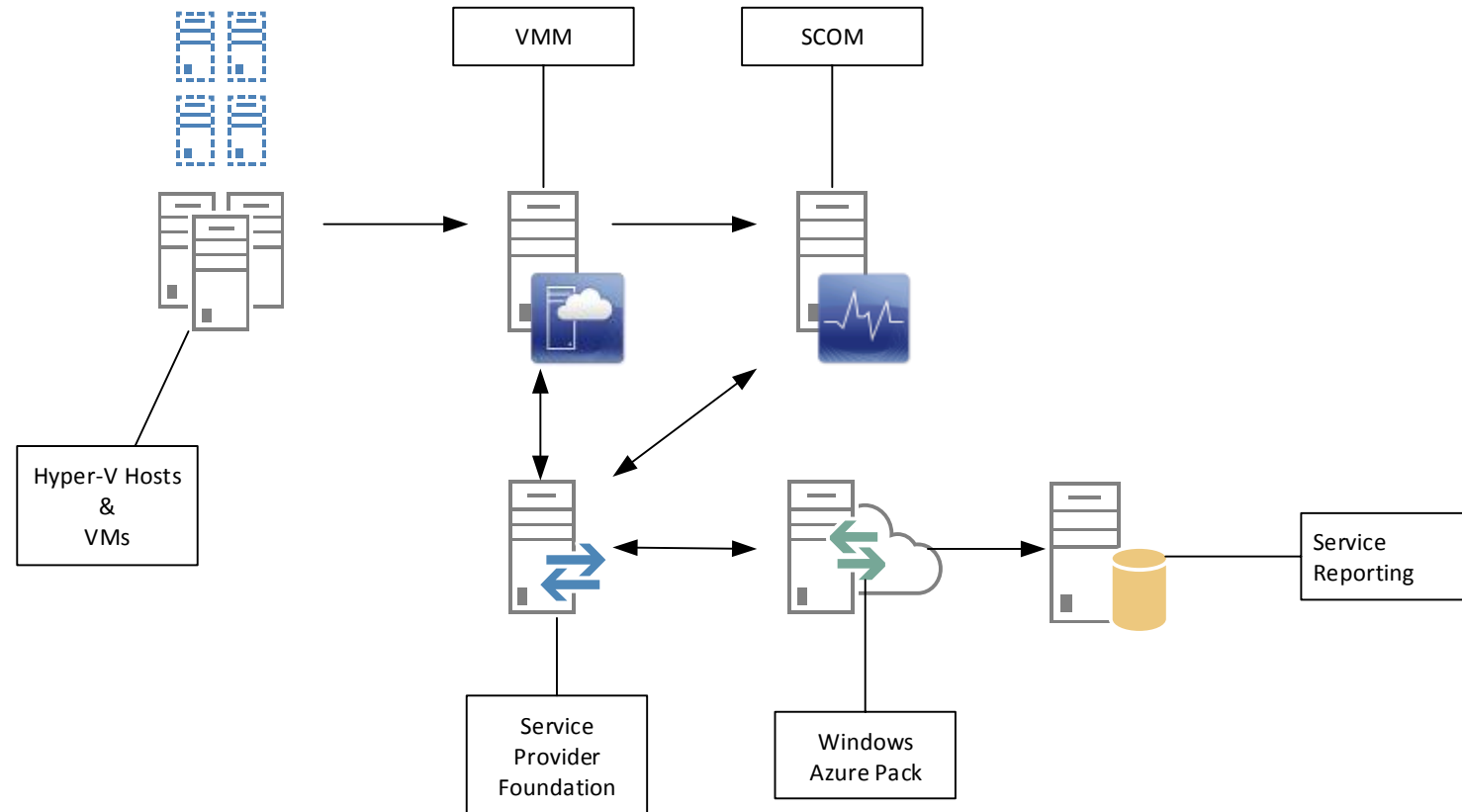
- Virtual Machine Manager
- Operations Manager
- Service Provider Foundation
- Service Reporting

Windows Azure Pack

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Übersicht – Interaktion



1. Virtual Machine Manager

- Sammelt Daten der verwalteten VMs und Hyper-V Hosts (CPU, RAM, Storage, Netzwerk, Start & Stop)
- Daten werden 1 Monat in der VMM DB gespeichert
- Sendet die Daten an den Operations Manager

2. Operations Manager

- Speichert die Daten des VMM im Operations Manager Data Warehouse
- Daten werden 1 Jahr lang im Data Warehouse gespeichert
- Daten stehen zum Abruf für die Service Provider Foundation zur Verfügung

Verbindung VMM <-> SCOM:

1. SCOM Konsole & Agent auf dem VMM
2. SCOM Agent auf Hyper-V Hosts
3. Dedizierte Services Accounts für VMM & SCOM
 - DOMAIN\vmm und DOMAIN\scom
 - DOMAIN\scom muss Mitglied der Gruppe Operations Manager Administrators sein
 - DOMAIN\vmm muss Mitglied der VMM Administratorrolle sein
4. Konfiguration der Verbindung per VMM Konsole

Verbindung VMM <-> SCOM:

The screenshot shows the Virtual Machine Manager (VMM) console interface. The title bar reads "Administrator - SRV-1.neumannndaniel.local - Virtual Machine Manager". The main window is divided into several sections:

- Home ribbon:** Contains buttons for "Create User Role", "Create Run As Account", "Create Servicing Window", "Import Console Add-in", "Backup", "PowerShell Jobs PRO", "Refresh", "Remove", and "Properties".
- Settings pane (left):** Lists various configuration categories such as General, Security (User Roles, Run As Accounts), Servicing Windows, Configuration Providers, System Center Settings, Console Add-ins, Hyper-V Recovery Manager, VMs and Services, and Fabric.
- Settings (1) pane (right):** Shows the configuration for an "Operations Manager Server". The "Connection Details" tab is active, displaying:
 - Connection Status: OK (with a green checkmark icon)
 - Error details: (empty text area)
 - Operations Manager management server: SRV-2.neumannndaniel.local
 - Operations Manager management group: Datacenter
 - Connection Settings:**
 - Enable the connection to Operations Manager
 - Enable Performance and Resource Optimization (PRO)
 - Enable Maintenance Mode Integration with Operations Manager

Verbindung VMM <-> SCOM:

Name der virtuellen Maschine	Host name	Durchschnittliche CPU-Auslastung	Max. CPU-Auslastung	RAM gesamt	Durchschnittliche Arbeitsspeicherauslastung	Gesamtgröße virtuelle Festplatte
<u>DC-1.neumanndaniel.local</u>	hv-01.neumanndaniel.local	0,61%	26%	2048 MB	103,85%	305,01 GB
<u>SRV-1.neumanndaniel.local</u>	hv-01.neumanndaniel.local	2,84%	28%	6144 MB	100%	120,23 GB
<u>Test-NVGRE</u>	hv-01.neumanndaniel.local	0%	0%	2048 MB	100%	10,12 GB
<u>SRV-4.neumanndaniel.local</u>	hv-01.neumanndaniel.local	0,81%	18%	4096 MB	100%	678,33 GB
<u>SRV-2.neumanndaniel.local</u>	hv-01.neumanndaniel.local	8,18%	44%	8192 MB	99,74%	80,01 GB
<u>SRV-5.neumanndaniel.local</u>	hv-01.neumanndaniel.local	1,87%	84%	2048 MB	155,25%	24,76 GB
<u>DC-2.neumanndaniel.local</u>	HV-2.neumanndaniel.local	0,77%	8%	2048 MB	76,03%	305,01 GB
<u>SRV-3.neumanndaniel.local</u>	HV-2.neumanndaniel.local	0,51%	24%	2048 MB	100%	80,01 GB
<u>VMGW-1.neumanndaniel.local</u>	gwhv-1.neumanndaniel.local	6,03%	9%	2048 MB	100%	11,43 GB

3. Service Provider Foundation

- Nutzt für die Interaktion mit VMM & SCOM einen OData Web Service
- Aggregiert auf Anforderung die Daten aus dem SCOM Data Warehouse für Verrechnung und Analyse

Verbindung SCOM <-> SPF

1. Dedizierter Service Account für SPF

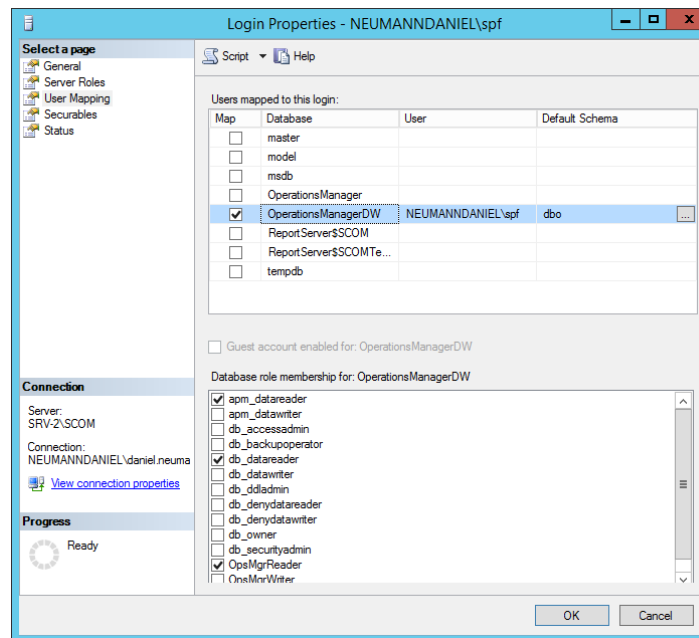
- Usage Application Pool Identity
- Mitglied in der lokalen Gruppe SPF_Usage
- Mitglied in der Gruppe der lokalen Administratoren auf dem SPF Server

2. Registrierung SPF mit SCOM Data Warehouse

```
import-module spfadmin
$OMDWSqlServer="SRV-2\SCOM"
$OMServer="SRV-2.neumannandaniel.local"
$Server=New-SCSPFServer -Name $OMServer -ServerType OMDW
$Setting = New-SCSPFSetting -Name $OMDWSqlServer -Value "Data Source=$OMDWSqlServer;Initial Catalog=OperationsManagerDW;Integrated Security=True"
-SettingType DatabaseConnectionString -Server $Server
```

Verbindung SCOM <-> SPF

3. SQL Login für DOMAIN\spf Account auf der SCOM Data Warehouse DB anlegen
 - User Mapping auf die OperationsManagerDW DB mit Benutzerrolle OpsMgrReader

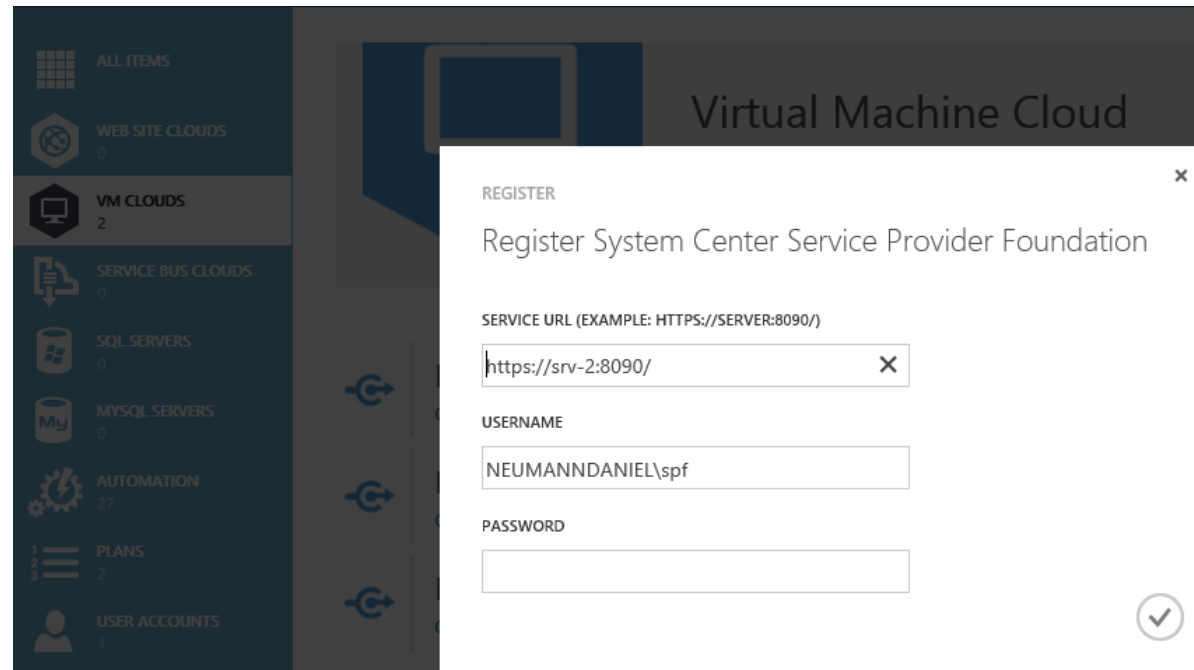


4. Windows Azure Pack

- Usage Service besteht aus 3 Komponenten
 - Usage Collector -> Triggert die SPF zum Abruf der Daten
 - Usage (REST API) -> Stellt den Zugriff auf die Daten zur Verfügung
 - Usage Database
- Daten werden 40 Tage lang in der DB gespeichert

Verbindung VMM <-> SPF & WAP

1. SPF Service Account DOMAIN\spf muss Mitglied der VMM Administratorrolle sein



Verbindung SPF <-> WAP

The screenshot shows the 'Virtual Machine Cloud' management console. On the left, a navigation pane lists various cloud services: ALL ITEMS, WEB SITE CLOUDS (0), VM CLOUDS (2), SERVICE BUS CLOUDS (0), SQL SERVERS (0), MYSQL SERVERS (0), AUTOMATION (27), PLANS (2), and USER ACCOUNTS (1). The main area displays a 'REGISTER' dialog box titled 'Register Service Provider Usage'. The dialog contains the following fields:

- SERVICE URL (EXAMPLE: HTTPS://SERVER:8090/USAGE/)**:
- USERNAME**:
- PASSWORD**:

The dialog also features a close button (X) in the top right and a confirmation button (checkmark) in the bottom right.

Verbindung SPF <-> WAP

100 %

Results Messages

	Id	RecordIndex	ResourceId	StartTimeTickCount	EndTimeTickCount	Service Type	SubscriptionId
1	263038A7-DE9D-498D-83F6-05B0A91C8E88	11243	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...
2	7C372042-0DF8-41AD-9553-23D77192077A	11244	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...
3	79A31D40-AE2D-4D93-A370-4DBF057D7901	11245	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...
4	BAB6A662-6E28-46EF-A681-56391F46EE70	11242	VM Utilization	635267592000000000	635267628000000000	VirtualMachine	75700CD5-893E-4F68-AD...
5	B169DCEC-95B7-4DF6-A3C1-584A8C711B90	11246	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...
6	E0842E07-3D6D-4E4D-9C2F-B1DA9C106E0D	11247	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...
7	8F902891-1A6F-4F6F-9F56-B2269E3DA138	11248	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...
8	F6BB7746-7A1A-486D-8BEC-C396CE77F347	11249	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...
9	7DA51FC9-C225-4687-8E8D-CA8FCA45850A	11250	VM Utilization	635267628000000000	635267664000000000	VirtualMachine	75700CD5-893E-4F68-AD...

Microsoft.MgmtSvc.Usage

Database Diagrams

Tables

System Tables

FileTables

Notification.Notification

Notification.Subscriber

usage.Configuration

usage.ProvidersConfig

usage.Records

usage.Version

UsageDiagnostics.Colle

UsageDiagnostics.Fron

UsageDiagnostics.Mair

UsageDiagnostics.Prov

	RecordId	ExternalRecordId	ResourceId	StartTime	EndTime	ResourceProviderId	Service Type	SubscriptionId
1	20740	10838	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
2	20741	10839	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
3	20742	10840	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	040FCA46-C4A7-4628-9E7C-202
4	20743	10841	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
5	20744	10842	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
6	20745	10843	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
7	20746	10844	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
8	20747	10845	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
9	20748	10846	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
10	20749	10847	VM Utilization	2013-12-23 08:00:00.000	2013-12-23 09:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
11	20750	10848	VM Utilization	2013-12-23 09:00:00.000	2013-12-23 10:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
12	20751	10849	VM Utilization	2013-12-23 09:00:00.000	2013-12-23 10:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50
13	20752	10850	VM Utilization	2013-12-23 09:00:00.000	2013-12-23 10:00:00.000	3	VirtualMachine	75700CD5-893E-4F68-ADA7-50

5. Service Reporting

- Inventarisierungs- und Verbrauchsübersicht
- Extrahiert & transformiert die Daten aus der WAP DB und lädt sie in die UsageAnalysis DB
- Daten können dann für den Chargeback verwendet werden

5. Service Reporting

- Wie lange werden die Daten gespeichert?
 - Datensätze stündlich -> 90 Tage
 - Datensätze täglich -> 3 Jahre
 - Datensätze monatlich -> Unendlich

Verbindung WAP <-> SR

1. SQL Services müssen unter einem Domänenaccount laufen
 - SQL Server
 - SQL Analysis Services
 - SQL Server Agent
 - SQL Server Integration Services
2. Dieser Domänenaccount braucht Lesezugriff auf die Operations Manager DB

Verbindung WAP <-> SR

3. User und Passwort für die WAP Usage REST API festlegen

```
1 Import-Module MgmtSvcAdmin
2 Set-MgmtSvcSetting -Namespace UsageService -Name Username -Value 'ServiceReporting'
3 Set-MgmtSvcSetting -Namespace UsageService -Name Password -Value 'Password1' -Encode
```

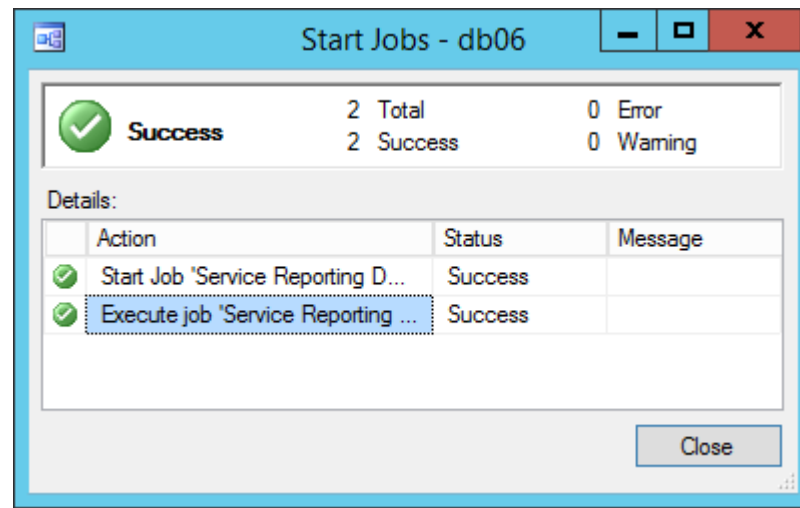
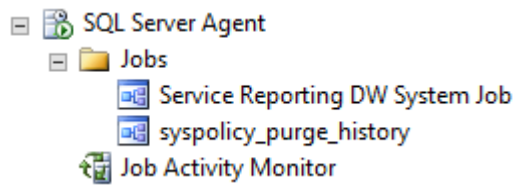
4. MaintenanceConfig.xml anpassen

- C:\Program Files\Microsoft System Center 2012 R2\Service Reporting\Maintenance
 1. <OperationsManagerSQLServers>SRV-2\SCOM</OperationsManagerSQLServers>
 2. <OperationsManagerDBs>OperationsManager</OperationsManagerDBs>
 3. <WAPUsageServiceURI>https://srv-5.neumanndaniel.local:30022/usage?</WAPUsage...>

Verbindung WAP <-> SR

5. PostDeploymentConfig.ps1 aufrufen

- C:\Program Files\Microsoft System Center 2012 R2\Service Reporting\Maintenance\
 1. .\PostDeploymentConfig.ps1 –User ServiceReporting –Password1



Verbindung WAP <-> SR

Row Labels	Processor Count	VM Maximum Count
⊕ CY2013-Nov	20	9
⊕ CY2013-Dec	33	15
⊕ CY2014-Jan	23	10
⊕ CY2014-Feb	17	9
Grand Total	93	43

Row Labels	Monthly Cores Alloc.	Monthly Cores Used	Monthly Memory Allocated	Monthly RAM Consumed	Monthly Diskspace Allocate	Monthly Diskspace Used	Monthly Disk IOPS (Bytes Mon
⊙ Administrator	2.206	2,17	4.573.184,00	81,14	257.679,36	209.815,37	848.912,81
⊙ daniel.neumann@neumannndanie_26a54ba0-0b37-44c8-9e	78	2,73	79.872,00	100,00	2.396,16	404,04	79.501,53
⊙ Test-NVGRE	78	2,73	79.872,00	100,00	2.396,16	404,04	79.501,53
CY2014-Jan	68	0,00	69.632,00	100,00	2.088,96	352,24	471,33
CY2014-Feb	10	5,47	10.240,00	100,00	307,20	51,80	158.531,73
⊙ wap@neumannndaniel.de_040fca46-c4a7-4628-9e7c-2024	146	0,27	149.504,00	18,63	4.485,12	1.066,70	2.082.697,63
⊙ WAP-1	146	0,27	149.504,00	18,63	4.485,12	1.066,70	2.082.697,63
CY2013-Nov	6	0,00	6.144,00	43,89	184,32	23,06	5.998.768,44
CY2013-Dec	110	0,82	112.640,00	11,99	3.379,20	769,85	249.324,45
CY2014-Jan	30	0,00	30.720,00	0,00	921,60	273,78	0,00
Grand Total	2.430	2,06	4.802.560,00	77,49	264.560,64	211.286,11	901.657,49

6. Cloud Cruiser – 3rd Party

The image displays two side-by-side screenshots of the Service Management Portal. The left screenshot shows the 'user costs' view, and the right screenshot shows the 'my costs' view. Both views feature a navigation sidebar on the left and a main content area on the right. The 'user costs' view includes a table with columns for 'TENANT', 'CURRENT MONTH', and 'PREVIOUS MONTH'. The 'my costs' view includes a table with columns for 'SUBSCRIPTION', 'CURRENT MONTH', and 'PREVIOUS MONTH'. Both tables show a single entry with a value of 9.32.

Service Management Portal - user costs

Navigation: ALL ITEMS, WEB SITE CLOUDS (0), VM CLOUDS (2), SERVICE BUS CLOUDS (0), SQL SERVERS (0), MYSQL SERVERS (0), AUTOMATION (27), PLANS (2), USER ACCOUNTS (1), USER COSTS

Summary: SUMMARY, REPORTS, SETTINGS, UPGRADE

TENANT	CURRENT MONTH	PREVIOUS MONTH
wap@neumannndaniel.de	9.32	

Service Management Portal - my costs

Navigation: ALL ITEMS, VIRTUAL MACHINES (1), NETWORKS (0), MY ACCOUNT, MY COSTS

Summary: SUMMARY, REPORTS

SUBSCRIPTION	CURRENT MONTH	PREVIOUS MONTH
neumannndaniel.local	9.32	

Vielen Dank.

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Appendix A – Installationslinks

- <http://blogs.technet.com/b/privatecloud/archive/2013/08/27/iaas-usage-and-service-reporting-using-system-center-2012-r2-and-windows-azure-pack.aspx>
- <http://blogs.technet.com/b/privatecloud/archive/2013/09/27/configuring-vmm-and-om-for-iaas-usage-and-metering.aspx>
- <http://blogs.technet.com/b/privatecloud/archive/2013/09/30/configuring-spf-and-windows-azure-pack-for-iaas-usage-and-metering.aspx>
- <http://blogs.technet.com/b/privatecloud/archive/2013/10/25/installing-amp-configuring-service-reporting-for-iaas-usage-and-metering.aspx>

Appendix B – Troubleshooting

- <http://blogs.technet.com/b/privatecloud/archive/2013/11/06/troubleshooting-installation-and-configuration-of-windows-azure-pack.aspx>
- <http://blogs.technet.com/b/privatecloud/archive/2013/11/08/troubleshooting-windows-azure-pack-spf-amp-vmm.aspx>
- <http://blogs.technet.com/b/privatecloud/archive/2013/11/20/troubleshooting-windows-azure-pack-amp-usage-part-1.aspx>
- <http://blogs.technet.com/b/privatecloud/archive/2013/11/21/troubleshooting-windows-azure-pack-amp-usage-part-2.aspx>
- <http://blogs.technet.com/b/scvmm/archive/2013/11/12/general-troubleshooting-list-for-windows-azure-pack-wap-and-spf-integration.aspx>

Appendix C – WAP Wiki

- <http://social.technet.microsoft.com/wiki/contents/articles/20689.windows-azure-pack-wapack-and-related-blogs-videos-and-technet-articles.aspx>

Appendix D – Daniel's Tech Blog

- System Center 2012 R2 Service Provider Foundation – Anmeldeinformationen
 - <http://www.danielstechblog.de/system-center-2012-r2-service-provider-foundation-anmeldeinformationen/>
- Windows Azure Pack und Cloud Cruiser Express
 - <http://www.danielstechblog.de/windows-azure-pack-und-cloud-cruiser-express/>
- Windows Azure Pack – Admin & Tenant Portal AD Single Sign On einrichten
 - <http://www.danielstechblog.de/windows-azure-pack-admin-tenant-portal-ad-single-sign-on-einrichten/>