ARCADA

Implementation of Office 365 Education in an academic institution.

Martin Lagus

DEGREE THESIS	
Arcada	
Degree Programme:	Information and Media Technology
Identification number:	4647
Author:	Martin Lagus
Title:	Implementation of Office 365 Education in an academic institution.
Supervisor (Arcada):	Magnus Westerlund
Commissioned by:	Arcada

Abstract:

This thesis is a Proof of Concept about the implementation of Office 365 at Arcada – University of Applied Sciences. The goal with this thesis is to investigate how Arcada can offer the services of Microsoft Office 365 to staff and students. It will explain how Arcada needs to prepare and implement technical aspects such as migration of users from on-premises environments to Office 365.

This thesis contains a theoretical part looking into the broader architecture of Office 365 and its technologies, including some practical demonstrations to further explain certain functions. First Office 365 is explained and what services it offers. Then the services are explained to give the reader a better insight. Lastly is explained how those services can be implemented into existing information systems, how Arcada should progress to provide those services to its staff and students as well as recommendations for future development.

Keywords:	Arcada, Office 365, SharePoint Online, Cloud services
Number of pages:	38
Language:	English
Date of acceptance:	28.5.2014

EXAMENSARBETE	
Arcada	

Utbildningsprogram:	Informations- och Medieteknik

Identifikationsnummer:	4647
Författare:	Martin Lagus
Arbetets namn:	Ibruktagning av Office 365 Education i en akademisk institution.
Handledare (Arcada):	Magnus Westerlund

Uppdragsgivare:	Arcada

Sammandrag:

I detta examensarbete skapas en konceptmodell för ibruktagandet av Microsoft Office 365 för samtliga användare vid yrkeshögskolan Arcada. Examensarbetet undersöker möjligheterna för Arcada att erbjuda tjänsterna inom Office 365 åt studeranden och personal. Ytterligare undersökningar görs för hur Arcada måste förbereda och ta i beaktande tekniska aspekter, såsom migrationen av användare från lokala informationssystem till Office 365.

Examensarbetet består av en teoretisk del som bekantar sig med den bredare arkitekturen av Office 365 och dess teknologier. Den teoretiska delen förstärks med praktiska exempel för att tydligare förklara vissa funktioner. Först förklaras vad Office 365 är och vilka tjänster som kan erbjudas genom den. Sedan beskrivs tjänsterna för att ge läsaren en tydligare bild. Sist förklaras hur tjänsterna skall tas i bruk med nuvarande informationssystem, vilka steg Arcada måste ta för att erbjuda tjänsterna åt samtliga användare samt tankar om framtida utveckling.

Nyckelord:	Arcada, Office 365, SharePoint Online, Molntjänster
Sidantal:	38
Språk:	Engelska
Datum för godkännande:	28.5.2014

CONTENTS

Figures

Glossary of terms and abbreviations

AD	Microsoft Active Directory
AD FS	Microsoft Active Directory Foundation Service
IM	Instant Message
Internal user	User inside Office 365 subscriber organization
External user	User outside Office 365 subscriber organization
SaaS	Software as a Service
Cloud	IT infrastructure service outside the organization
On-premises	Service inside the organization
DirSync	Directory Synchronization
SSO	Single Sign-On
STS	Security token service
OWA	Outlook Web App

1 INTRODUCTION

This thesis has been commissioned by Arcada – University of Applied Sciences. Arcada is a Swedish speaking, multi-professional university of applied sciences in Helsinki, Finland. Arcada has 2700 students from 40 different countries and a staff of 190 members.

Arcada is looking for a way to modernize its information services for staff and students. Currently Arcada offers a range of different information services for different purposes. One of the problems include the lack of a proper information channel between the school and students. There is a website which acts as one, but the problem is that few are using it, because it's both visually and functionally outdated. Another problem is the email. Students have old IMAP email mailboxes with small amounts of storage for email. This causes problems with modern emails and emails with attachments, which can be large and quickly fill up the email mailbox. Also there is no way to synchronize or have a shared calendar through the email system, which has an impairing effect for the collaboration between students.

To provide modern services, Arcada is looking at Office 365 by Microsoft. Office 365 offers a variety of services through the cloud, including large email mailboxes with calendar sharing, and a good environment for different websites and information flow. In order to make the transition from an on-premises environment to the cloud as smooth as possible, Arcada commissioned a study about the implementation of Office 365 with its current information systems. With this study, Arcada will have a solution for how to best provide the services offered by Office 365 to staff and students.

This thesis will cover the migration of staff and students from an on-premises environment to Office 365 and the use of different tools inside Office 365. SharePoint Online will be covered more deeply, as Arcada is looking for specific instructions on how they can provide the services of SharePoint Online to staff and students. Practical examples of SharePoint Online are provided to demonstrate certain functions more extensively.

This thesis is made as a guideline for Arcada, but some parts can be used by others as the instructions aren't necessarily based on Arcada's internal information systems.

1.1 Methods and scope

This thesis is written based on information gathered from literature studies and practical testing. The literature studies are information mainly gathered from official Microsoft resources. These resources have been chosen because the subject of the thesis is strongly connected to one of Microsoft's products. In order to do practical testing, an Office 365 developer environment has been used.

The goal with this thesis is to investigate how Arcada can best offer Microsoft Office 365 to staff and students and how they should perform the migration from existing information systems to Office 365. To offer Arcada enough information, a thorough explanation of the different technologies inside Office 365 is made. Arcada is particularly interested in SharePoint Online and the use of it, so the focus point in this thesis will be SharePoint Online.

This thesis focuses solely on technical implementations. It doesn't take into consideration any economic- or usability-related aspects.

2 OFFICE 365 – BACKGROUND

2.1 Office 365

Office 365 is an online service by Microsoft Corporation, initially launched globally the 28th of June 2011 (Microsoft 2011a). Office 365 is a subscription-based service that offers a wide range of Microsoft's services from the cloud. The service includes hosted email, social networking and collaboration, cloud storage for subscribers and the Office software suite, either as desktop applications or online through the browser. Office 365 is a SaaS solution. SaaS (or Software as a Service) is a solution where one or more applications are distributed through a cloud service to multiple users, regardless of their location, rather than the traditional model where applications are installed locally per user and computer (Microsoft 2012a). SaaS allows activities to be managed from one central location in a one-to-many scenario, meaning if the software is to be updated, it doesn't require any interaction from the end user. Instead the software is being updated from the cloud and the user accessing the software will automatically be presented with an updated version, as Figure 1 illustrates.
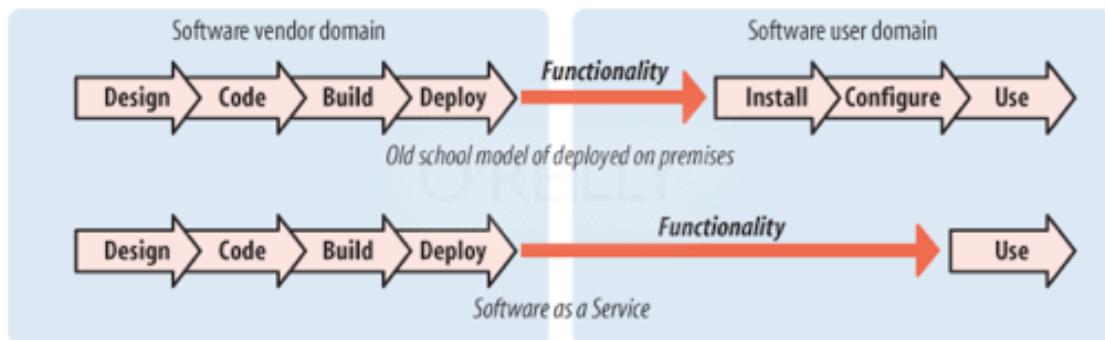
Figure 1. Illustration of the SaaS structure (Michelle Perkins, Adobe Blogs 2010).

2.1.1 Exchange Online

Microsoft Exchange is a part of Office 365 and offers hosted email. Each user has 50GB of storage space for email storage. With Exchange Online the user will have the ability to synchronize contacts and calendar across a variety of devices and the option for push-based email (Microsoft 2014b). In addition to device synchronization, Exchange Online offers a webmail-based option, OWA. OWA is used to access email, calendars, con-

tacts, tasks, documents in SharePoint and other email mailbox content through a web-browser.

2.1.2 SharePoint Online

SharePoint Online gives users the ability to create internal and external sites to share documents and information with colleagues, partners and customers (Microsoft 2014c). Internal sites can consist of different team sites that provide information for a specific team or group inside the corporation. They can provide any type of web based content, tasks and calendars etc. for the team to collaborate. External sites can provide similar information and functionality as the internal sites but are meant for users outside the organization. SharePoint Online increases the possibilities for user and team collaboration inside an organization. It works as an information channel to the users in the form of team sites and other internal project or intranet sites.

2.1.3 OneDrive for Business

OneDrive for Business (formerly known as SkyDrive Pro) gives users a personal storage in the cloud. The basic quota for users is 25GB. Users can upload documents and files to their personal OneDrive folder and access them from any device through a dedicated OneDrive application or through the web browser. Users can also share their OneDrive folders and files to internal and external users (Microsoft 2014c). With a cloud connected storage service OneDrive for Business increases the collaboration opportunities between users, in the form of simple file sharing.

2.1.4 Office Online

Office Online (formerly known as Office Web Apps) is an online suite of Microsoft's traditional Office desktop applications. Office Online gives the ability to create and edit Word, Excel and PowerPoint files from a web browser. It features real-time co-authoring capabilities for collaboration on shared documents, presentations, spreadsheets and notebooks (Microsoft 2014e). Office Online is a tool with which users can quickly edit or create Office documents regardless of the computer or device they're

using. Office Online is integrated into Office 365 and gives the user the ability to create and edit Office documents directly from their OneDrive for Business site.

2.1.5 Lync Online

Lync is Microsoft's instant messaging service (IM) that enables internal users the possibility to communicate in real-time with each other regardless of their physical location. Lync enables voice and video conferencing with one or multiple users, file sharing, instant messaging, status information and desktop or program sharing (Microsoft 2014d). Lync is a tool with which users can effectively participate in remote meetings or quickly ask questions from colleagues. Lync is used through a desktop application, mobile application or through a web browser.

2.2 Subscription plans

Office 365 features a range of different subscription plans to cover different organizational needs. This thesis will focus on Office 365 Education. Office 365 Education offers three different subscription plans which are detailed in Figure 2. Arcada is planning to start with plan A2, which doesn't offer desktop applications of Office 365. If Arcada were to upgrade to plan A3, it could offer staff and students the newest version of Office desktop applications, Office Mobile applications for Android and Apple iOS devices. In addition Arcada gets a guaranteed 99,9% uptime assurance for Office 365 from Microsoft as well as features like eDiscovery center, which offers search across SharePoint sites and Exchange email mailboxes (Microsoft 2014h). Figure 2 illustrates the differences between the subscription plans. On time of writing this the Office desktop version is Office 2013.

A2	A3	A4
Free for academic institutions	**Students: $2.50 per user/month** **Faculty and staff: $4.50 per user/month**	**Students: $3 per user/month** **Faculty and staff: $6 per user/month**
• Cloud-based email, calendar and contacts • Use your own domain name • Instant messaging, voice and video chat • Online conferencing with desktop sharing • Web-based viewing and editing of Word, Excel, PowerPoint, and OneNote files	**Everything in A2, plus:** • **Office Professional Plus 2010** desktop version subscription (for up to 5 devices per user) • Unlimited email storage • Archiving • eDiscovery tools to support your compliance needs • Hosted voicemail support	**Everything in A3, plus:** • Enterprise voice capabilities *Replace or enhance a PBX with Lync Server on-premises*

Figure 2. Comparison of subscription plans for Office 365 Education (Jibran Jamshad, MSDN Blogs 2013).

3   IMPLEMENTATION OF OFFICE 365

This chapter will explain the implementation of Office 365. It will describe the pre-requisites for the implementation and what needs to be taken into consideration before starting the process. Chapter 3.1 is focused on user and data management. This chapter contains subchapters that explain the different steps to migrate users successfully from an on-premises environment to Office 365. Chapter 3.2 is focused solely on SharePoint Online and the different features that SharePoint Online offers. This chapter will include explanations for basic features inside SharePoint Online as well as explanations for administrative functions.

3.1   User and data management

This chapter focuses on user and data management. An introduction of the different techniques and technologies is done in the beginning, followed by explanations to implement Single Sign-On in Office 365, migrating users and email from an on-premises environment to the cloud as well as synchronizing permissions and groups.

SSO (Single Sign-On) enables users inside an organization to use their corporate credentials to access Office 365 services. SSO removes the need to manage multiple logon identities and passwords. SSO helps an organization to enforce password policies and account restrictions in both the on-premises environment as the Office 365 directory.
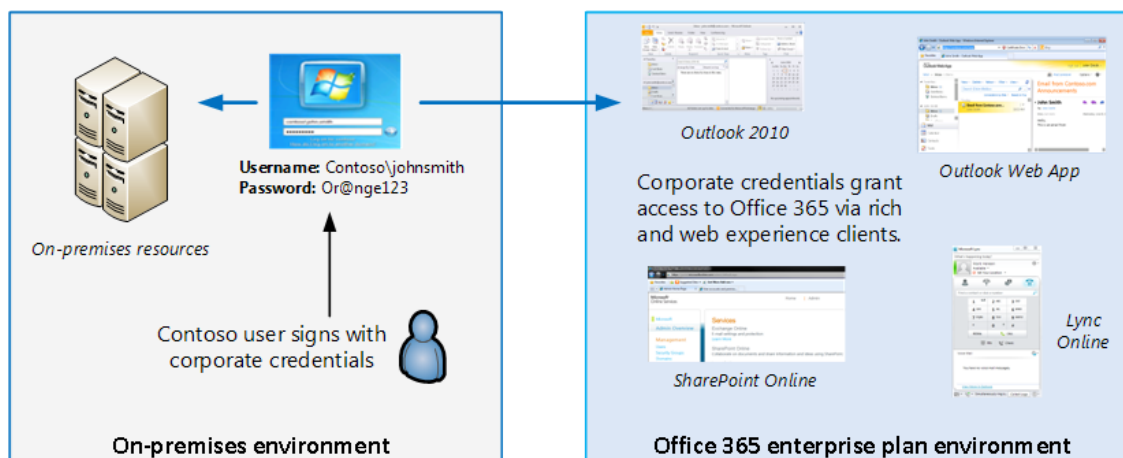

Figure 3. Illustration of the Office 365 SSO Experience (Microsoft 2014q)

13

AD FS (Active Directory Federation Services) is a software component by Microsoft for Windows Server operating systems to provide users with SSO access to systems across different organizational environments. AD FS uses Active Directory Domain Services as an identity provider to establish a trust between two business partners (Microsoft 2014t).

STS (Security Token Service) is a service component that builds, signs and issues security tokens according to the WS-Trust and WS-Federation protocols. STS is pre-built inside AD FS 2.0 (Microsoft 2014r).

Federated Domain is the domain name for the organization after it has been registered in Office 365. When signing up for Office 365 users are given a default subdomain called onmicrosoft.com. For users to be able to login through SSO with their organizational credentials, a federated domain must be created of the organizations domain inside Office 365 (Ping Identity).

3.1.1 Setting up SSO

Before migrating user data or files to Office 365 certain preparations must be made. One of them is setting up SSO. SSO enables users to access both the on-premises and Office 365 environments with a single username and password. It allows users to access Microsoft cloud services with on-premises AD credentials (Microsoft 2014f). SSO provides users with a single login screen, instead of multiple ones for each service. Users need to sign in only once and remember only one username and password. Furthermore it allows administrators to control account policies for cloud-based email mailboxes by using on-premises AD management tools.

Deploying SSO includes several components that configure the trust relationship between the on-premises AD FS server and the Microsoft Federation Gateway. SSO requires both a STS infrastructure and DirSync (Microsoft 2014f).

In order to implement SSO, following requirements must be met.

- Active Directory deployed and running in either Windows Server 2003 R2, Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, or Windows Server 2012 R2 with a functional level of mixed or native mode (Microsoft 2014g).
- AD FS 2.0 and an AD FS 2.0 proxy (Microsoft 2014g).
- A SSL certificate for the federated domain must be bound to the default website of the AD FS 2.0 server (Petri 2013b).
- The federated domain is added and verified within the Office 365 management portal (Petri 2013b).

After the requirements are met, a new on-premises STS infrastructure must be set up to provide the local and remote AD users with SSO access to Office 365. The Windows Azure AD, which is the cloud back-end, provides identity and access capabilities for Office 365 and supports the following security token services.

- AD FS (Microsoft 2014f).
- Shibboleth Identity Provider (Microsoft 2014f).
- Other third-party identity providers (Microsoft 2014f).

In order for SSO to work properly DirSync must be set up, which will be explained in chapter 3.1.2. After DirSync has been set up, STS needs to be verified as functioning properly. This can be done e.g. by signing into Office 365 from a local domain-joined computer with the same login credentials as in the on-premises AD or with the Microsoft Remote Connectivity Analyzer –tool from the Office 365 management portal (Microsoft 2014i).

3.1.2 Synchronization of users from an on-premises environment to Office 365

Arcada is using an on-premises installation of AD for user management. Office 365 is a service of its own and in no way connected to on-premises installations by default. In order to gain access to Office 365 a user must have an active account in Office 365. If a user needs to use the functions inside Office 365, such as Exchange or Lync, a user must also have an active Office 365 subscription (Microsoft 2013a). For the sake of

administration, a single user management option is desired. This means that the users are managed from either an on-premises AD installation or directly from Office 365. In this thesis the on-premises AD installation will function as the source for user management.

In order to get the users from the on-premises installation to the Office 365 service, Arcada must use DirSync. DirSync is a tool created by Microsoft and it replicates certain objects and attributes from the on-premises AD with Windows Azure AD. The objects that are replicated include user and group information and the attributes include information such as the users' phone number or title (Petri 2013a). The DirSync tool must be installed on a dedicated computer in the on-premises environment. When the user accounts are synchronized with Office 365 for the first time, they are marked as inactive. They don't have any of the features inside Office 365 activated, meaning they can't send or receive email and they don't consume any subscription licenses (Microsoft 2013a). At this time there is no built-in automation for assigning licenses or activating users. However this can be achieved with a set of PowerShell scripts, which are shown in Figure 4. The scripts can be found and downloaded from http://social.technet.microsoft.com/wiki/contents/articles/15905.how-to-use-powershell-to-automatically-assign-licenses-to-your-office-365-users.aspx. Figure 5 outlines all possible steps that are part of a license assignment process.

File	Description
Get-LicensingInputFromAD.ps1	Creates a source data file based on information from your Active Directory Domain Service.
SetupScript.ps1	Configures your environment for running the Licensing scripts
AssignLicense.tmp	Assigns licenses based on a source data file. The content of this template file is used by SetupScript.ps1 to create the actual PowerShell script file.
Get-MSOLUserLicensingReport.tmp	Creates a report of all licensed users in Office 365. The content of this template file is used by SetupScript.ps1 to create the actual PowerShell script file.

Figure 4. Description of script files for assigning licenses (Microsoft 2013b).
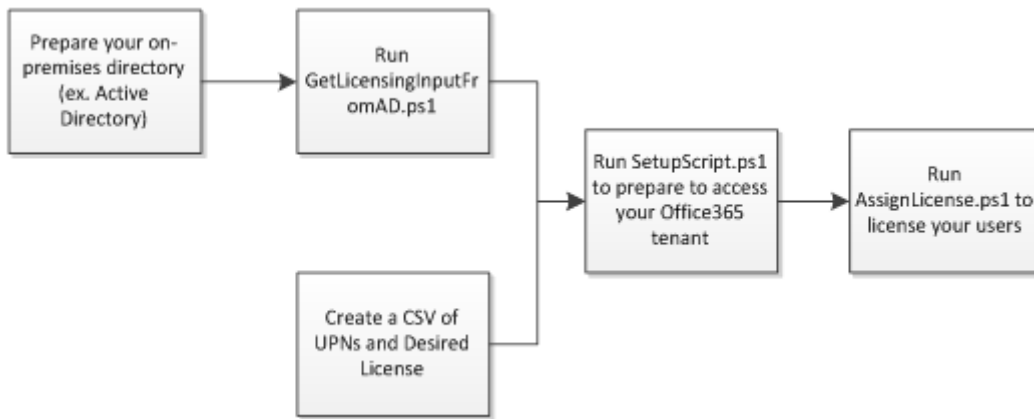
Figure 5. Steps in a license assignment process (Microsoft 2013b).

Microsoft recommends that a cleanup of AD is performed before beginning the Office 365 DirSync deployment (Microsoft 2013a).

During the initial synchronization, a copy of all the local AD users and groups is created and sent to the Office 365 Windows Azure AD. From then on, the DirSync tool checks for changes or new users, and writes those to the cloud when found. (Petri 2013a).

DirSync synchronizes by default only from an on-premises environment to the cloud. Two-way synchronization is possible through a hybrid deployment feature in the DirSync tool. Two-way synchronization enables the control of certain directory objects (such as users) to be modified in the Windows Azure AD. Changes made in the cloud for these objects are then synchronized back to the on-premises AD. It is to be noted that the two-way synchronization isn't allowed to modify all attributes in the directory. It will only have permission to modify those attributes that can be written back from Windows Azure AD, as illustrated in Figure 6.

Write-Back attribute	Exchange "full fidelity" feature
msExchArchiveStatus	Online Archive: Enables customers to archive mail.
msExchUCVoiceMailSettings	Enable Unified Messaging (UM) - Online voice mail: This new attribute is used only for UM-Microsoft Lync Server 2010 integration to indicate to Lync Server 2010 on-premises that the user has voice mail in online services.
msExchUserHoldPolicies	Litigation Hold: Enables cloud services to determine which users are under Litigation Hold.
ProxyAddresses (LegacyExchangeDN <online LegacyDn> as X500)	Enable Mailbox: Offboards an online mailbox back to on-premises Exchange.
PublicDelegates	Cross-premises Public Delegation: Enables users to specify delegates for their mailbox.
SafeSendersHash BlockedSendersHash SafeRecipientHash	Filtering: Writes back on-premises filtering and online safe and blocked sender data from clients.

Figure 6. Permissions for two-way synchronization (Microsoft 2014k).

3.1.3 Migrating staff email mailboxes into Office 365

Arcada is using Microsoft Exchange 2010 SP3 to provide email services for the staff. In order to migrate Exchange 2010 email mailboxes to Office 365 a hybrid deployment must be used. Arcada is looking for a solution where they keep their on-premises Exchange environment for staff. This can be achieved with a hybrid deployment. Arcada's current structure resembles the one in Figure 7.
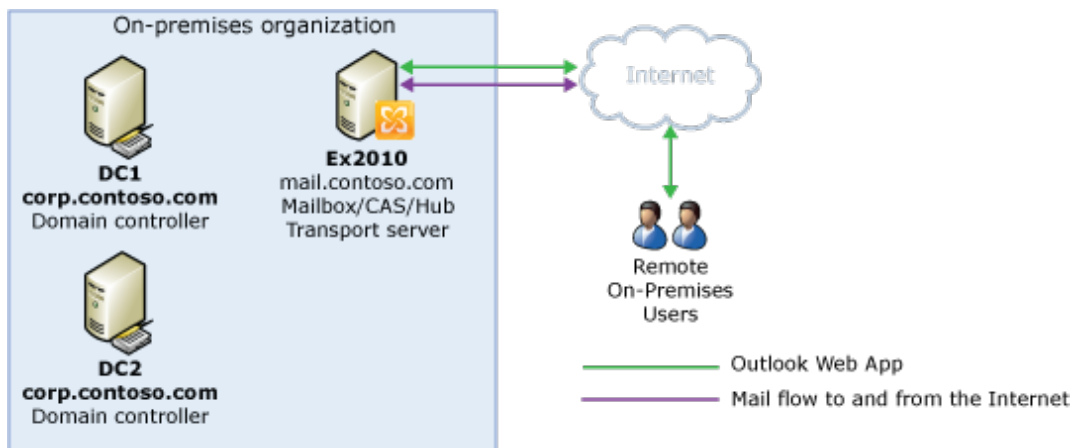

Figure 7. Exchange environment before a hybrid deployment (Microsoft 2013e).

A hybrid deployment creates a link between the on-premises Exchange environment and the Exchange Online environment in Office 365. It enables users in both the on-

premises Exchange environment and Exchange Online environment in Office 365 to find one another in the global address list (GAL), and to send, receive and reply to email regardless of which system is hosting their email mailbox (Microsoft 2014j). After performing a hybrid deployment, the Exchange environment changes to resemble the one illustrated in Figure 8.
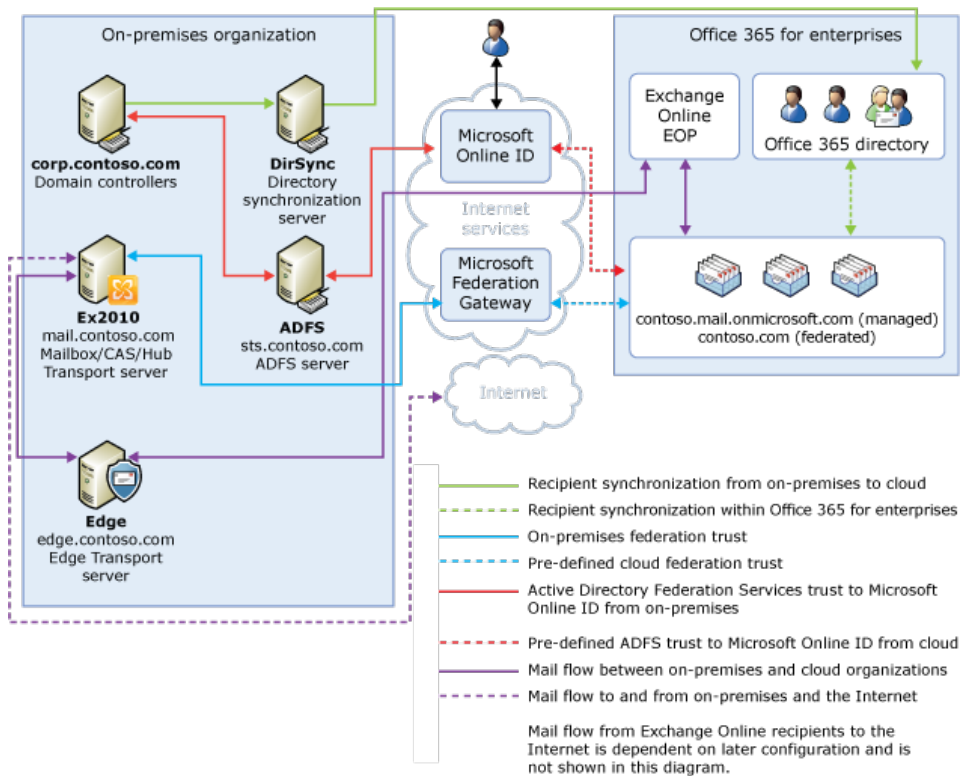

Figure 8. Exchange environment after a hybrid deployment (Microsoft 2013e).

In order to perform a hybrid deployment certain criteria must be met. The organization must have at a minimum

- Exchange 2010 SP3 installed, configured with the Client Access and Hub Transport server roles. Microsoft recommends deploying more than one Exchange 2010 SP3 server in the on-premises environment to help increase reliability and availability of hybrid deployment features. The best practice is to install the email Mailbox, Client Access and Hub Transport server roles on each additional Exchange 2010 SP3 server deployed in the on-premises environment (Microsoft 2013c).
- AD synchronization server (Microsoft 2013c).

- AD FS server farm or AD FS proxy servers (Microsoft 2013c).

To move existing email mailboxes from the on-premises environment to Exchange Online, Microsoft recommends the use of the New Remote Move Request wizard in the Exchange Management Console (EMC) on the on-premises Exchange server (Microsoft 2013d). The user must have an active account and an active subscription in Office 365 before moving the email mailbox.

3.1.4 Migrating student email mailboxes into Office 365

Contrary to the staff email services, Arcada is offering students email services through an on-premises IMAP service. New students will automatically have their email mailbox created in Office 365. Existing students will continue to have their email mailbox in the on-premises service with the option to move their email mailbox to Office 365. To offer a user-friendly migration, Arcada should create a web-based interface for existing students who decide to move their email mailboxes to Office 365.

3.1.5 Permissions and groups

To manage permissions and groups in Office 365, it is recommended to use security groups, instead of setting individual user rights (Microsoft 2011b). The users can then be assigned to appropriate groups. When DirSync has been set up, existing security groups in the on-premises environment will synchronize to the cloud. Security groups can also be created manually from the Office 365 management portal. When security groups have been set up, permissions are easily assigned to them. These security groups can be used to set groups and permissions in SharePoint Online (Microsoft 2014o).

3.1.6 Deactivation of users leaving the organization

By default, students that graduate lose their Office 365 subscription through the institution. (Microsoft 2014a). Students that graduate can be moved to an alumni license, which provides the basic email account, contacts and calendar.

3.2 Implementation of SharePoint Online

3.2.1 What is a site collection?

A site collection is a grouping of websites that have the same owner and share settings, such as permissions. When a site collection is created, a top-level site is automatically created in the site collection. One or more subsites can be created below the top-level site, if needed (Microsoft 2014m).
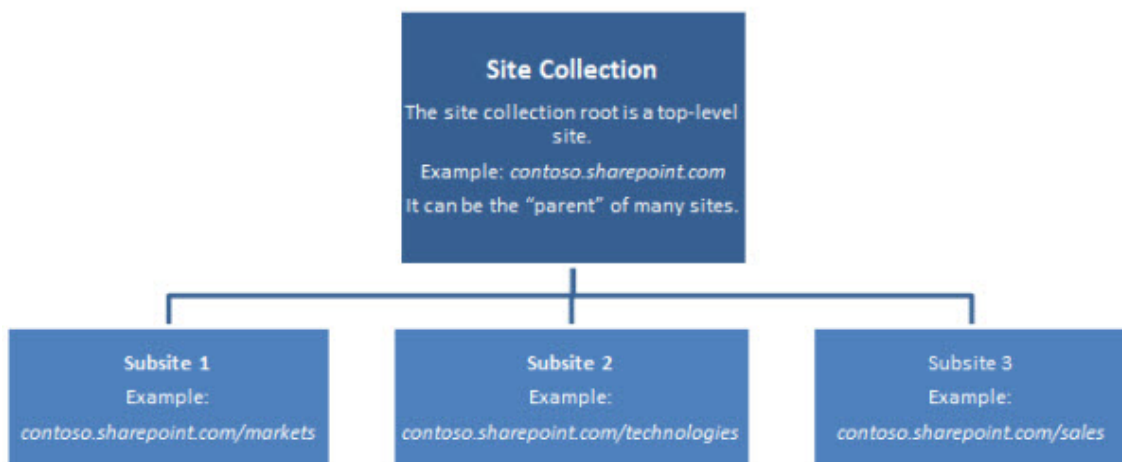

Figure 9. Site collection hierarchy (Microsoft 2014m).

Site collections serve many different purposes. The top level site can be seen as the main site for a team. The subsites are sites inside the top level site that can be used for specific team projects. In the case of Arcada e.g. each institution can have their own site collection in order to target their students with specific information and/or features. More specific content for smaller groups can be targeted through subsites, if there is a need for it.

When creating a site collection the user has the option to use site templates. Site templates can be pre-populated with lists, libraries, pages and other elements or features to support specific needs. If a site collection uses a template, each site inside the site collection will inherit the properties from the chosen template. The use of more than one template inside a site collection is possible (Microsoft 2014m).

3.2.2 What is a site?

Sites are websites that can be created inside SharePoint Online, or they can be plain links inside SharePoint Online pointing to external websites. Users can create and manage custom team-focused and project-focused sites for collaboration. Administrators can in addition to team sites, create company-wide intranet portals or public facing external websites.

3.2.3 Personal sites

Personal sites or "My Sites" are sites that provide users options for social networking inside SharePoint Online. My Sites provide users a centralized location to store, share and track information. At their My Site users can edit their profile picture or write a description about themselves. My Sites are by default divided into three primary components (Microsoft 2014m). The sites can contain Web Parts, which enable the user to add functionality to pages without having to write any code. Web Parts can be e.g. document libraries or charts on pages. The user knows that he/she is on a personal site, when the URL contains the snippet –my. E.g. Contoso-my.sharepoint.com (Microsoft 2014p).

- **My Newsfeed** is the default landing page. This page displays a feed of recent activities related to a user's specified co-workers and interests. Users can customize their newsfeeds by following co-workers, specifying interests, and configuring activities they want to follow.
- **My OneDrive for Business Content** is a Web Part page that displays content a user has stored in the My Site.
- **My Sites** is a page of links to sites that a user has decided to follow and links to suggested sites.
- **About Me** is the page where users can share their expertise, profile picture and more. The About Me page is the page that is visible to other users inside the organization when they visit other user profiles. The My Newsfeed and My OneDrive for Business Content pages are available only to the user.

Figure 10 illustrates the top bar of Office 365, which shows links to personal sites such as the users newsfeed and sites, the users OneDrive content and the users about me page.
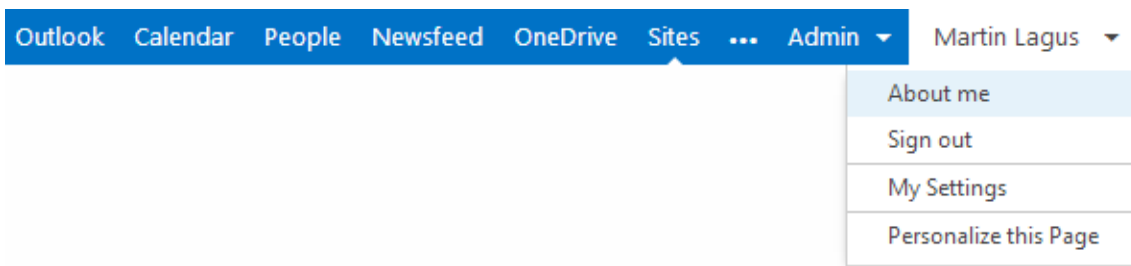
Figure 10. Screenshot of the view for different personal sites.

By default, all authenticated users can create a My Site. The SharePoint admin can customize My Site content for each user in the organization and enable policies to protect privacy (Microsoft 2014m). The My Site host controls the appearance and behaviour of the Newsfeed and About Me pages on all personal sites in the organization. The Share-Point admin can create a template for these sites to create a unified experience across all personal sites and limit the type of information shared (Microsoft 2014p). To create a template for the My Site host, the SharePoint admin must use apps and web parts. The SharePoint admin can create a shared app, which will reflect its contents across all personal sites. To create a shared app the admin has to be either on the Newsfeed or About me page on the My Site host and click settings -> Manage shared apps. Then the admin has to add the new shared app, which will be featured on all personal sites.
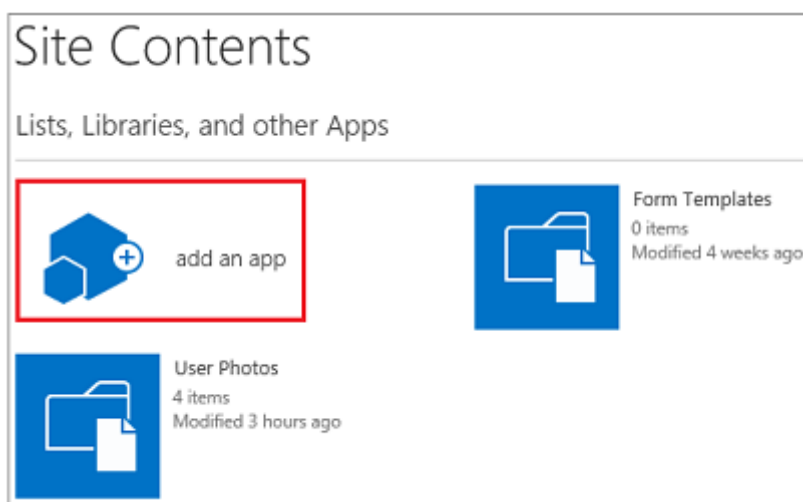

Figure 11. Add a new shared app (Microsoft 2014p).

23

To add the new shared app to the personal sites, the SharePoint admin has to choose Settings -> Edit page, from either the Newsfeed or About Me page. The admin can then choose to which part on the page to add the app. This will then be reflected to all personal sites.
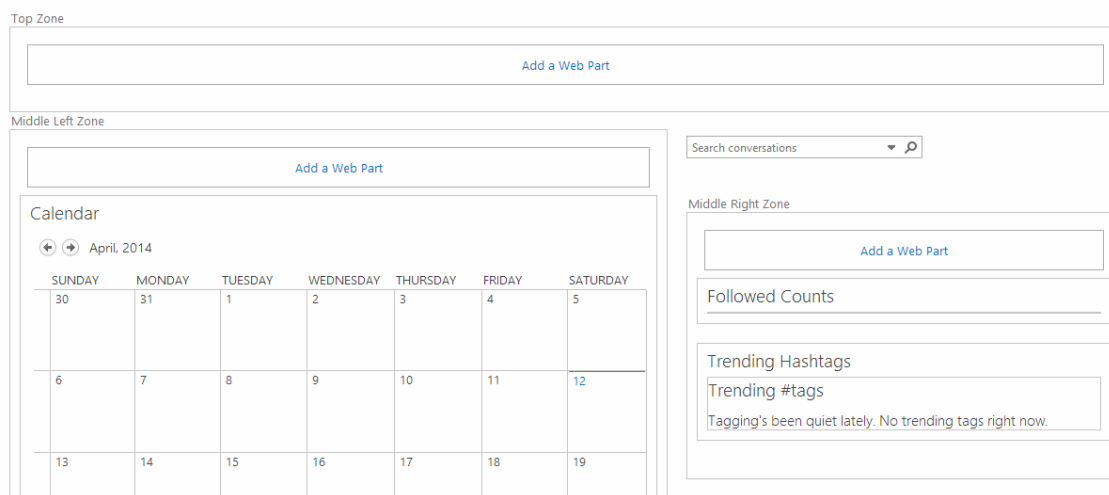

Figure 12. Screenshot of adding a new web part.

3.2.4 Administration of SharePoint Online.

The SharePoint Online Administration Center enables the SharePoint Online Administrator to manage and maintain site collections, and enable features that work across site collections (Microsoft 2014l). This includes, but is not limited to creating new and deleting existing site collections, setting OneDrive storage quota for individual users, assigning permissions, and enabling different features. In order for sites to function, site collections must be set up. There are three administrative roles in the SharePoint Online service administration (Microsoft 2014m).

- **Global admin**   Admin for the Office 365 Portal; can manage service licenses, users and groups, domains, and subscribed services. In Office 365, a Global admin is also a SharePoint Online admin.
- **SharePoint admin**   Global admin whose primary job is to manage a SharePoint Online environment using the SharePoint admin center; can create and

24

manage site collections, designate site collection administrators, determine tenant settings, and configure e.g. search, and user profiles.

- **Site collection admin**   User with administrator permissions to manage a site collection. A site collection can have several admins, but only one primary admin. The SharePoint Online admin should assign permissions to the primary site collection administrator when creating a site collection. More administrators for the site collection can be added afterwards.

When a site collection is created, a global admin or SharePoint admin designates a primary site collection admin. Microsoft recommends that one or more site collection admins are designated as backup, as well as designating a secondary global admin inside Office 365.

3.2.5 Manual Site creation

A student can manually create a site for e.g. a group assignment in a course or project, if the SharePoint Online setting for this feature is enabled. Users can then share information inside the site related to its purpose.

To manually create a site the user has to navigate to the Office 365 portal. Inside the portal the user has to choose "Sites" from the navigation bar. At the "Sites" page the user will see a number of promoted sites, assuming public or internal sites have been created and promoted. As Figure 13 illustrates, the user will see a link "+ new site" and by clicking that link the user will be able to give the site a name, a custom path, write a description and add additional site owners etc. When the site has been created the user can customize it to fit his/her needs. Depending on how the users' site is set up, the new site will be a site collection or a subsite.
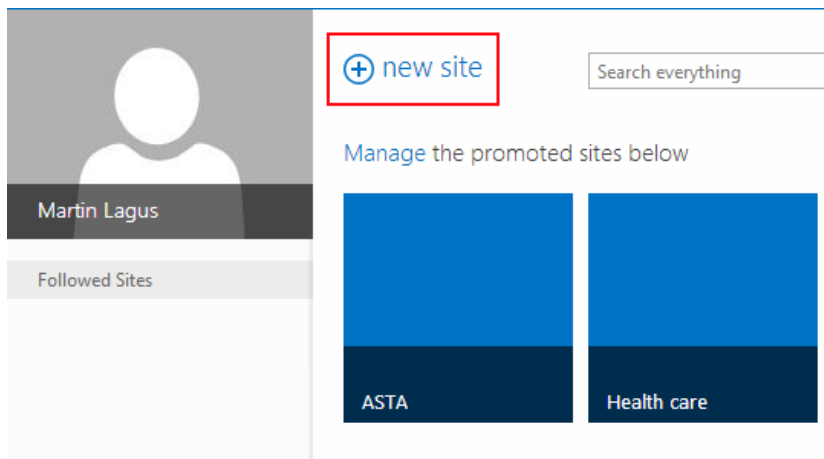
Figure 13. Screenshot of creating a new site.

3.2.6 SharePoint Online audiences

SharePoint Online audiences are groupings of users that can be targeted for specific content inside the organization. Groupings are determined by memberships in Exchange Online distribution groups, memberships in SharePoint groups, or rules that are configured by the SharePoint Online admin in the SharePoint admin center (Microsoft 2014n). SharePoint Online offers audience targeting for web parts or navigation links, from the web browser. In order to target pages or page layouts for specific audiences, a specific web service inside SharePoint Online can be used.

SharePoint web parts have a property called Target Audiences, which allows admins to assign a specific audience for that web part. Once the target audience has been set, the web part will only be visible to users inside that group (Susan Shao, imason blogs 2014).

3.2.7 SharePoint Store

When creating content for site collections and sites, there's an option to embed Share-Point applications. These applications can be SharePoint applications in the local app catalog. Applications in the app catalog are local and can be centrally managed by the SharePoint Online administrator, examples of such are a picture library or calendar. The app catalog can also host custom made applications that the organization has developed (Microsoft 2014s). In addition to the applications in the app catalog, there are apps that

can be installed from the SharePoint Store. The applications in SharePoint Store are created by Microsoft or by third-party developers. Every application in the store goes through a verification to ensure the app follows the guidelines for quality and safety. Applications in the store can be offered as free, with a trial or paid (Microsoft 2013f). Applications from the SharePoint Online store can be installed only by the Office 365 or SharePoint Online admin. When an admin buys or installs a third-party application, it will automatically be available to all users when they browse under Apps. Admins can also install them directly to site collections or site templates, which doesn't require any actions from the end user (Microsoft 2014s).
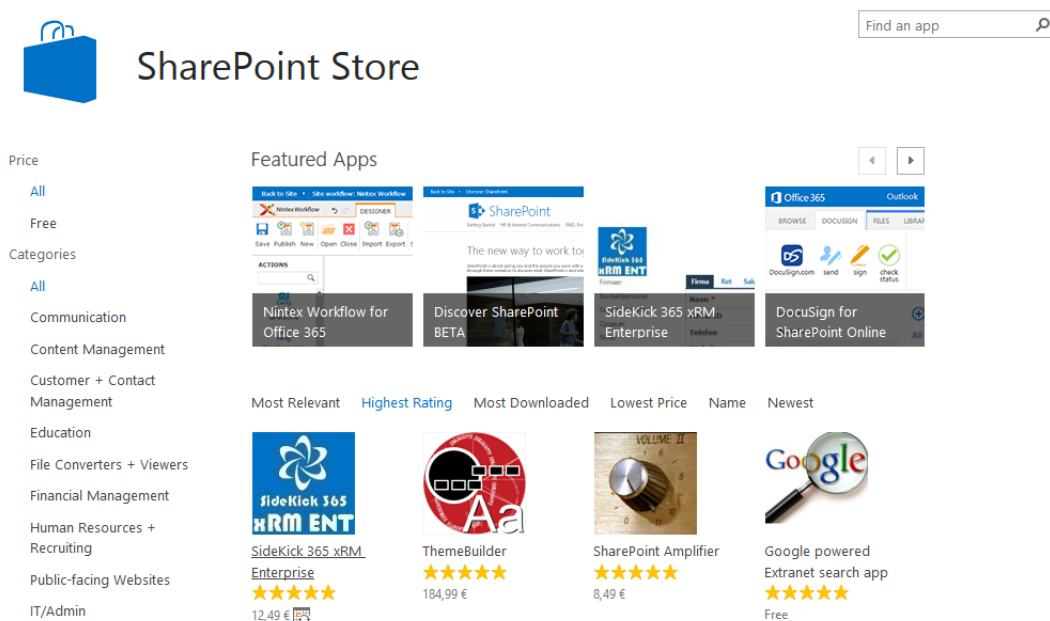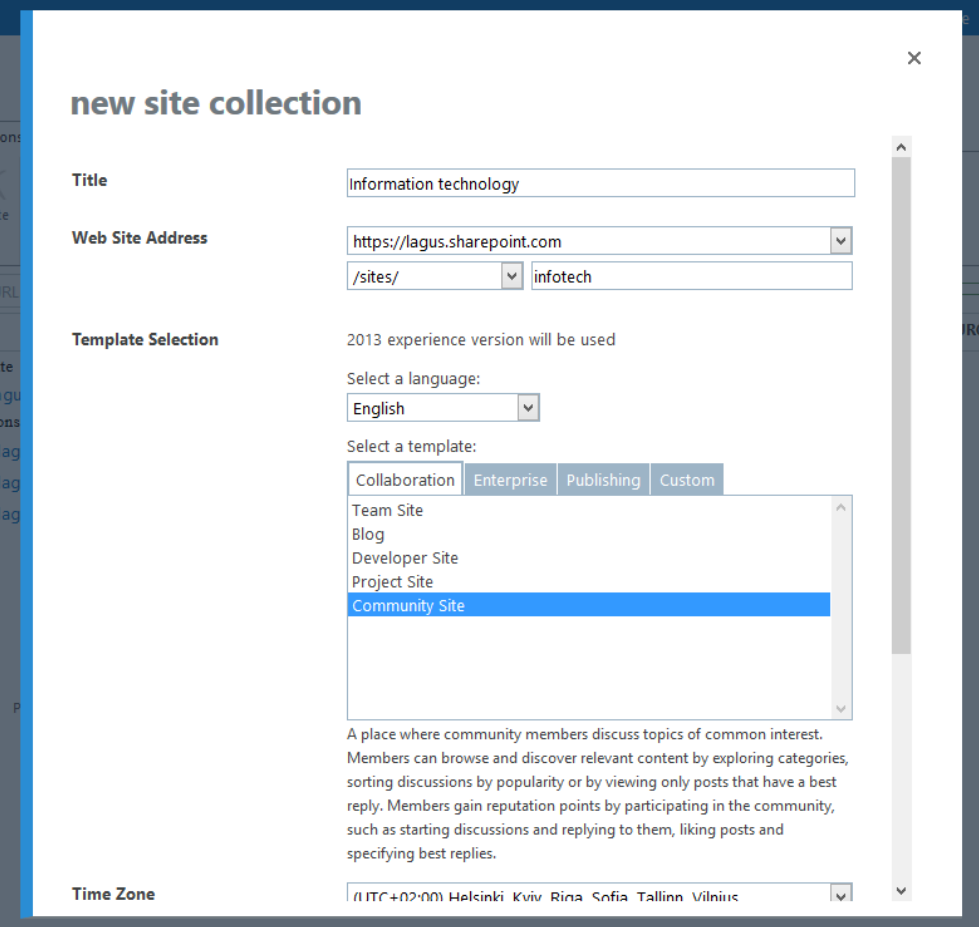
Figure 14. Screenshot of SharePoint Store.

4 SETTING UP A BASIC SHAREPOINT SITE ENVIRONMENT

Given that all pre-requisites are fulfilled and DirSync is set up, this chapter will focus on setting up a basic SharePoint site environment.

4.1.1 Creation of a site collection

The global admin or SharePoint admin can create a site collection. The site collection is created from the SharePoint Online admin center, under the tab "site collections. When creating a new site collection the admin will be prompted for some information, as illustrated in Figure 15. Here the admin can choose e.g. the title and address for the site as well as if the site collection should use a pre-defined template. The admin can also specify the administrator for the site collection and set the storage and server resource – quota.
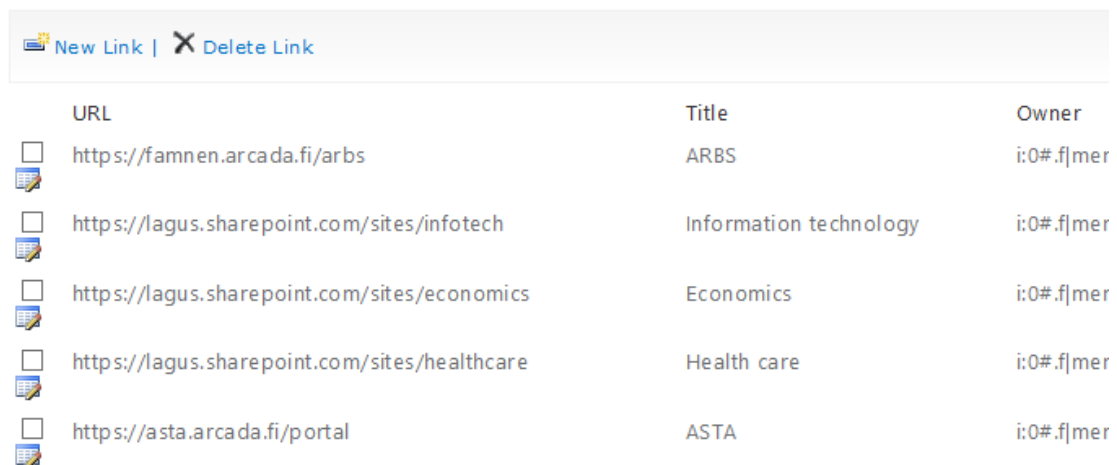

Figure 15. Screenshot of the creation of a new site collection.

28

Once the site collection has been created, it can be visited from the link set at the creation.

4.1.2 Setting promoted sites

Site collections can be defined as promoted. Promoted sites are a good way to bring forth sites that are important. The global or SharePoint –admin can specify which sites are promoted. To make a site promoted, the admin must from the SharePoint admin center choose the tab "user profiles". From the user profiles site the admin will find a link called "Manage Promoted Sites".

Use this list to promote certain sites to users. Sites added here will appear on Sites page in user's My Sites.

	URL	Title	Owner
☐	https://famnen.arcada.fi/arbs	ARBS	i:0#.f|mer
☐	https://lagus.sharepoint.com/sites/infotech	Information technology	i:0#.f|mer
☐	https://lagus.sharepoint.com/sites/economics	Economics	i:0#.f|mer
☐	https://lagus.sharepoint.com/sites/healthcare	Health care	i:0#.f|mer
☐	https://asta.arcada.fi/portal	ASTA	i:0#.f|mer

Figure 16. Screenshot of Manage Promoted Sites.

The admin can choose to add new or delete existing promoted sites. If a promoted site is deleted, it still exists, but doesn't show up at the promoted sites area. When setting up a promoted site, the admin sets up certain information such as to which audience this promoted site should be targeted.

Figure 17. Screenshot of properties of setting up a promoted site.

The promoted sites will show up at the user's personal site, as illustrated in Figure 18.

Figure 18. Screenshot of a users' personal site, illustrating promoted sites.

4.1.3 Creating a subsite

The global, SharePoint or site collection –admin can create a subsite inside a site collection. The subsite can be a more specified site that is connected to its parent site (the site collection). The subsite can be created from the menu inside the site collection as Figure 19 illustrates. The subsite inherits by default properties from the site collection.

Figure 19. Screenshot of site collection mainpage.

5   CONCLUSION

On the consumer side cloud services have long been popular, with services such as Dropbox or Spotify. On the corporate side adaptation of new technology is usually considerably slower, due to unfamiliarity, securi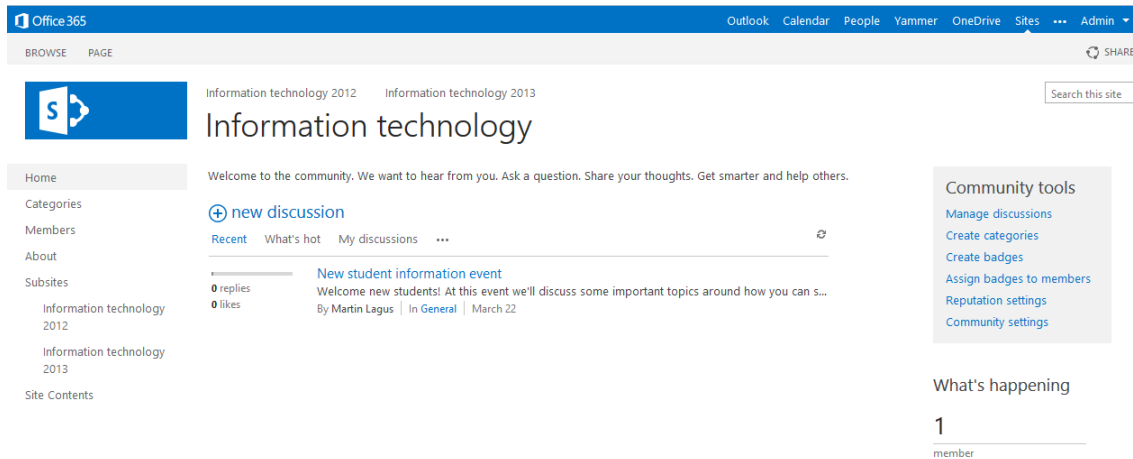ty concerns or lack of resources to fully investigate and implement a new service. However cloud services are getting more and more popular on the corporate side as well, thanks to easier implementation, easier administration and a lower cost structure. Office 365 is one of the big contenders on that front. This thesis offers the reader insight in what a modern cloud service is and how an organization can best utilize the services and functions provided by one.

This thesis covers the subject on a higher level, meaning it won't take into consideration deep specifics of Arcada's current information systems and their structure. It provides Arcada the tools to successfully implement an Office 365 environment and instructions on how user and email migrations can be handled. The instructions provided in this thesis are based on instructions found on Microsoft's official websites and the structure is set up in a way that feels logical to myself. This thesis would've benefited from going deeper into certain features inside Office 365, but that wasn't possible in the current timeframe.

Arcada will be able to use this thesis as a reference, when planning their new and modern information system environment.

5.1   Recommendations

In order for Arcada to implement Office 365 successfully, this thesis recommends the following actions and considerations.

Regarding migration of users the following must be taken into consideration. If users have custom attributes in their on-premises AD environment, the SharePoint admin must add those attributes into the Windows Azure AD in Office 365 in order for those attributes to be mapped to the cloud. Arcada can use the same security groups in Share-Point Online as in their on-premises environment, as the groups synchronize to the

cloud with the DirSync tool. These groups can then be used in SharePoint Online to target specific audiences, e.g. students studying information technology or healthcare.

In order to increase collaboration between staff and students this thesis recommends the use of Lync Online. Lync Online can be installed as a desktop application through the Office 365 web portal and is by default available for all users with a subscription. Lync Online will synchronize with the user's cloud-based address book and will provide the possibility to e.g. chat in real time with fellow students or staff.

SharePoint Online works best when the users are actively using it. This thesis recommends the creation of a simple guide with few steps about the most important features in the SharePoint environment, e.g. how to set a profile picture or how to create a discussion. When planning the use of SharePoint Online it is recommended to carefully plan the site collections and sites. This thesis gives one solution to consider. Arcada can create top level site collections for each education program. The site collections would act like the primary information channels for each program and if needed could contain subsites or links for program specific courses or information. When creating site collections or sites, the use of web parts is recommended. Web parts are a simple way to offer users increased functionality. A suggestion for a web part could be the use of a calendar for an education program. Every user in the education program could then see relevant calendar information for the program on its site.

5.2 Future development

To really utilize the services and functions provided by Office 365 and SharePoint Online, Arcada should consider the integration of existing services into Office 365. Currently the services are spread out on different websites and they offer little to zero consistency. To provide a consistent user experience Arcada should move existing services into SharePoint Online. By doing this users will find all the services from one place and this would increase the use of SharePoint Online, and make it a proper platform for sharing and receiving information. After all, no matter how good the tools are, they are worthless without active users.

To further increase collaboration and social experience, this thesis recommends the consideration of Yammer. Yammer brings versatile social features into Office 365 and can easily be enabled in the SharePoint Online settings. When enabled, Yammer will replace the default Newsfeed inside SharePoint Online. Yammer enables users to easily discuss topics on a full school scale or in smaller groups for specific subjects. Yammer is free to use for educational facilities using Office 365.

Arcada should consider a more extensive subscription of Office 365. One which would offer the latest Office desktop applications for its users. This would enable a more consistent use of tools across staff and students, which helps the teacher in viewing and editing documents.

REFERENCES

Jibran Jamshad, MSDN Blogs 2013. How to enroll/sign-up for Office 365 Education – Plan A2 [www]. Available: http://blogs.msdn.com/b/jibranj/archive/2013/02/15/how-to-enroll-sign-up-for-office-365-education-plan-a2.aspx. Accessed: 12.4.2014.

Michelle Perkins, Adobe Blogs 2010. The Software as a Service (SaaS) Pattern Explained [www]. Available: http://blogs.adobe.com/digitalmedia/2010/06/the_software_as_a_service_saas/. Accessed: 12.4.2014.

Microsoft 2011a. Microsoft Launches Office 365 Globally [www]. Available: http://www.microsoft.com/en-us/news/press/2011/jun11/06-28msoffice365pr.aspx. Accessed: 27.2.2014

Microsoft 2011b. SharePoint Online: Get Started with SharePoint Online [www]. Available: http://technet.microsoft.com/en-us/magazine/hh395478.aspx. Accessed: 22.3.2014.

Microsoft 2012a. Cloud basics: Software as a Service [www]. Available: http://www.microsoft.com/industry/government/guides/cloud_computing/4-SaaS.aspx. Accessed: 12.4.2014.

Microsoft 2013a. Plan for directory synchronization for Office 365 [www]. Available: http://technet.microsoft.com/en-us/library/hh852469.aspx. Accessed: 15.3.2014.

Microsoft 2013b. How to Use PowerShell to Automatically Assign Licenses to Your Office 365 Users [www]. Available: http://social.technet.microsoft.com/wiki/contents/articles/15905.how-to-use-powershell-to-automatically-assign-licenses-to-your-office-365-users.aspx. Accessed: 14.3.2014.

Microsoft 2013c. Exchange Server Deployment Assistant [www]. Available: http://technet.microsoft.com/en-gb/exdeploy2013/Checklist?state=2284-W-CgAIAAAAQAAAAA8AOFIAQA~~. Accessed 14.3.2014.

Microsoft 2013d. Move or create mailboxes [www]. Available: http://technet.microsoft.com/en-gb/exdeploy2013/Checklist?state=2284-W-FQAIAAAAQAAAAA8AOFIAQA%7e%7e. Accessed: 14.3.2014.

Microsoft 2013e. Exchange Server Deployment Assistant [www]. Available: http://technet.microsoft.com/en-gb/exdeploy2013/Checklist?state=2284-W-CAAIAAAAQAAAAA8AOFIAQA~~. Accessed 14.3.2014.

Microsoft 2013f. Publish apps for SharePoint [www]. Available: http://msdn.microsoft.com/en-us/library/office/jj164070%28v=office.15%29.aspx. Accessed: 5.4.2014.

Microsoft 2014a. Office 365 Education [www]. Available: http://office.microsoft.com/fi-fi/academic/. Accessed: 2.3.2014.

Microsoft 2014b. Office 365 – Business-class email and calendaring [www]. Available: http://office.microsoft.com/en-us/business/office-365-business-email-and-shared-calendar-services-FX102996755.aspx. Accessed: 1.3.2014

Microsoft 2014c. Office 365 – File sharing [www]. Available: http://office.microsoft.com/en-us/business/office-365-file-sharing-online-collaboration-tools-FX102997013.aspx. Accessed: 1.3.2014

Microsoft 2014d. Office 365 – Video conferencing [www]. Available: http://office.microsoft.com/en-us/business/office-365-video-conferencing-FX102996964.aspx. Accessed: 1.3.2014.

Microsoft 2014e. Office Online [www]. Available: http://office.microsoft.com/en-us/online/. Accessed: 1.3.2014.

Microsoft 2014f. Single sign-on roadmap [www]. Available: http://technet.microsoft.com/en-us/library/hh967643.aspx. Accessed: 15.3.2014.

Microsoft 2014g. Prepare for single sign-on [www]. Available: http://technet.microsoft.com/en-us/library/jj151786.aspx. Accessed 15.3.2014.

Microsoft 2014h. Office 365 Education plans and pricing [www]. Available: http://office.microsoft.com/en-us/academic/compare-office-365-education-plans-FX103045755.aspx. Accessed 15.3.2014.

Microsoft 2014i. Verify that single sign-on has been set up correctly [www]. Available: http://technet.microsoft.com/en-us/library/jj151809.aspx#BKMK_VerifySingleSignOn. Accessed: 15.3.2014.

Microsoft 2014j. Plan an Exchange Online hybrid deployment in Office 365 [www]. Available: http://technet.microsoft.com/en-us/library/hh852414.aspx. Accessed: 15.3.2014.

Microsoft 2014k. Attributes that are written back to the on-premises AD DS from Windows Azure Active Directory in an Exchange hybrid deployment scenario [www]. Available: http://social.technet.microsoft.com/wiki/contents/articles/19901.list-of-attributes-that-are-synced-by-the-windows-azure-active-directory-sync-tool.aspx#Table_2_Attributes_that_are_written_back_to_the_on-premis-es_AD_DS_from_Windows_Azure_Active_Directory_in_an_Exchange_hybrid_deployment_scenario. Accessed: 15.3.2014.

Microsoft 2014l. SharePoint Online Administration Center Guide [www]. Available: http://office.microsoft.com/en-us/office365-sharepoint-online-enterprise-help/sharepoint-online-administration-center-guide-HA102480154.aspx. Accessed: 17.3.2014.

Microsoft 2014m. Manage site collections and global settings in the SharePoint admin center [www]. Available: http://office.microsoft.com/en-us/office365-sharepoint-online-enterprise-help/manage-site collections-and-global-settings-in-the-sharepoint-admin-center-HA102844602.aspx. Accessed: 17.3.2014.

Microsoft 2014n. Manage SharePoint Online audiences [www]. Available: http://office.microsoft.com/en-us/office365-sharepoint-online-enterprise-help/manage-sharepoint-online-audiences-HA102772738.aspx?CTT=5&origin=HA102844602. Accessed: 22.3.2014.

Microsoft 2014o. Default SharePoint Groups in SharePoint Online [www]. Available: http://office.microsoft.com/en-001/office365-sharepoint-online-small-business-help/default-sharepoint-groups-in-sharepoint-online-HA102834815.aspx. Accessed: 22.3.2014.

Microsoft 2014p. Customize the My Site host [www]. Available: http://office.microsoft.com/en-001/office365-sharepoint-online-enterprise-help/customize-the-my-site-host-HA103894491.aspx. Accessed: 22.3.2014.

Microsoft 2014q. Overview of single sign-on for Office 365 [www]. Available: http://technet.microsoft.com/en-us/library/hh852486.aspx. Accessed: 12.4.2014.

Microsoft 2014r. Security Token Service [www]. Available: http://msdn.microsoft.com/en-us/library/ee748490.aspx. Accessed: 12.4.2014.

Microsoft 2014s. Use the App Catalog to make custom business apps available for your SharePoint Online environment [www]. Available: http://office.microsoft.com/en-us/sharepoint-help/use-the-app-catalog-to-make-custom-business-apps-available-for-your-sharepoint-online-environment-HA102772362.aspx#_Toc347303051. Accessed: 12.4.2014.

Microsoft 2014t. Active Directory Federation Services [www]. Available: http://msdn.microsoft.com/en-us/library/bb897402.aspx. Accessed: 12.4.2014

Petri 2013a. Activating Microsoft Directory Synchronization [www]. Available: http://www.petri.co.il/active-directory-integration-office-365-directory-sync.htm. Accessed: 14.3.2014.

Petri 2013b. Active Directory Integration with Office 365: Complete Federation [www]. Available: http://www.petri.co.il/active-directory-integration-office-365-complete-federation.htm. Accessed 15.3.2014

Ping Identity. Create a Federated Domain [www]. Available: http://documentation.pingidentity.com/display/PFS/Create+a+Federated+Domain. Accessed: 12.4.2014.

Susan Shao, imason blogs 2014 [www]. Available: http://blog.imason.com/4-ways-to-target-content-in-sharepoint/. Accessed: 13.4.2014.