Software Requirements Specification

for

POS_Connect

Version 1.0

1/9/2013

Table of Contents

Revision History

Name	*Date*	*Reason For Changes*	*Version*
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1. ## **Introduction**

1.1 **Purpose**

Point of Sales Connect (POS_Connect) version 1.0 is a commercial service that leverages

a client's existing Point of Sales (POS) system to create, update, and maintain an online store. POS_Connect establishes a connection between a local POS and a remote web service. The remote web service in turn establishes and hosts a web store for a given client. POS_Connect maintains and updates both local POS and online databases, while also facilitating online transactions for a given client.

1.2   Document Conventions

All requirements in the document must have a priority level of 1, 2, or 3. Priority level 1 specifies that the requirement is essential. Priority level 2 specifies that the requirement may be included in the end but is not necessary to product functionality. Priority level 3 specifies extra features of the product that may be included after all level 1 and 2 requirements are adequately completed.

1.3   Intended Audience

This document is intended for use by current and future development teams and outside project advisers and stakeholders who are associated with POS_Connect. This document contains technical information regarding the performance, specifications, and functional requirements (prioritized via the system outlined in Section 1.2) of POS_Connect. This Document also outlines the User Interfaces of POS_Connect.
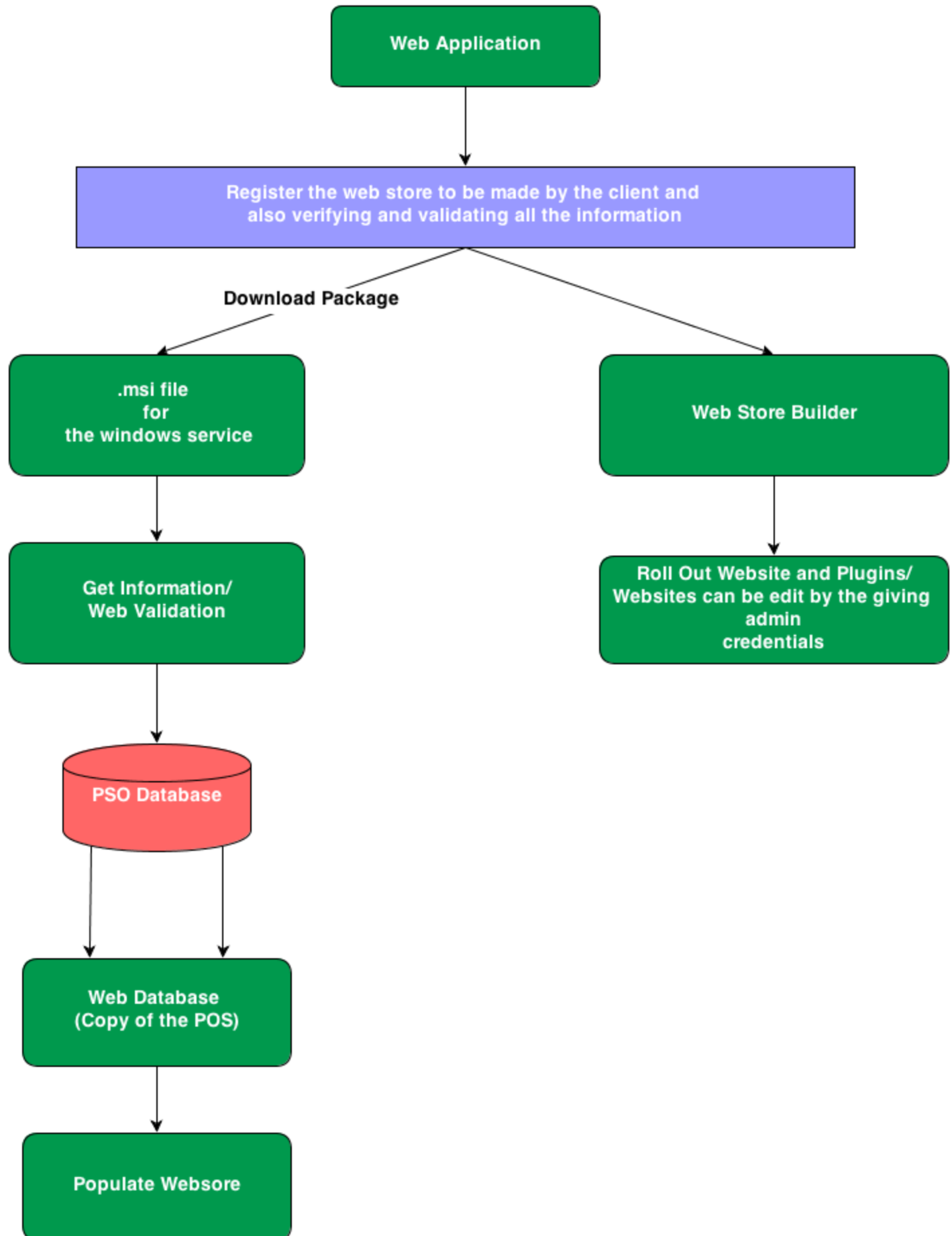
1.4   Product Scope

POS_Connect is designed to run on a private web server utilizing Wordpress, Multisite, PHP, and existing databases, so as to host, maintain and secure individual client's web stores and account information. POS_Connect also includes a Windows based client side service which automates interactions between the client's local POS and the POS_Connect server.

2.   Overall Description

2.1   Product Perspective

POS_Connect is a self-contained, standalone product. POS_Connect is mainly targeted toward small, pre-established businesses, as the purpose is to integrate into and improve upon already existing local POS systems. It also creates a client editable web store focusing on a simple user interface with little to no required technical background.

```
                        ┌──────────────────────┐
                        │    Web Application    │
                        └──────────────────────┘
                                   │
                                   ▼
        ┌──────────────────────────────────────────────────────┐
        │  Register the web store to be made by the client and  │
        │    also verifying and validating all the information   │
        └──────────────────────────────────────────────────────┘
              Download Package
              │                              │
              ▼                              ▼
     ┌─────────────────┐            ┌─────────────────────┐
     │    .msi file    │            │  Web Store Builder  │
     │       for       │            └─────────────────────┘
     │ the windows     │                     │
     │    service      │                     ▼
     └─────────────────┘            ┌──────────────────────────────┐
              │                     │  Roll Out Website and Plugins/│
              ▼                     │ Websites can be edit by the   │
     ┌─────────────────┐            │     giving admin              │
     │ Get Information/│            │     credentials               │
     │  Web Validation │            └──────────────────────────────┘
     └─────────────────┘
              │
              ▼
        ┌──────────────┐
        │ PSO Database │
        └──────────────┘
           │        │
           ▼        ▼
     ┌─────────────────┐
     │  Web Database   │
     │ (Copy of the POS)│
     └─────────────────┘
              │
              ▼
     ┌─────────────────┐
     │ Populate Websore│
     └─────────────────┘
```

2.2   Product Functions

POS_Connect provides clients with:
- *A user account, including a username, a password, and a list of owned stores*
- *A windows service that facilitates communication between the Intuit POS system and the POS_Connect servers*
- *An alert system which notifies the client of online transactions and requirements which the client must fulfill to complete these transactions*

Clients:
- *Create and own multiple web stores*
- *Create, read, update, and delete both local and and online inventories*
- *Sell items online through the web store*
- *Edit store themes to suit personal preference*

Customers:
- *Create, read, update, and delete a personal, online shopping cart*
- *View, purchase, and pay for items electronically through the web store*

Windows Syncing Service
- *Resolves conflicts between online and offline inventories*
- *Provides transaction data to the client*
- *Receives and transmits inventory data to and from each local client and the server*

2.3   User Classes and Characteristics

Client class:

Clients compose the primary user class which purchases POS_Connect to create a personal web-store. Clients have personal accounts on the POS_Connect servers that keep records of all pertinent information. Clients are provided with the POS_Connect Windows service that syncs their personal POS to their custom web store. Clients can create, read, update, and delete online and local inventories, sell items, and edit the personal themes of the multiple web stores they are permitted to own/operate through POS_Connect.

Customer class:

Customers compose the secondary user class which primarily interacts with the POS_Connect clients. Customers create, read, update, and delete personal shopping carts. Customers also can view and pay for online items through a client's personal web store.

2.4   Operating Environment

POS_Connect Windows service requires a Windows OS with Windows XP or later. The POS_Connect web service requires an Apache web server able to run PHP.

2.5   Design and Implementation Constraints

The POS_Connect service is currently limited to Windows computers and clients who already own an existing Intuit POS system, which may be addressed further in later versions. The POS_Connect web server must be able to run PHP, Wordpress, Multisite, and maintain a MySQL

database.

2.6   **Assumptions and Dependencies**

Assumptions:
- *Clients are expected to be store owners themselves.*
- *Clients are expected to already have Intuit POS set up.*

Dependencies
- *Wordpress and associated E-Commerce and Multisite plug-ins*

3.   **External Interface Requirements**

3.1   **User Interfaces**

3.1.1   **Web UI**
As of version 1.0 all POS Connect online services, including the main page where account verification and client download take place and the web stores where clients can list products and customers can buy them are all Wordpress website pages. This section shows the user interface with the POS Connect system annotated with requirement numbers associated with particular UI components.

The POS Connect main page is shown below. The current page should be displayed on the navigation in a different color than the other links. When a user clicks on the "Home" link, they are taken to the home page. When the user clicks on the "Downloads" link, they should be taken to the downloads page. If a user wishes to search the POS Connect site, they can use the search boxes on the right side of the page to do so.
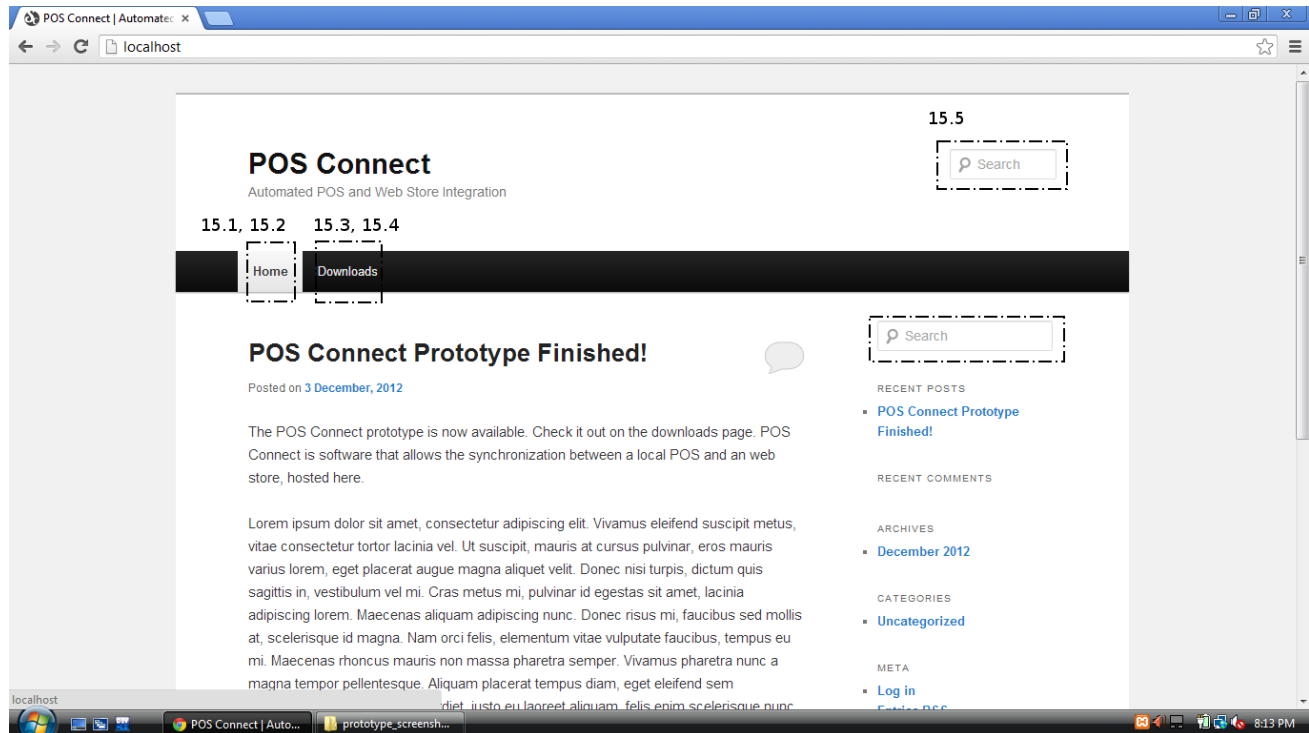
Figure 1: POS Connect main page

The POS Connect download page is shown below. The navigation and search boxes follow the same specifications as outlined in the previous section. The page has a download link located directly below the title. Any additional information is below the download link. Clicking on the link initiates a download of the installer for the client.
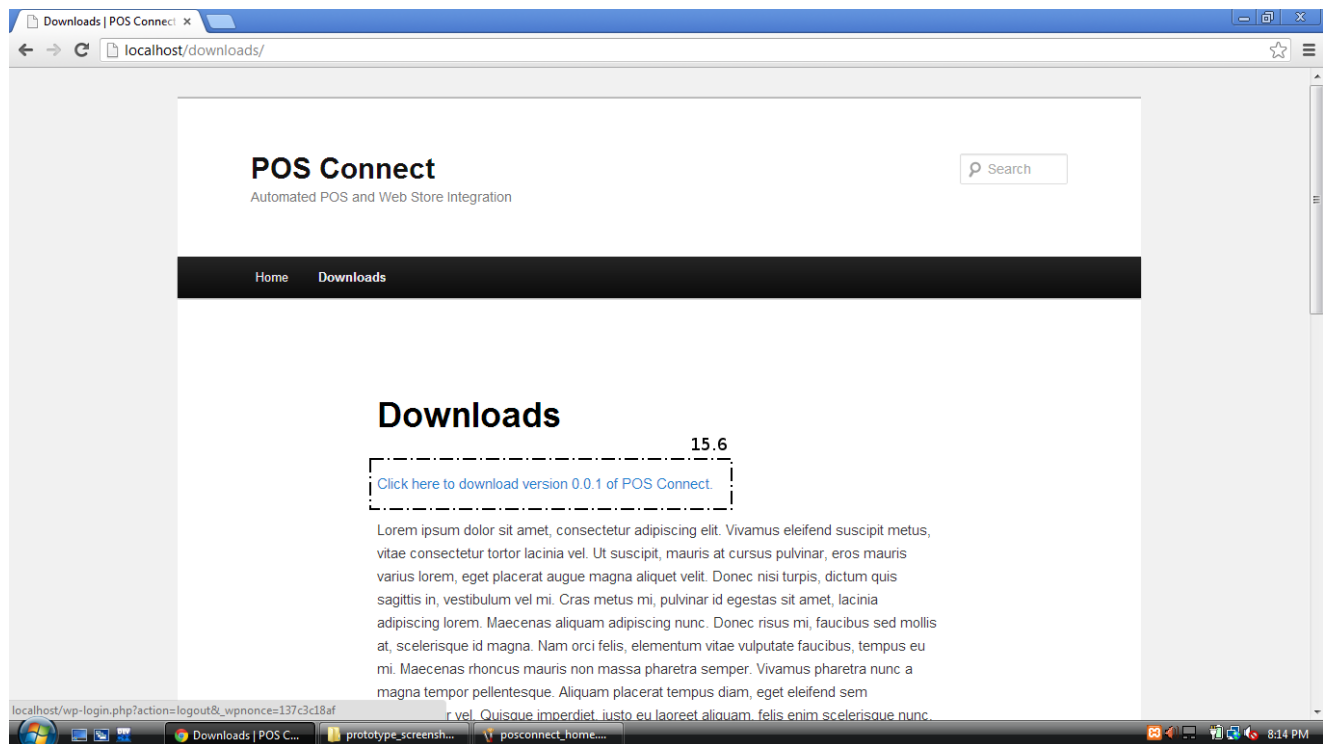

Figure 2: POS Connect download page

The following screenshot shows the home page for an individual store. The store has the products page link at the leftmost or topmost (depending on layout) part of the navigation. Clicking on the products page link directs a user to the products page for that site. Searching on the site for an individual store searches through the products and additional information, such as posts or page content, on that store's site.
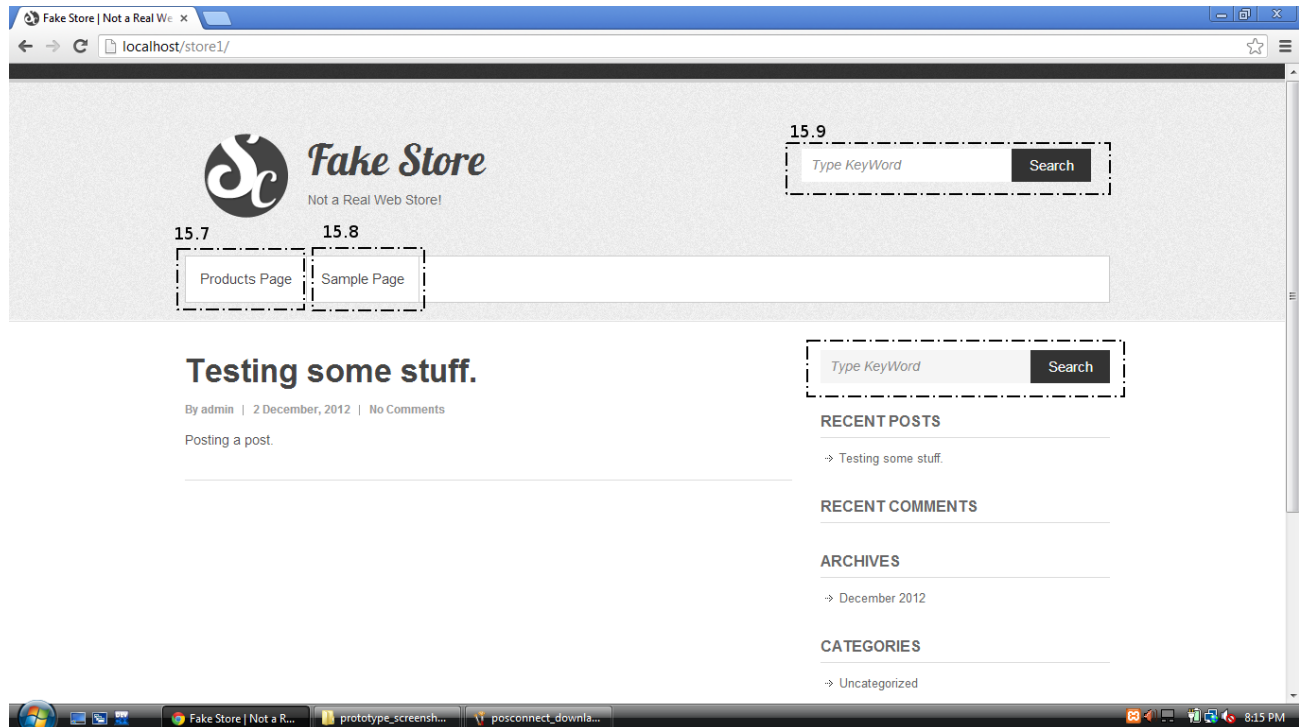
Figure 3: Home Page for Individual Store

The following screenshot shows an individual store's product page. Clicking on the title of a product directs a user to the product detail page. A user can add a product to their cart by clicking on the "Add To Cart" button.
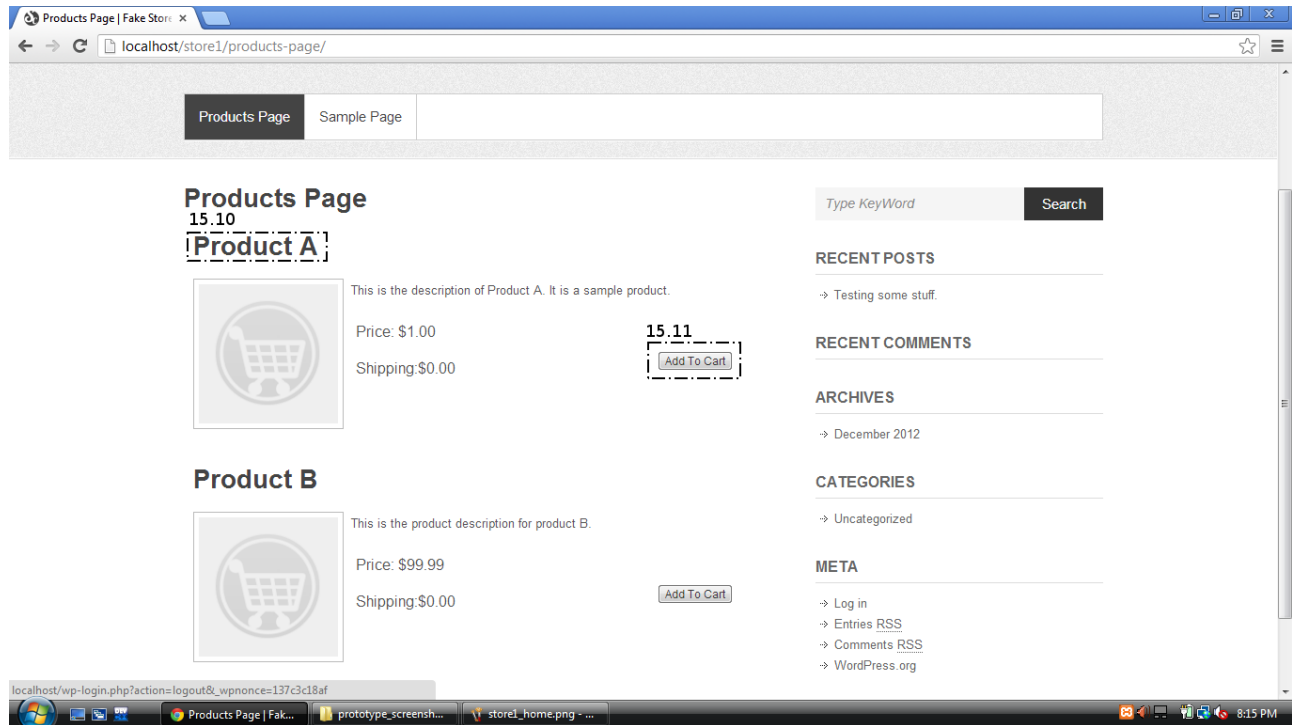
Figure 4: Products listing page

The next screenshot shows a product detail page. Navigation and other features on this page function the same was as outlined for an individual web store. A user can also add the item in question to their cart from this page by clicking the "Add To Cart" button.
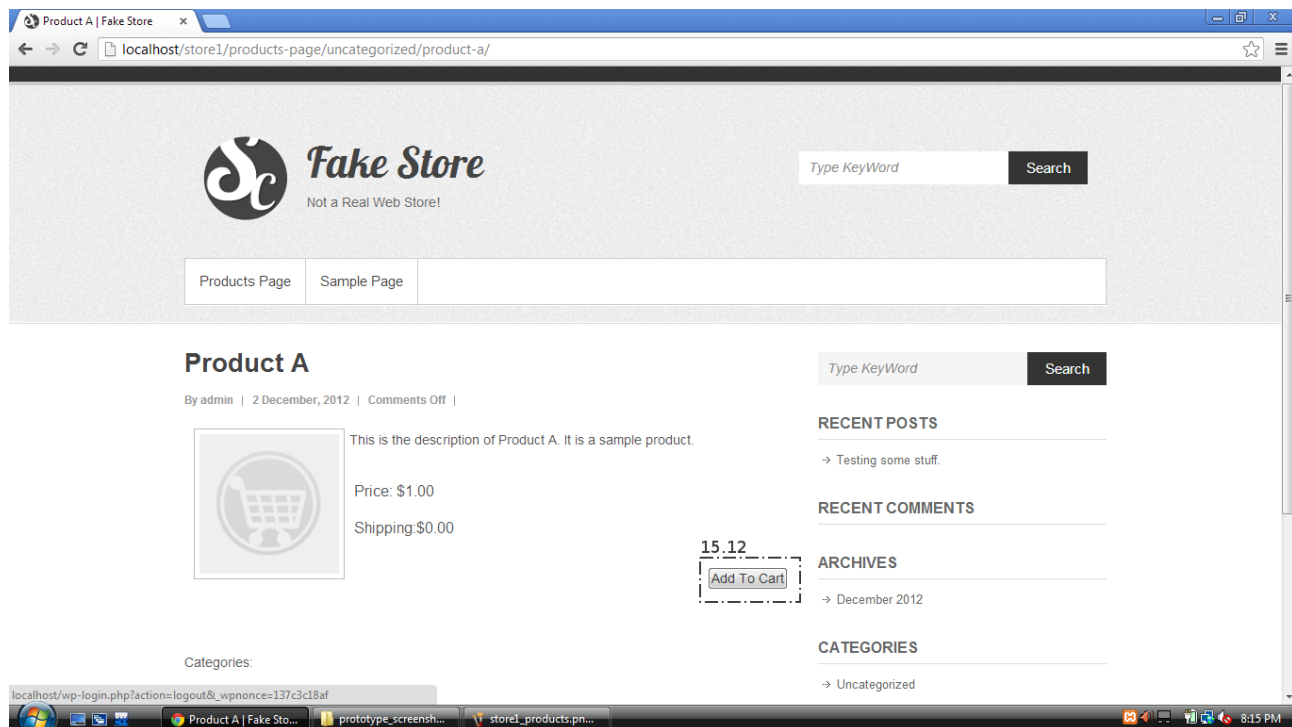

Figure 5: Product detail page

The following screenshot shows the login page for administration of an individual store. The username and password are to be entered into the appropriate boxes, then a user logs in by clicking on the "Log In" button.

Figure 6: Login page for administration of individual store

The following screenshot shows the WordPress dashboard for a particular store. The user can select a normal WordPress option if they wish, or the Products navigation item to list their products managed by POS Connect. Clicking on this link should take the user to the product administration page.
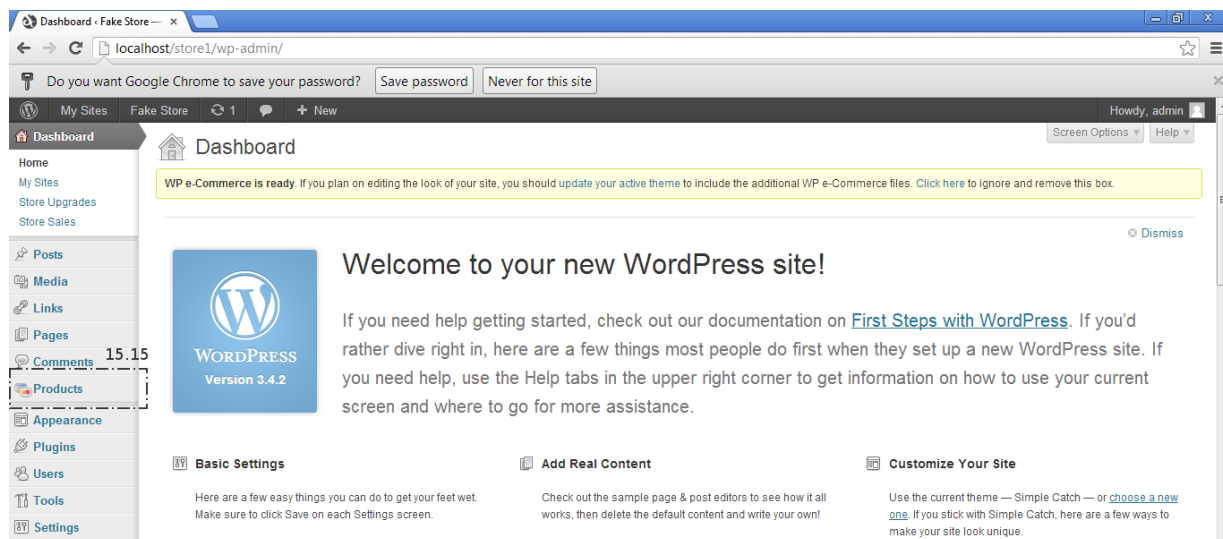
Figure 7: WordPress dashboard for a particular store, "products" link listed on dashboard

The following screenshot shows the product administration page. Clicking on a link at the top of the table sorts the table by that field. Clicking again sorts it descending. Clicking on a product title takes the user to the product edit page. Hovering over the title shows additional options to be

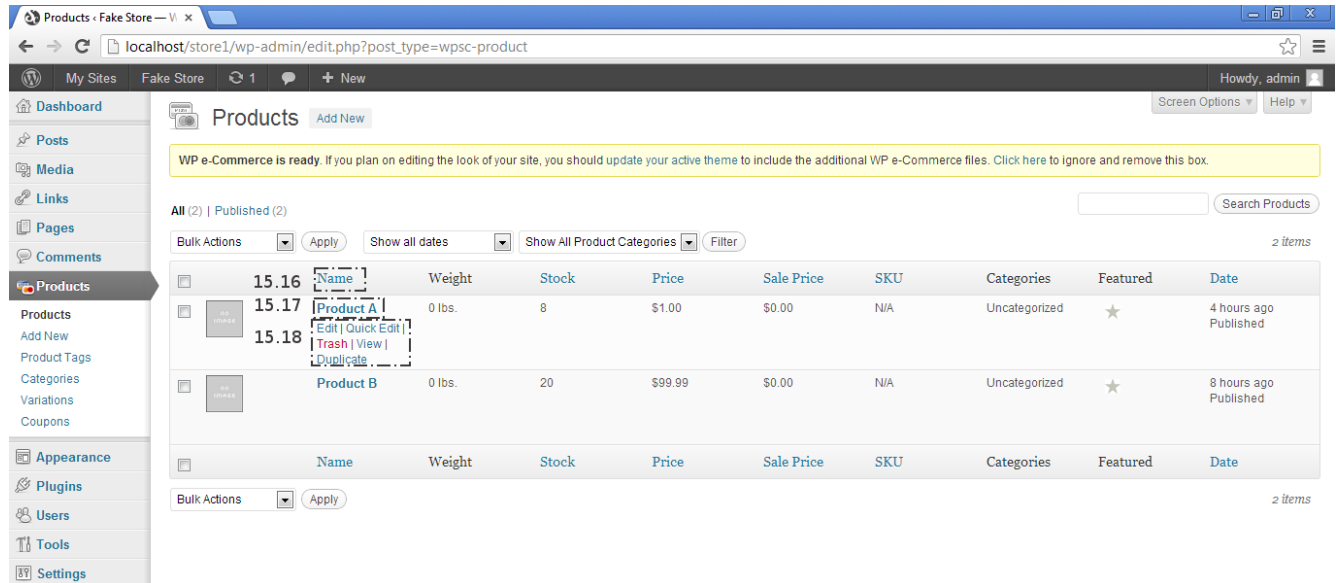*displayed. Other links on the page are handled by the wp-eCommerce plugin for Wordpress.*

Figure 8: Product administration page, products are sorted

The following screenshot shows the product edit page. An administrator can edit the product title, long description, and page at which the product appears on the site. The user can also click on the "View Product" button to view the product as a customer would see it on the product detail page. Changes can be previewed by clicking "Preview Changes." In order to save all changes, the user should press the "Update" button.
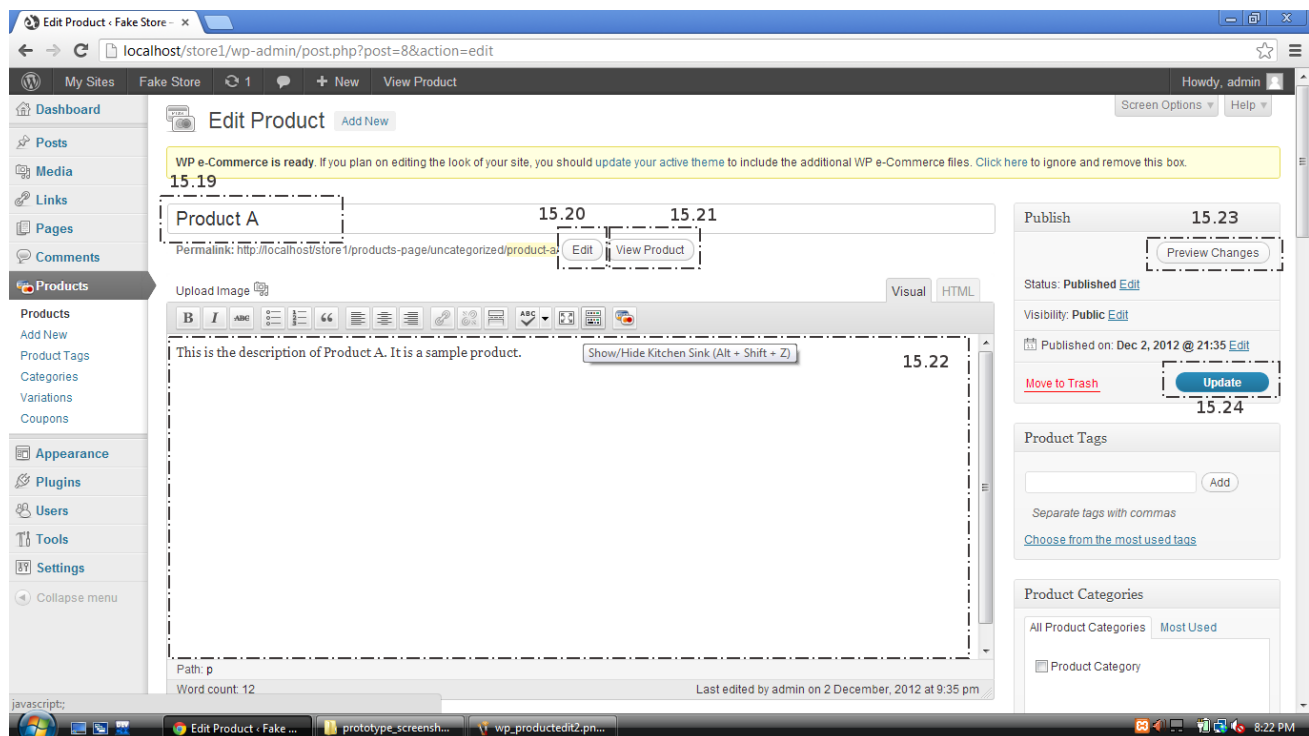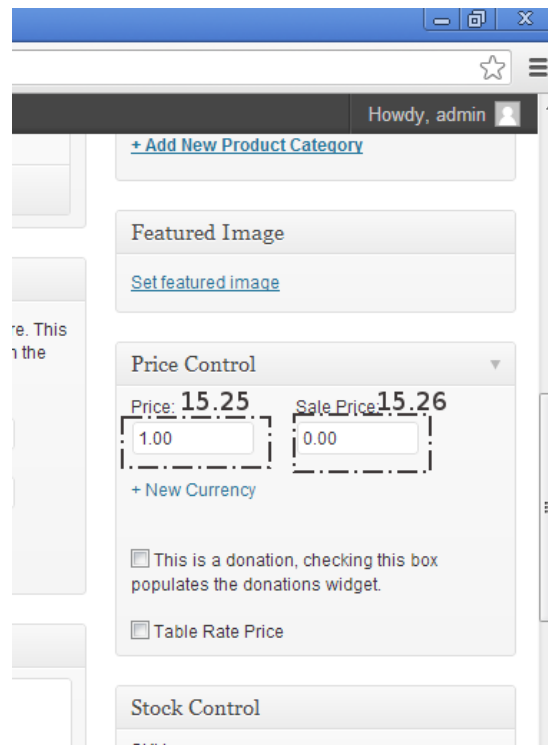

Figure 9: Product edit page

The following screenshot also shows the product edit page. The price and sale price can be edited on the right side of the page, below the visible portion on the above screenshot.

Figure 10: Price edit page

The following screenshot shows a store's checkout page. Cart items are listed here. Quantities of items can be edited from this page, and products can be removed altogether. To proceed to an available payment service, a user enters the required information in section 15.30 and clicks the "Next" button to be redirected to the proper payment authorization site.

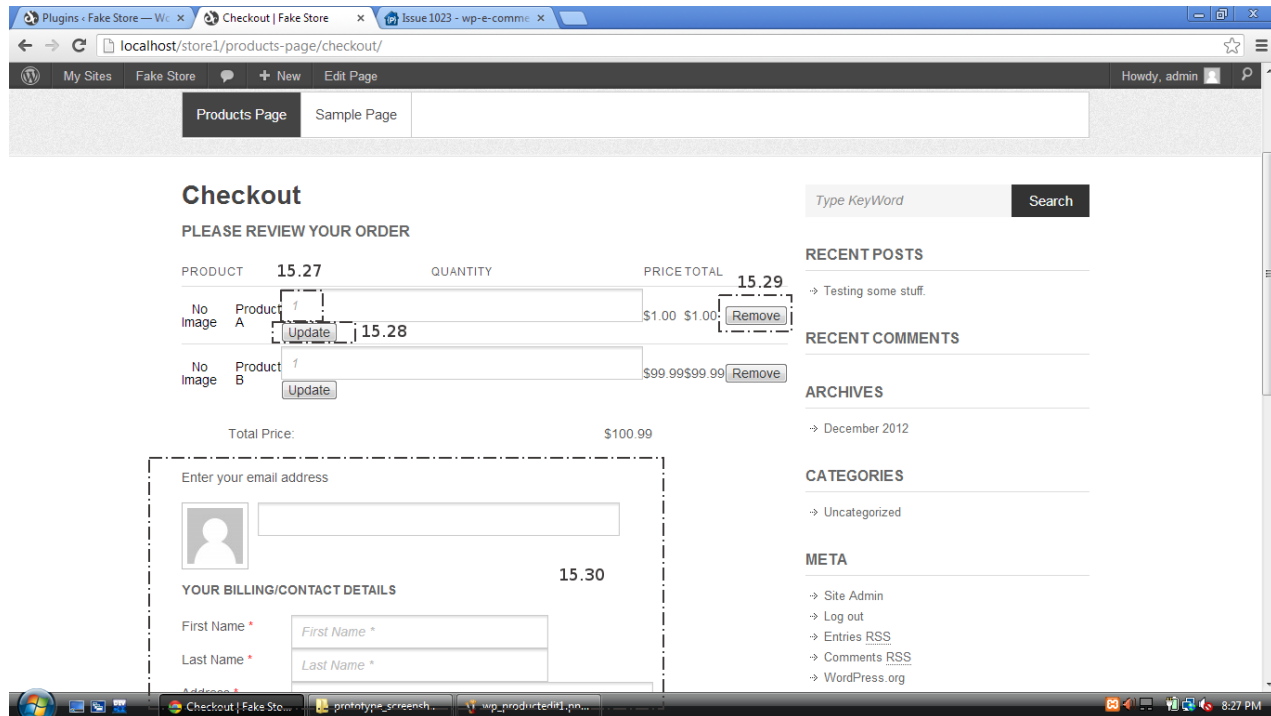Figure 11: Checkout page

3.1.2 *Local UI*

The following screen shots are related to REQ-2.1, the Windows Service installer.

Double clicking on the POS_setup installer POS_Setup Setup wizard is prompted.
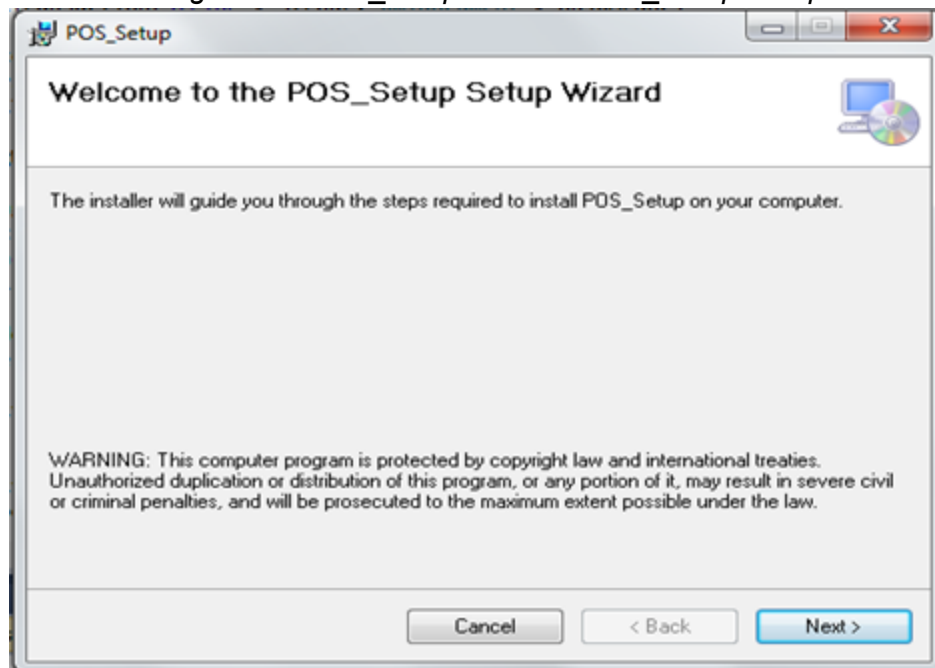
Figure 12: POS_setup Installer

Clicking on the cancel button displays a dialog box asking user if he/she wants to exit the setup.

Figure 13:

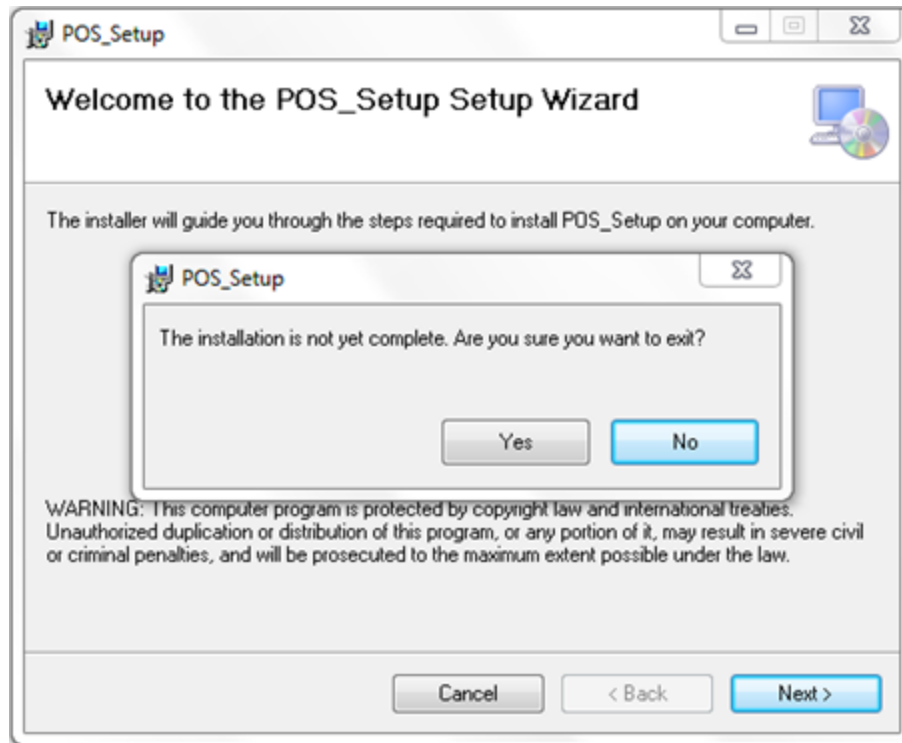*Clicking on the next button in the setup wizard asks the user for the folder location in which the installer is to be installed.*
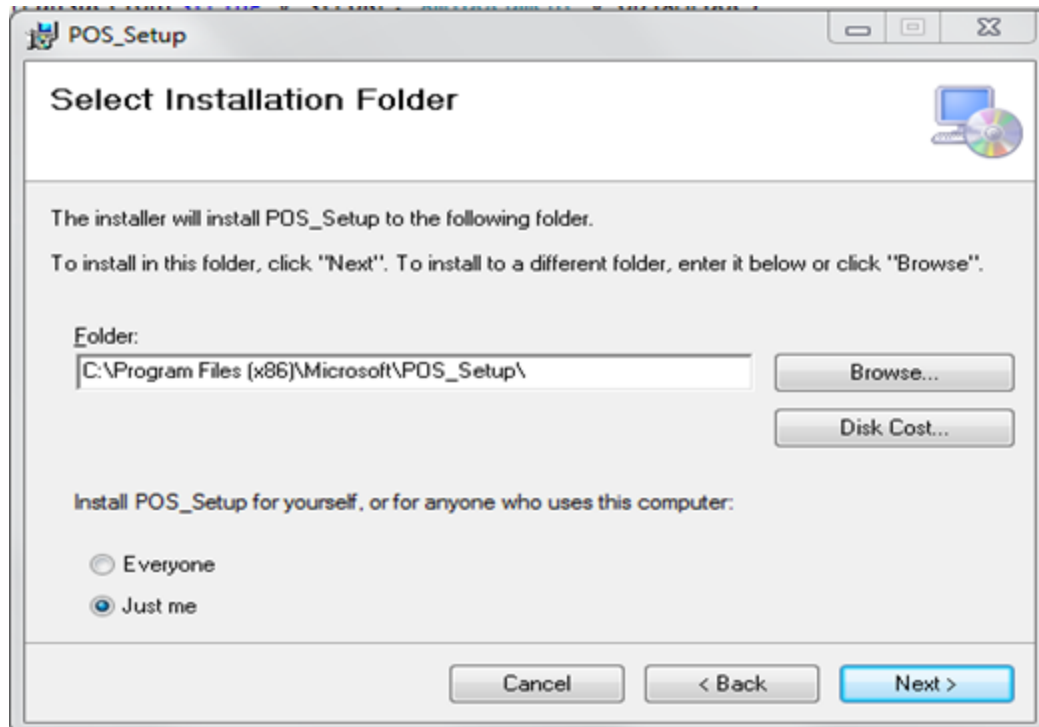
Figure 14:

The Next button displays a dialog box which asks for the users confirmation.
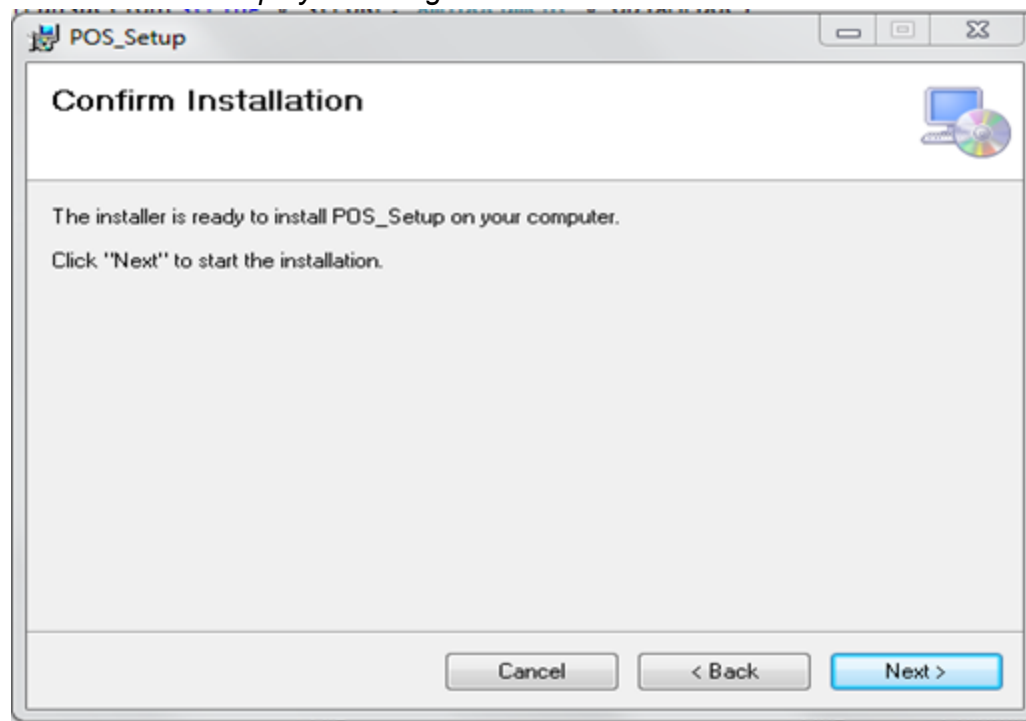
Figure 15:

Clicking on the Next button initiates the POS_setup installation.
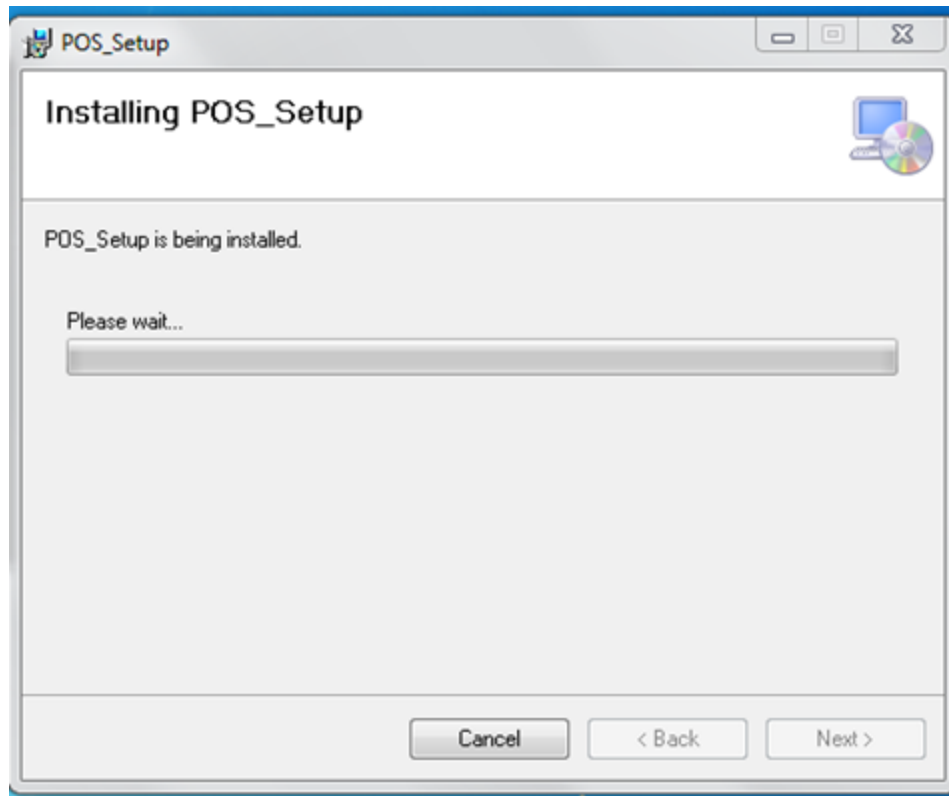
Figure 16:
Once the installation is over the user is asked to click on the Close button to exit.
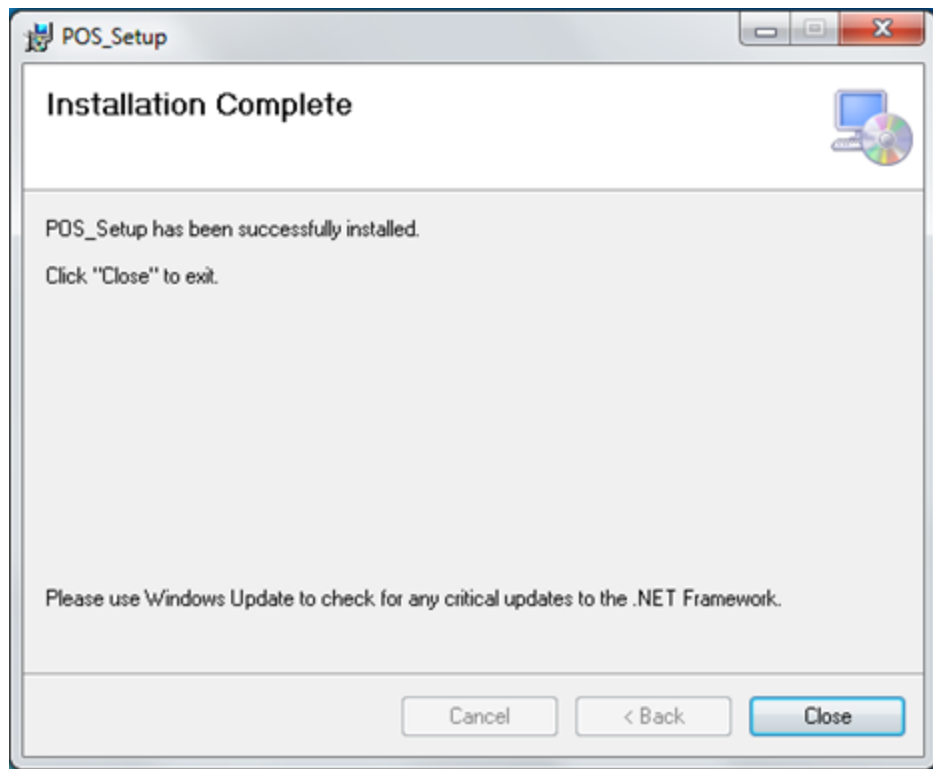
Figure 17:

After the service is installed clicking on the start button initiates the sync process.
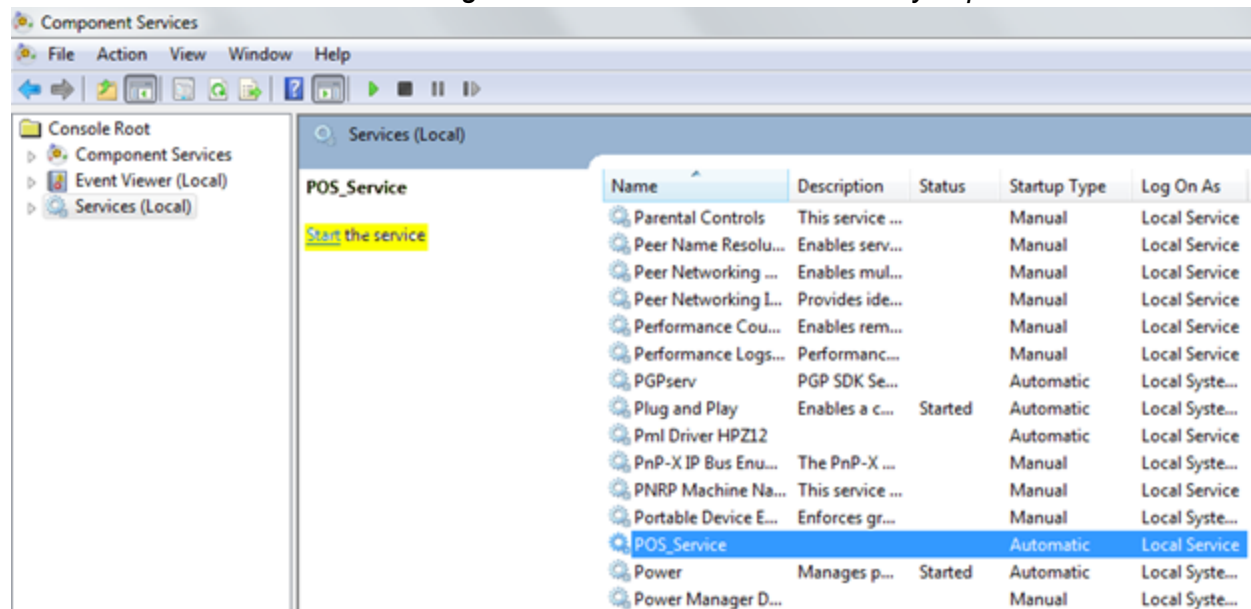
Figure 18:

Windows then makes an attempt to start the POS_Service.
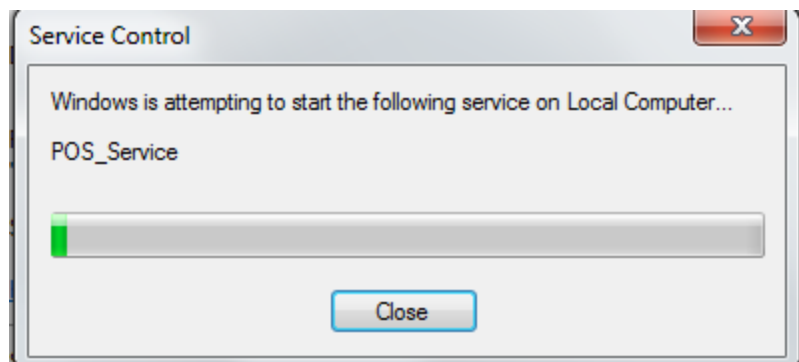
Figure 19:

Clicking on the POS_Setup again prompts the user to either repair or remove the service.
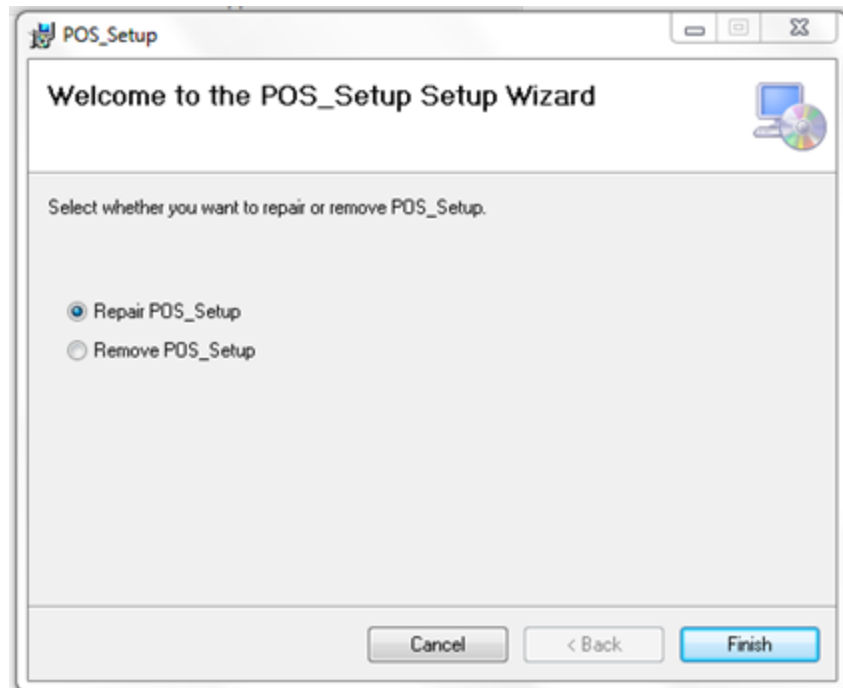
Figure 20:

Selecting the repair radio button and then clicking on Finish displays a dialog box stating that the service already exists.
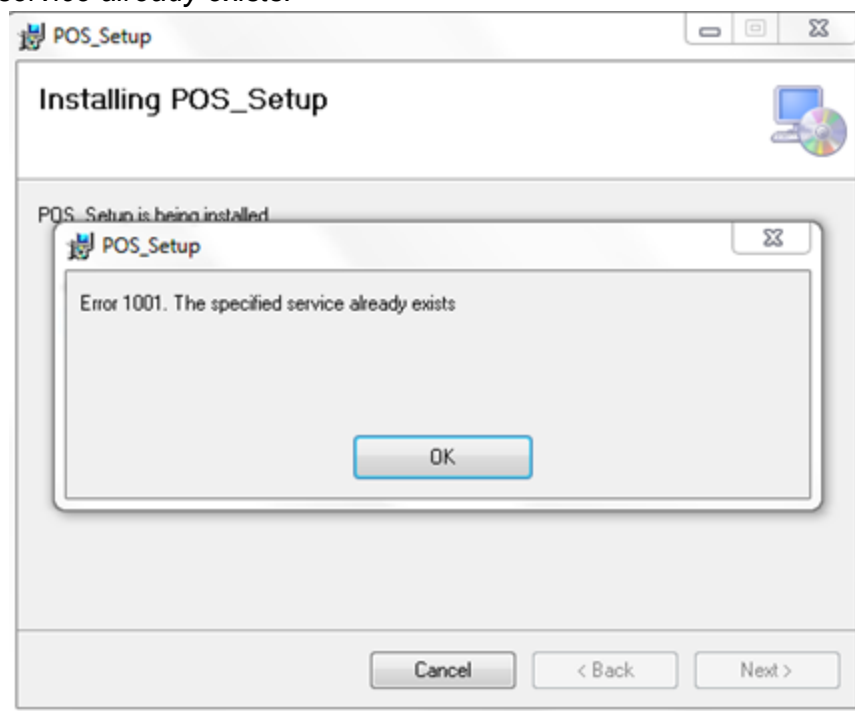
Figure 21

Selecting the remove radio button and clicking on finish starts the uninstallation.
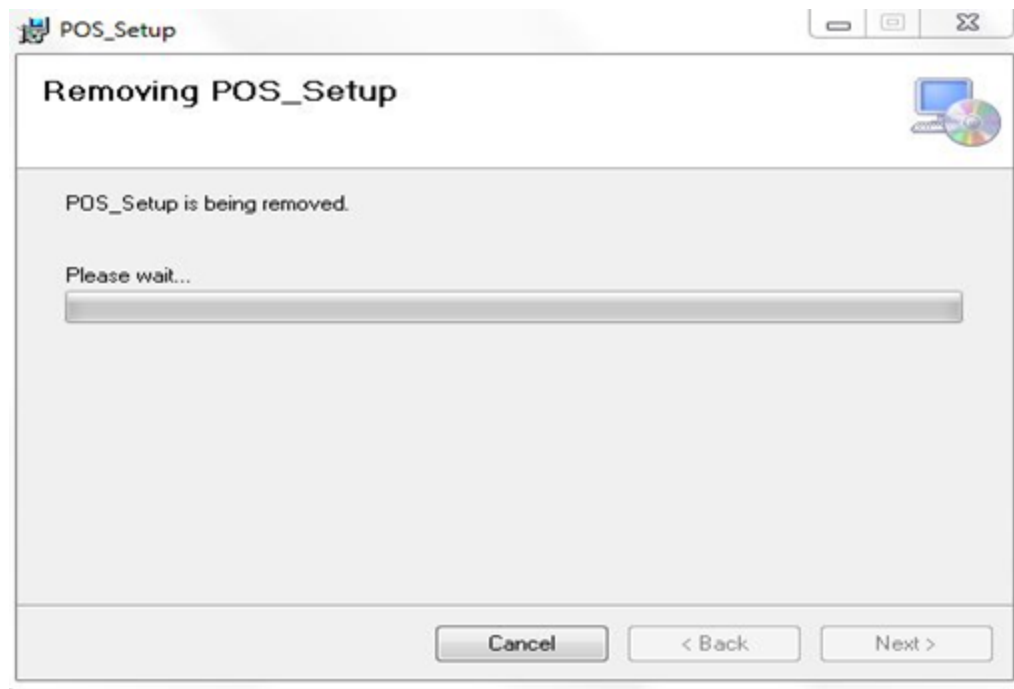
Figure 22:

Once the service has been uninstalled a dialog box showing that the service has been successfully removed is shown. Clicking on Close exits the installer.
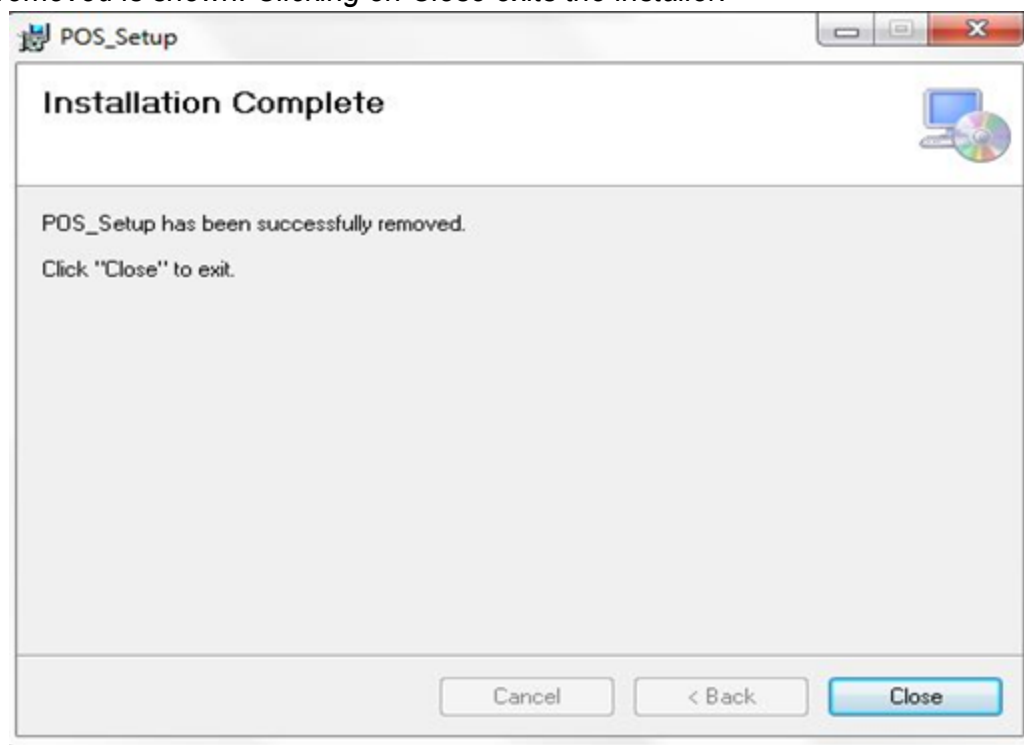
Figure 23:

As per requirement REQ-13.2, clients on their local machines can access a force sync option from the system tray.
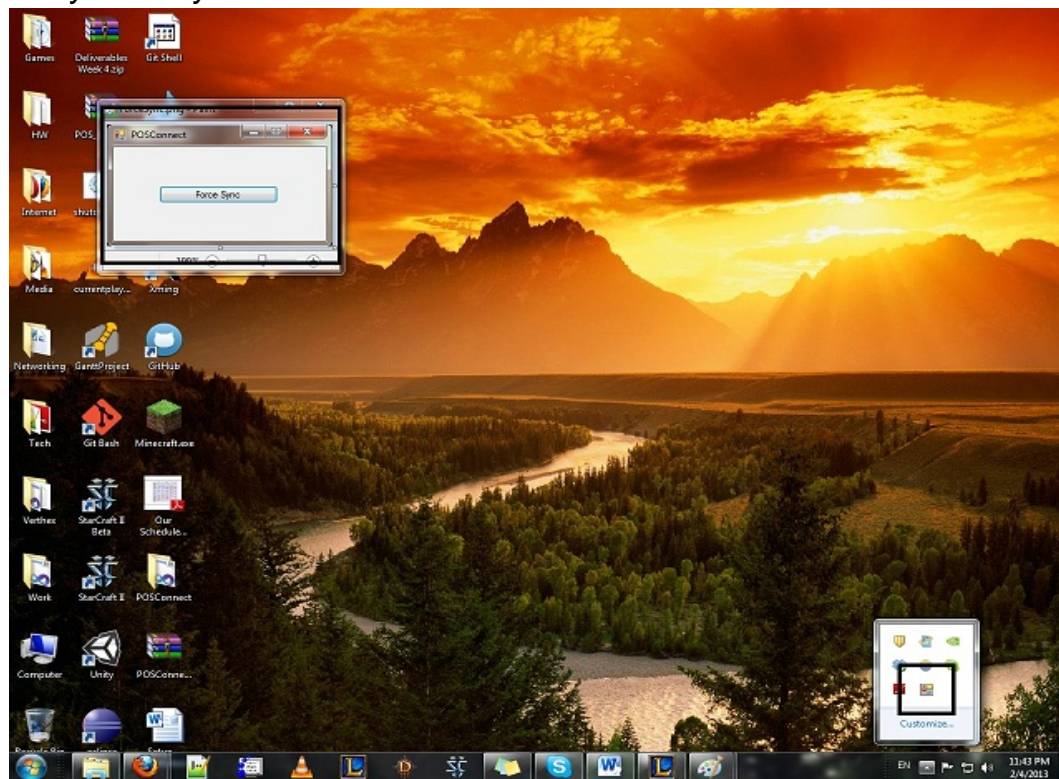
Figure 24:

3.2 Hardware Interfaces

POS_Connect's client side service requires a PC able to run windows XP or higher. 20MB of free space is recommended.

POS_Connect's server side service requires the ability to grow dynamically based upon number of clients and frequency of communications but does not initially require a large amount of space or resources to run.

A functional mouse and keyboard are required for fully functionality of both the client and server sides of POS_Connect.

3.3 Software Interfaces

POS_Connect integrates with multiple softwares including Wordpress for web site generation and management, Multisite for hosting multiple stores, and Intuit POS for local inventory management. POS_Connect also utilizes an Apache server with PHP functionality and both an offline and online MySQL database for inventory management. On the client side of the product POS_Connect must run on a Windows XP or better OS.

3.4   Communications Interfaces

All communications and syncing between the client and server happen in XML formatted messages sent in HTTP messages. Any secure data is not be sent or by POS_Connect and not managed by this system.

4.   System Features

4.1   Client Account

4.1.1   Description
Clients are able to use the system to create a personal user account through the main website. This user account stores all pertinent information including which stores they own and how many stores they own.

4.1.2   Functional Requirements
REQ-1.1:   When a client wants to start using this system they must first make an account on the system providing any necessary banking and store information. This account stores user information in an online database that can be viewed and edited by the account holder at any time. (Priority 1)

4.2   Windows Service

4.2.1   Description
Clients with an account gain access to a downloadable windows service package that initializes a client's store. It also handles the communications between the clients' local POS and their web store.

4.2.2   Functional Requirements
REQ-2.1:   Clients who have an account are provided with a windows service installer package that obtains store information from the client and local POS (intuit). This service runs in the background of the client's computer and handles all communications and information transfers with the server. This includes creating the initial web store (See requirement 3), handling sync requests and responses, and dealing with log information. (Priority 1)

4.3   Web Store

4.3.1   Description
Clients, through the use of their account information and windows service, are provided with a web store or stores. These are hosted by the system that keeps an online database of the client's stock and allows for customers to buy and search for a client's items online.

4.3.2 Functional Requirements

REQ-3.1:   Clients are able to create and edit an online web store that is hosted on the system's servers. This store have 5 or more themes for clients to choose from and clients may create more than one store. This web store is where a client's customers can buy items and the client can edit their store. (See requirements 4-9 for further functionality) (Priority 1)

4.4   Online inventory

4.4.1   Description

As items are sold the online inventory is updated. The online stock displayed for each client's store is a real time reflection of that client's store's online inventory.

4.4.2 Functional Requirements

REQ-4.1:   As inventory is updated, either through a sync with the client or an online sale occurring, online stock for the items as well as web carts are updated. (Priority 1)

REQ-4.2:   Inventory is displayed through the web store according to the theme a client has chosen for their store. Inventory can also be organized and searched for by category and department. (Priority 2)

4.5   Editable Product Information

4.5.1   Description

All product information in the online inventory database is editable. Pictures may also be added or edited for product in the database.

4.5.2   Functional Requirements

REQ-5.1:   Clients are able to view all product information and edit this information online. This online product information, including pictures, is not synced with local POS product information except on first sync. (Priority 1)

4.6   Web Cart

4.6.1   Description

Customers on a web store are able to add/remove items to a virtual web cart and purchase all items in the cart at checkout.

4.6.2   Functional Requirements

REQ-6.1:   A customer can select a product that is not out of stock and add any valid number of the product to their web cart. This web cart can be used to monitor items you want or for buying groups of items. Items are subtracted from the inventory list upon checkout and not upon adding to the cart. (Priority 1)

4.7   Online Sales

4.7.1   Description

A client's web store is capable of online purchases and transactions with customers.

4.7.2   Functional Requirements

REQ-7.1:   A customer can inspect items online add them to a web cart and can purchase the item. Before paying for an item or adding an item to a web cart, the system checks the current inventory to make sure the item is not out of stock. (Priority 1)

4.8   Payment Processing

4.8.1   Description

The system must process payments when a customer checks out. This feature shall be considered complete if all of its high priority requirements are met. It is a high priority feature.

4.8.2   Functional Requirements

REQ-8.1:   A customer is able to check out via PayPal. After checking out, the store owner receives payment equal to the total value of the items in a customer's cart credited to their PayPal account. (Priority 1)

REQ-8.2   A customer is able to check out via authorize.net. After checking out, the store owner receives payment equal to the total value of the items in a customer's cart credited to their authorize.net account. (Priority 2)

4.9   Shipping and Label Information

4.9.1   Description

The server must notify a client when an item is sold providing information about the sale. Shipping information and a formatted ready to print shipping label are provided.

4.9.2   Functional Requirements

REQ-9.1:   A client upon syncing is informed of all sales/transactions made since the last sync. Shipping information and a ready to print label are prepared for users with printers. (Priority 1)

4.10   Conflict Resolution

4.10.1   Description

As conflicts occur with sales or inventories either online or offline the system handles each kind of conflict as well as it is capable of doing.

4.10.2   Functional Requirements

REQ-10.1: All conflicts resulting from online to online interactions are handled by the server immediately. This prevents duplicate stock from being sold or informs the user(s) that a conflict has occurred and that their transaction will <u>not</u> be

processed or it will be refunded. (Priority 1)

REQ-10.2: *All conflicts resulting from online to offline inventory deficiencies are handled on sync with the client. Local customers and inventory takes priority over online sales and any conflict resulting from online sales notifies and refunds the online customer. (Priority 1)*

4.11   Information Reporting

4.11.1   Description
As information regarding sync conflicts or completed transaction occur they are logged for debugging and providing information to clients.

4.11.2   Functional Requirements
REQ-11.1: *All conflicts that occur for an individual web store are logged with any action taken, such as informing a customer of a deficiency in products, and saved in the database for a limited amount of time under the web store owner's account. (Priority 2)*

REQ-11.2: *A log of all sales for an individual web store are recorded online and saved on the associated client's computer at next sync. This log is shown to the user at sync to inform them of recent sales as well as what actions should be taken. (i.e. 10 baseballs need to be sent to 4901 Duncan Street). This information is also available online and saved at a text file on the client's computer. (Priority 1)*

4.12   Inventory Management

4.12.1   Description
A client's inventory is handled through their local POS (intuit) and then synced with the system's online inventory. A client may also edit their inventory either online/offline through the system.

4.12.2   Functional Requirements
REQ-12.1: *Clients can create, read, update, and delete from a simple Graphical User Interface (GUI) on their local machines. These changes are reflected in the local POS (intuit) as well as the online inventory upon sync. (Priority 3)*

REQ-12.2: *Clients can create, read, update, and delete from an online interface that immediately updates the online inventory. Local inventory is updated on sync. (Priority 3)*

4.13   Syncing

4.13.1   Description
Web stores as well as a client's local POS inventory are updated by the windows service (See requirement 2). This happens automatically after any transaction and can also be forced at any time by a client from their local machine.

4.13.2   Functional Requirements
REQ-13.1: Local POS inventory and online inventories are periodically compared (10 minute intervals) and resolved into a master inventory list. This list is then sent to both the local POS and online inventory so that they can be updated. This sync logs conflicts (See requirement 11) and notifies clients and customers with the appropriate information when the conflicts occur. (Priority 1)

REQ-13.2: Clients can force a sync at any time on their local machine and immediately see sync results. (Priority 1)

4.14   POS Interaction

4.14.1   Description
The windows service (See requirement 2) can interact with a user's POS as well as any MySQL localhost databases. This interaction includes creating, reading, updating, and deleting inventory in the local POS or MySQL database.

4.14.2   Functional Requirements
REQ-14.1:   The windows service can interact with Intuit POS (Priority 1)

REQ-14.2:   The windows service can interact with a generic MySQL database. (Priority 1)

4.15   Web UI Requirements

4.14.1   Description
Various actions that must be taken when a user interacts with various portions of the user interface on web sites hosted by POS connect are listed in this section. All requirements in this section refer to the screenshots labeled with requirement numbers in the External Interface Requirements section of this document.

4.14.2   Functional Requirements
REQ-15.1: On the POS Connect home page, the link "Home" link appears with a different background color than the other links.

REQ-15.2: On all pages of the POS Connect main site (not individual stores) clicking on the home link causes a user to navigate to the POS Connect home page.

REQ-15.3: Clicking on the "Download" link on the navigation of the POS Connect site causes a user to navigate to the POS Connect client installer download page.

REQ-15.4: Inactive navigation items on the POS Connect page have the same color as the navigation bar background.

REQ-15.5: Entering terms into the search box on the POS Connect main site (not individual stores) performs a search of the content of the POS Connect main site and lists results.

REQ-15.6: *Clicking on the download link from the POS Connect download page initiates a download of the POS Connect client installer.*

REQ-15.7: *Clicking on the products page navigation on a store's page causes the user to navigate to the full product listing page.*

REQ-15.8: *Additional links on the navigation for a store's page are located either to the right of or below the products link, depending on the theme.*

REQ-15.9: *Entering search terms on an individual store's site searches through the content of that site, including products, and returns results.*

REQ-15.10: *Clicking on the product name on the product listing page causes a user to be redirected to the product detail page for the item in question.*

REQ-15.11: *Clicking on the "Add to Cart" button on the product listing page causes the item in question to be added to the user's cart.*

REQ-15.12: *Clicking on the "Add to Cart" button on the product detail page causes the item in question to be added to the user's cart.*

REQ-15.13: *The login page has text boxes where the user can enter a username and password to attempt to authenticate with.*

REQ-15.14: *Clicking on the "Log In" button on the login page attempts to authenticate the user using the given credentials from the form specified by REQ-15.13.*

REQ-15.15: *A "Products" link shows up in addition to the standard WordPress dashboard options after a user successfully logs in. Clicking on this link takes the user to the products list managed by POS Connect.*

REQ-15.16: *Clicking on a the top column in the table on the products listing page causes all products to be sorted by that field. Clicking on the same item when items are sorted switchs the sort ordering from ascending to descending, or from descending to ascending.*

REQ-15.17: *Clicking on a product name from the product administration page takes the user to the product edit page for that product.*

REQ-15.18: *Hovering over a product name on the product listing displays additional options provided by the wp-eCommerce plugin.*

REQ-15.19: *From the product edit page, users can change the title for a product.*

REQ-15.20: *From the product edit page, users can change the page address for a product.*

REQ-15.21: *From the product edit page, users can navigate to the view product page.*

REQ-15.22: *From the product edit page, users can edit the description of a product.*

REQ-15.23: *Users can preview the changes they have made on the product edit page by clicking on the "Preview Changes" button.*

REQ-15.24: *Users can apply all changes made on the product edit page by clicking on the "Update" button.*

REQ-15.25: *Users can edit the product price on the product edit page.*

REQ-15.26: *Users can set a sale price from the product edit page.*

REQ-15.27: *Users can change the quantity of a given item in their cart from the checkout page.*

REQ-15.28: *Users apply changes to the quantity for an item in their cart by clicking the "Update" button below the quantity editing text box.*

REQ-15.29: *Users can remove an item from their cart by clicking the "Remove" button next to the item in question from the checkout page.*

REQ-15.30: *Users can proceed to a payment processing service by filling out the required information on the checkout page and clicking the "Next" button.*

5. Other Nonfunctional Requirements

5.1 Performance Requirements

All transactions, whether online or offline, trigger a sync process. During this process, there is a chance of displaying conflicting information regarding the stock of an online store. A sync process should take a minute or less to complete in order to minimize the frequency these types of conflicts from occurring.

All syncing communications timeout after one minute of no response from the either client or server. After this time, the non-responsive component is assumed to be unreachable, and any uncompleted actions are set aside for the next sync unless communication from the unreachable component is reestablished.

5.2 Safety And Security Requirements

In regard to authorization, payment, and bank account information, all sensitive information is sent over encrypted channels and databases that are managed by other established services. POS_Connect does not store or directly manipulate any sensitive banking information. Rather, it only asks for and archives usernames, passwords, and information directly related to the POS_Connect web service. This information is also encrypted and not available for public access.

5.3   **Software Quality Attributes**

POS_Connect must be tailored to the needs of those with little to no technical background. All interfaces and communications with clients are geared toward simplicity and ease of access.

POS_Connect's Window's Service includes an API that is an extensible framework for communicating with different POS systems. This API is allowed to be used in other projects to facilitate communications between any web service and a variety of local POS systems.

5.4   **Business Rules**

Clients have full control over their personal web store and local Window's Service at all times. This includes, but is not limited to, editing the inventory, themes, and product information at any time. Client's do not have access to any other client's personal or web store information.

Customers only have access to information displayed on a client's web store. Customers have access to web carts and the ability to make transactions on in stock products any time the web store is running.

Administrators have access to usernames, web store information, and all other non-secure/encrypted information, such as client passwords. Administrators, only with the permission and observation of respective client, have access to all features of a client's web store. This is to help reduce client expertise and interaction with the system if the client does not understand or wish to edit the store themselves.

Appendix A: Glossary

POS : *An acronym for Point of Sales, which is the place where a transaction occurs in exchange for goods or services*

POS_Connect : *The name of the product for which this document is being written*

Wordpress : *A free and open source blogging tool and a content management system used for website creation and management*

PHP : *An open source server-side scripting language designed for Web development to produce dynamic Web pages*

Multisite : *An open source plug-in for use with Wordpress to create multiple websites across a network*

Client : *An owner and operator of a single instance of the POS_Connect installation*

Customer : *One of the users of a client's POS_Connect website*

Administrator : A person who manages the POS_Connect servers and product

GUI : An acronym for graphical user interface, it is a type of user interface that allows users to interact with electronic devices using images rather than text commands

UI : An acronym for user interface. A UI is the space designed for interaction between humans and machines.

MySQL : The world's most used open source relational database management system

Intuit : An American software company that develops financial and tax preparation software and related services for small businesses, accountants and individuals

Sync : A term for the process for retrieving data, resolving conflict in the data, and sending the data back

OS : Operating System. The main software that controls interactions from the hardware of the computer to the software that runs on the computer

API : An acronym for application programming interface. An API is a protocol intended to be used as an interface by software components to communicate with each other