

# BigLedger Handbook

Vincent Lee <vincent@akaun.com>, Diana Filimonova <diana@wavelet.net>

Version 1.0, 2022-05-15



This is the public guide that provides all public use cases of the Akaun Platform. To view this in other formats, click on the following:

- [Epub Format](#)
- [Single File HTML](#)
- [PDF Format](#)

# Table of Contents

1. User Guide .....	5
1.1. General Users.....	5
1.1.1. Your AkaunID.....	5
1.1.2. The Production, Staging and Development Environment.....	5
1.1.3. Understanding Root vs Tenant.....	5
1.1.4. The Applet Store .....	6
1.2. Project Implementors .....	7
1.2.1. Subscription setup in Akaun Platform.....	7
1.2.2. Tenant setup in Akaun Platform.....	7
1.2.3. Applet-Catalogs .....	7
1.2.4. Configuration of Core Modules .....	8
1.3. Tenant Owners .....	9
1.3.1. Section 1 .....	9
1.3.2. Section 2 .....	9
1.4. Applet Developers .....	10
1.4.1. Signing up your bigledger account.....	10
1.5. Reseller Guide .....	11
1.5.1. Section 1 .....	11
1.5.2. Section 2 .....	11
1.6. System Integrators .....	12
1.6.1. Section 1 .....	12
1.6.2. Section 2 .....	12
2. Guide by Industry.....	13
2.1. Consumer Electronics Industry.....	13
2.1.1. Problems.....	13
2.1.2. Solutions .....	13
2.1.3. Features.....	13
2.2. Pharmacy Industry.....	13
2.2.1. Problems.....	13
2.2.2. Solutions .....	13
2.2.3. Features.....	13
2.3. Car Workshops .....	13
2.3.1. Problems.....	13
2.3.2. Solutions .....	13
2.3.3. Features.....	13
2.4. Retail Chainstores.....	13
2.4.1. Problems.....	13
2.4.2. Solutions .....	13

2.4.3. Features .....	13
2.5. Logistics Industry .....	13
2.5.1. Problems .....	14
2.5.2. Solutions .....	14
2.5.3. Features .....	14
2.6. Manufacturing Industry .....	14
2.6.1. Problems .....	14
2.6.2. Solutions .....	14
2.6.3. Features .....	14
2.7. Pet Industry .....	14
2.7.1. Problems .....	14
2.7.2. Solutions .....	14
2.7.3. Features .....	14
3. Guide by Modules .....	15
3.1. Core Module .....	15
3.1.1. Overview .....	15
3.1.2. Benefits .....	15
3.1.3. Related Applets .....	15
3.1.4. Pricing .....	15
3.2. Accounting Module .....	15
3.2.1. Overview .....	15
3.2.2. Features .....	15
3.3. Point of Sales Module .....	16
3.4. Manufacturing Module .....	16
3.5. Membership Module .....	16
3.6. Multilevel Marketing Module .....	16
3.7. Unified Contact Center Module .....	16
3.8. Inventory Module .....	16
3.9. EcomSync Module .....	16
3.10. Delivery Module .....	16
3.11. Cross Platform Commerce .....	16
3.12. Procure to Pay Module .....	16
3.13. Order To Cash Module .....	16
4. Applet Directory .....	17
4.1. Applet Listing .....	17
5. Cloud Native Architecture .....	18
5.1. Background .....	18
5.2. Motivation .....	18
5.2.1. Integrations .....	18
5.2.2. Infrastructure and Toolchain .....	18
5.2.3. Network Effect .....	18

5.2.4. Cloud Cost Savings .....	19
5.2.5. Artificial Intelligence .....	19
5.2.6. Human Resource .....	19
5.3. Journey .....	19
5.4. Challenges and Lessons .....	19
5.5. Technical Considerations .....	19
6. Technical Guide .....	20
6.1. Applet Development Guide .....	20
6.2. Akaun Shell Development Guide .....	20
6.3. Cloud Infrastructure .....	20
6.4. BigLedger Database Guide .....	20
6.4.1. Overview .....	20
6.4.2. Database Schema .....	20
6.4.3. Liquibase .....	20
6.4.4. The Root Database Schema .....	20
6.4.5. The Tenant Database Schema .....	20
6.5. BigLedger Java API Guide .....	20
6.5.1. Spring Framework .....	20
6.5.2. RESTful API Best Practices .....	20
6.6. Domain Driven Design .....	20
6.7. CP Commerce Development .....	20
6.8. Kubernetes .....	20
7. Documentation Authoring .....	21
7.1. Authoring this Documentation .....	21
7.2. Setup and Configurations .....	21
7.2.1. Github Repository .....	21
7.2.2. AsciiDoctor Toolchain .....	22
Installing AsciiDoctor .....	22
Installing Epub3 Converter .....	23
Installing PDF Converter .....	23
Installing Multipage HTML Converter .....	23
7.2.3. Visual Studio Code .....	23
7.3. Understanding the Directory Structure .....	23
7.4. Committing Changes To The Repository .....	24
Glossary .....	26
Appendix A: First Appendix .....	27
A.1. First Subsection .....	27
A.2. Second Subsection .....	27
Appendix B: Second Appendix .....	28
B.1. First Chapter .....	28
B.2. Second Chapter .....	28

# Chapter 1. User Guide

This repository contains all the source code for publishing the Akaun Platform Public Documentation.

## 1.1. General Users

The very first thing that every akaun-platform users would need to have, is to sign up for and AkaunID. You can do so by visiting <https://akaun.com/>

### 1.1.1. Your AkaunID

It is important for you to understand that with a single AkaunID, it is possible for you to have multiple Sign-In methods. You could be using an email with password, a phone number with the same password, you could also be adding access keys to your AkaunID for integration purposes.

### 1.1.2. The Production, Staging and Development Environment

The very first thing to know is to understand the usage of each of the following environments.

Environment	URL	Custom Domain	Description
Production	<a href="https://akaun.com">https://akaun.com</a>	<a href="https://&lt;something&gt;.akaun.net">https://&lt;something&gt;.akaun.net</a>	This is the life environment, used by real businesses in their day to day operations.
Staging	<a href="https://akaun.com">https://akaun.com</a>	<a href="https://&lt;something&gt;.akaun.app">https://&lt;something&gt;.akaun.app</a>	This environment is usually used for testing by the customers and project managers. New features are tested by the end users here before it gets deployed to the production environment.
Development	<a href="https://akaun.dev">https://akaun.dev</a>	<a href="https://&lt;something&gt;.akaun.xyz">https://&lt;something&gt;.akaun.xyz</a>	This environment is usually used by the software developers to do their experiments.

If you have registered an AkaunID to login to the Production environment, that doesn't mean you have the same AkaunID registered in the Staging Environment and vice versa.

### 1.1.3. Understanding Root vs Tenant

Within a single environment (Production vs Staging vs Development) there's one and only one root database, and there could be MANY tenant databases. Each user could be joining MULTIPLE tenants

and they could have different "RANK" when joining each tenant, for example, OWNER, ADMIN, MEMBER, GUEST, VISTOR.

Rank of a users in a Tenant	Description
OWNER	The OWNER of a tenant is able to add any applets to an "applet catalog" if the person is also the owner/admin of the "applet catalog". The OWNER is able to add, remove or promote another user in the tenant to be the OWNER of the tenant. This RANK is usually granted to the business owners or MIS Manager of a company.
ADMIN	The ADMIN of a tenant can do almost everything that the OWNER can do, except adding , removing or promoting another user in the tenant to become the OWNER. This role is usually granted to the MIS Executive or managers in a company.
MEMBER	The MEMBER Rank does not entitle a user to administer the Tenants , Applet Catalogs, they can however, become the OWNER/ADMIN or MEMBER of an Applet after they installed the specific applet. It is important to understand that the "OWNER/ADMIN of the Tenant" is NOT the same as the "OWNER/ADMIN" of the "Applet"

#### 1.1.4. The Applet Store

By default, a newly signed up user would see the "Applet Store" (applet) upon successful login. From the **Applet Store** , a user would be able to install applets in the public or private applet-catalogs.

It is very important for users to take note that they are able to see "RANK" tag and "TENANT" tag before installing the applet, so that they are installing the right applet for themselves.

If you are NOT the OWNER / ADMIN of a tenant, you can see a list of applet-catalogs and multiple applets in each of the applet-catalog. If you see a blank page, please contact the platform-administrators to add grant you access to the applet-catalogs specially created for your organization, so that you can start installing applets with them.

## 1.2. Project Implementors

Understanding of the Akaun Platform is a prerequisite for successful implementation of any projects using the BigLedger platform.

In this section, we are going to list down what the Platform System Administrators need to do, in order for a company to start using the Akaun-Platform.

### 1.2.1. Subscription setup in Akaun Platform

The Platform System Administrator should be using the "Platform SysAdmin Applet" to create a subscription, and then add the OWNER / ADMIN of the tenants (usually the MIS Manager or business owners) as a MEMBER of this subscription. By adding a user to this subscription, he/she will be able to create new Applet Catalogs using the "Tenant Admin Applet".

*(At the time of writing as per 2022-05-19, the new "Platform SysAdmin Applet" and "Tenant Admin Applet" are being redeveloped, hence, we will use the work around method to achieve this for the time being.)*

### 1.2.2. Tenant setup in Akaun Platform

Only the Akaun Platform system administrators (Wavelet and BigLedger employees) are able power up the tenant for you. The Platform System administrators need to ensure that when creating the Tenant, the correct subscription account is chosen.

Please email [jira-mis@wavelet.net](mailto:jira-mis@wavelet.net) to request for the tenant to be created.

(We do not plan to allow non-System Administrators to create new tenants at the moment, because our Billing engine and FPX recurring payment authorization is not ready yet. Once these are ready, we may consider allowing businesses that have authorized us to bill and charge be able to create tenants in the "Tenant Admin Applet" )

### 1.2.3. Applet-Catalogs

Think of applet-catalog as a collection of applets, tagged with RANK and TENANT. When the OWNER/ADMIN of the applet-catalogs can add applets to it, and they have to specify the "rank" and "tenant". This also mean, within the same applet-catalog, it is possible to include the same applet that links to different tenants.

The ADMIN/OWNER of the applet-catalog also need to add users to the applet-catalogs, and they can add them as OWNER/ADMIN/MEMBER to the applet-catalogs. Only OWNER/ADMIN of the catalogs can manage the applet-catalog (adding / removing applets and users from the applet-catalogs).

All OWNER/ADMIN/MEMBER of an applet-catalog can see the applets in this catalog and install these applets when they use the "Applet Store ⇒ Private"

When the users install applets from the "Applet Store" the RANK/TENANT tags will be applied to grant the users the respective permissions when they open the respective applet. Only the OWNER/ADMIN of the applets will be able to see and click on the "Settings" on the left handside



menu of the applets to perform some further configuration for the applet. (This is not the same as the rank of the users in the applet-catalog).

#### **1.2.4. Configuration of Core Modules**

The Core Module consist of the following the main applets that are depended by all other applets. For example, in order to issue a sales invoice, we need to ensure that the Company and Branches are setup and configured, the products and services are added into the Item Maintenance applet, the employees of the company is setup so that the users can select the salesman when issuing the sales invoice.

The applets in [Core Module](#) should be installed, configured in proper sequence, before you proceed to install the other applets.

See [Section 3.1, “Core Module”](#) for more details.

## **1.3. Tenant Owners**

Platform Guide for Tenant Owners

### **1.3.1. Section 1**

### **1.3.2. Section 2**

## **1.4. Applet Developers**

Guid for applet Developers

### **1.4.1. Signing up your bigledger account**

## **1.5. Reseller Guide**

Guide for resellers

### **1.5.1. Section 1**

### **1.5.2. Section 2**

## 1.6. System Integrators

Guide for system integrators

### 1.6.1. Section 1

some sections here

### 1.6.2. Section 2

# Chapter 2. Guide by Industry

This guide by industry provide :

- use cases
- case study
- key paint points and feature of each industry

## 2.1. Consumer Electronics Industry

### 2.1.1. Problems

### 2.1.2. Solutions

### 2.1.3. Features

## 2.2. Pharmacy Industry

### 2.2.1. Problems

### 2.2.2. Solutions

### 2.2.3. Features

## 2.3. Car Workshops

### 2.3.1. Problems

### 2.3.2. Solutions

### 2.3.3. Features

## 2.4. Retail Chainstores

### 2.4.1. Problems

### 2.4.2. Solutions

### 2.4.3. Features

## 2.5. Logistics Industry

### **2.5.1. Problems**

### **2.5.2. Solutions**

### **2.5.3. Features**

## **2.6. Manufacturing Industry**

### **2.6.1. Problems**

### **2.6.2. Solutions**

### **2.6.3. Features**

## **2.7. Pet Industry**

### **2.7.1. Problems**

### **2.7.2. Solutions**

### **2.7.3. Features**

# Chapter 3. Guide by Modules

The Akaun platform is like lego blocks, users will be able to mix and match different applets to formulate a new module, even if it is not in the list below.

## 3.1. Core Module

The Core Module consist of the basic applets that would be required and depended by all other applets. Every [Project Implementors](#) need to ensure these applets are properly setup and configured before moving on to the other applets.

### 3.1.1. Overview

The Core Module consist of the following applets:

- Chart of Account Applet
- Organization Applet
- Tax Configuration Applet
- Cashbook Applet
- Doc Item Maintenance Applet
- Inventory Item Maintenance Applet
- Customer Maintenance Applet
- Supplier Maintenance Applet
- Employee Maintenance Applet
- Entity Maintenance Applet

These applets should be installed, configured in proper sequence, before you proceed to install the other applets.

### 3.1.2. Benefits

### 3.1.3. Related Applets

### 3.1.4. Pricing

## 3.2. Accounting Module

### 3.2.1. Overview

### 3.2.2. Features



**3.3. Point of Sales Module**

**3.4. Manufacturing Module**

**3.5. Membership Module**

**3.6. Multilevel Marketing Module**

**3.7. Unified Contact Center Module**

**3.8. Inventory Module**

**3.9. EcomSync Module**

**3.10. Delivery Module**

**3.11. Cross Platform Commerce**

**3.12. Procure to Pay Module**

**3.13. Order To Cash Module**

# **Chapter 4. Applet Directory**

## **4.1. Applet Listing**

# Chapter 5. Cloud Native Architecture

Common misunderstanding \* thinking web based = cloud based. \* everything has A.I. \* online / networked = cloud based

Our aspirations \* To be the business operating systems

## 5.1. Background

- Outdated JBoss application server, EJB 1.0 / 2.0
- Servers idling
- Hackers attack
- Certain minimum costs to power up a tenant
- Self service
- Internal employee users vs customers + suppliers
- Integration pains

## 5.2. Motivation

Platform Business Model

Multiple offerings → as middleware - backend as a service → as applets → as SAAS → as communication hub

Cross Platform development

Scalability

Flexibility

Growth

Composable Enterprise

Utility based billing

### 5.2.1. Integrations

spikes in loads

### 5.2.2. Infrastructure and Toolchain

Various tools ready to be used out of the box... example : OCR, Lambda, RDS, NoSQL, API Gateway

### 5.2.3. Network Effect

#### **5.2.4. Cloud Cost Savings**

#### **5.2.5. Artificial Intelligence**

#### **5.2.6. Human Resource**

### **5.3. Journey**

### **5.4. Challenges and Lessons**

### **5.5. Technical Considerations**

- managing complexities
- Sharing about our journey to transform from monolith architecture to cloud native architecture
- Sharing about the problems and challenges implementing stateless applications
- Sharing about the implementation of Micro-Frontend Architecture
- Sharing about the implementation of Web Socket using API Gateway and DynamoDB
- Sharing about challenges of securing the API, permissions / configurations etc
- Sharing about the challenges of multi-tenant environments
- Sharing about the design of composable enterprise architecture
- Sharing about the tricky part of networked tenants

# Chapter 6. Technical Guide

This technical guide is used by both internal and external employees of

## 6.1. Applet Development Guide

## 6.2. Akaun Shell Development Guide

## 6.3. Cloud Infrastructure

## 6.4. BigLedger Database Guide

### 6.4.1. Overview

### 6.4.2. Database Schema

### 6.4.3. Liquibase

### 6.4.4. The Root Database Schema

### 6.4.5. The Tenant Database Schema

## 6.5. BigLedger Java API Guide

### 6.5.1. Spring Framework

### 6.5.2. RESTful API Best Practices

## 6.6. Domain Driven Design

## 6.7. CP Commerce Development

## 6.8. Kubernetes

# Chapter 7. Documentation Authoring

## 7.1. Authoring this Documentation

This documentation is written using asciidoc, please take a few minutes to go through the following guide:

- <https://docs.asciidoctor.org/asciidoctor/latest/>
- <https://docs.asciidoctor.org/asciidoc/latest/>

Some useful videos:

- <https://www.youtube.com/watch?v=KbmpBZO4EoY>
- <https://www.youtube.com/watch?v=GL1SEYOhEiQ>
- [https://www.youtube.com/watch?v=wca5m7JpS\\_U](https://www.youtube.com/watch?v=wca5m7JpS_U)

## 7.2. Setup and Configurations

### 7.2.1. Github Repository

- Github User Account

In order to author this documentation, you will need to have a <https://github.com> account. As an employee of Wavelet.net or BigLedger.com , you will be using the <username>@wavelet.net to register for the github user.

You can request the HR department to grant you access to the [hr@wavelet.net](mailto:hr@wavelet.net) to grant you the access to Github Akaun organization (<https://github.com/akaun>).

- Downloading the Github Desktop Client by clicking on the button below:



Please visit <https://desktop.github.com/> to download the Github Desktop.

- Accessing the repository

After you have downloaded the github, please clone the <https://github.com/akaun/Public-Guide> to your local computer.

## 7.2.2. AsciiDoctor Toolchain

Depends on the operating systems you are using, please follow the instructions below accordingly:

### Installing AsciiDoctor

- Linux
  - <https://docs.asciidoctor.org/asciidoctor/latest/install/linux-packaging/>
- Windows
  - <https://docs.asciidoctor.org/asciidoctor/latest/install/windows/>

- Mac
  - <https://asciidoctor.org/docs/install-asciidoctor-macos/>
  - <https://docs.asciidoctor.org/asciidoctor/latest/install/macos/>

### Installing Epub3 Converter

Please click on the link below for detailed instructions:

<https://docs.asciidoctor.org/epub3-converter/latest/>

### Installing PDF Converter

<https://asciidoctor.org/docs/asciidoctor-pdf/#install-the-published-gem>

### Installing Multipage HTML Converter

<https://github.com/owenh000/asciidoctor-multipage>

## 7.2.3. Visual Studio Code

- Downloading Visual Studio Code

Please visit the following page to download. <https://code.visualstudio.com/download>

After you have installed the Visual Studio Code, please install the following extensions:

- AsciiDoc
- Github Pull Requests and Issues
- vscode-pdf

The next step is to open the folder where you cloned the <https://github.com/akaun/Public-Guide> repository using the Visual Studio Code

## 7.3. Understanding the Directory Structure

Folder Name	Description
bin	This folder contains shell scripts that you need to install and setup. You will also see a file called <code>publish.sh</code> , and this is the file that you would execute to compile the asciidoc into various file formats, and save them in the "docs" folder. You shouldn't be editing any files in this folder.
build	This is a temporary folder that gets deleted and re-created every time we "compile" the documentation. You shouldn't need to mess with files in this folder.



content	This is where you will be contributing by editing the files in this folder.
docs	You shouldn't need to edit any files in this folder. But you are welcome to open the files in this folder to check the "compiled output" of your changes , to ensure they are correct before pushing your code to the github, and request for your branch to be merged with the "main" branch in github.

## 7.4. Committing Changes To The Repository

Before you make any changes, it is absolutely important that you **checkout** the local repository into a different branch, and the naming convention that we use would be:

YYYY-<email\_address>

You may find the following resource useful:

- <https://code.visualstudio.com/docs/editor/versioncontrol#:~:text=You%20can%20create%20and%20checkout,tags%20in%20the%20current%20repository.>
- <https://www.youtube.com/watch?v=X9-iaXfKY5g>
- <https://www.youtube.com/watch?v=H5BLEPhqxe8>
- <https://www.jasongaylord.com/blog/2020/07/08/create-delete-branches-using-visual-studio-code>

Once you have made the changes you want, remember to run the command from the "Public-Guide" directory:

```
bin/publish.sh
```

The above shell script will clean up the "docs" and "build" folders, and then compile all the adoc files into the intermediate "build" folder and subsequently publish the final output into the "docs" folder.

To view the final output, you can open the "docs" folder and view the content in the folder by opening one of the following files:

- index.html (This is the multipage html output)
- blg\_handbook.pub
- blg\_handbook.pdf
- blg\_handbook.html

Once you have completed your editing, the next step is to create a **pull request**. Refer to the following for more information:

- <https://docs.github.com/en/pull-requests/collaborating-with-pull-requests/getting-started/about-collaborative-development-models>
- <https://docs.github.com/en/pull-requests>
- <https://www.youtube.com/watch?v=oa1wXWeH1IQ>

Congratulations !!

# Glossary

## **Akaun Shell**

The user interface that loads into a web browser, and showing users a list of applets.

## **Applet**

An application that runs on the Akaun Shell.

## **Applet Store**

The applet where users can discover other applets and install these other applets.

## **Environment**

There are 3 environments, namely production, staging and development. Each of these environments lives in a different AWS account.

## **Platform Administrators**

This refers to the BigLedger MIS Department.

## **System Administrator**

This refers to the BigLedger MIS Department.

## **Root Database**

This refers to the Platform main and global database.

## **Tenant**

Every tenant is isolated from each other , it has its own independent database and other resources like files storage. Within a tenant, it is possible to create multiple companies, and they share the same database.

## **Tenant Admin**

This refers to the OWNER or ADMIN of the Tenant.

# **Appendix A: First Appendix**

## **A.1. First Subsection**

## **A.2. Second Subsection**

# **Appendix B: Second Appendix**

## **B.1. First Chapter**

## **B.2. Second Chapter**

sdfsfa