

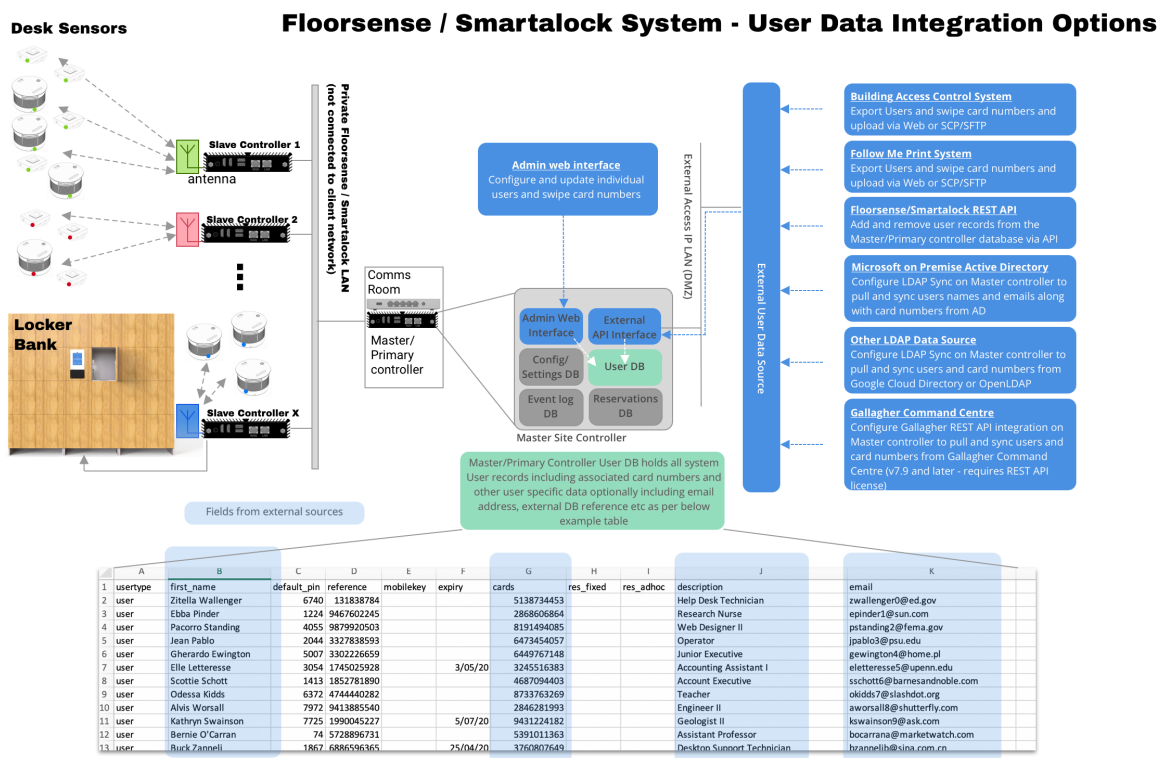
Smartlock / Floorsense User Database Import / Export – Integration Guide

1.0 Overview:

The Smartlock/Floorsense system maintains a database of users, rfid cards and reservations on the master controller. This document describes

- The basic topology for connecting over IP network to Smartlock/Floorsense Master controller (sometimes called Primary Controller)
- A description of the database as stored on the Master controller
- how to go about importing users, their swipe cards and other useful data such as email addresses or unique IDs into the system from an external system (such as a building access card database)
- the methods to keep the Smartlock data updated
- how to export the database from Smartlock master server for backup or quick editing and re-importing. This maybe faster than using the Web interface.

Generally integration with the Master controller occurs over its “outside” LAN interface which connects into the customers network via a DMZ. Over this network both the web administration of the system can be performed, and also the automated or manual uploads of the customers end-user names, current access card numbers, and optionally other user data such as email addresses, locker and desk fixed reservations from an external source system.



Internally the Master Controller maintains the complete user database including all card numbers and locker/desk reservations for the entire site. Sections of the entire database will be transferred and deleted from slave controllers (at individual locker banks or other locations) as required - such as when a user creates or releases a reservation on a particular locker bank or desk, then the relevant parts of the database are downloaded automatically to the slave controller.

The slave controllers can also update the Master database, for example, when a new user or reservation is created locally at a touchscreen kiosk connected to the slave, then that slave will update the Master controller.

If the Master database is offline, a slave will not be able to create new users or create any new locker / desk reservations until the Master is reachable again. Any existing users *will* however be able to open their *existing* lockers. In addition the floorsight pucks will still change colour if swiped on by user Swipe card and update the Master when the network becomes available again.

1.1 Data Source Options:

Smartalock/Floorsense supports a variety of methods for importing user data such as their name, and swipe card number – which is generally the minimum required for operation of the lockers and desks. Other optional attributes such email address, user expiry date, pre-allocated (fixed) locker or desk reservations and pre-defined locker access PIN numbers can also be supplied by an external source system.

The methods for introducing data from source system fall into these options

Building Access Control System

Export Users and swipe card numbers and upload via Web or SCP/SFTP

Follow Me Print System

Export Users and swipe card numbers and upload via Web or SCP/SFTP

Microsoft on Premise Active Directory

Configure LDAP Sync on Master controller to pull and sync users names and emails along with card numbers from AD

Floorsense/Smartalock REST API

Add and remove user records from the Master/Primary controller database via API

Other LDAP Data Source

Configure LDAP Sync on Master controller to pull and sync users and card numbers from Google Cloud Directory or OpenLDAP

Gallagher Command Centre

Configure Gallagher REST API integration on Master controller to pull and sync users and card numbers from Gallagher Command Centre (v7.9 and later - requires REST API license)

2.0 Database Description

The user database contains the following information:

Field	Description
-------	-------------

Name	A single field with the users name. The first and last names are separated with space, but stored as a single field.
Default PIN	A 4 digit PIN that will be used as a Default PIN for any reservations created for this user. Please note that the reservation PIN for each locker reservation can be changed independently of this default PIN
Reference	a unique ID into a customer's external systems – e.g. an employee ID, or other identifier used in customers external Database. This can be a very useful key value to provide to Smartalock as often this is guaranteed to be unique (optional)
Mobilekey	an internal identifier linking a user record with the mobile app. These values are generated by the Smartalock App when a mobile user registers (optional)
Expiry	Used by the Smartalock Master to automatically age out user records (optional)
Cards	A pipe separated list of card serial numbers (CSNs) associated with this user (optional)
Res_fixed	a list of lockers permanently reserved for this user (optional)
Res_adhoc	A list of lockers dynamically reserved for this user at the time of export (optional)
Email	The users email address (optional)
Group	A user group on the Smartalock / Floorsense master controller that the user should belong to. This group must already exist or the the import will fail
Bk_fixed	The desk key (desk number) for a fixed floorsight desk booking

3.0 Importing a User Database (SFTP/SCP/HTTP Method)

The import process to the Smartalock Master is flexible.

- The import file can be either CSV or TSV (auto detected) and the import process will handle quoted text correctly within CSV files. The CSV/TSV import file can be created in Excel, Text Editor or can generally be exported from a source system directly in either CSV or TSV format.
- A header row is assumed for imports originating from either HTTP or Command Line (SSH)
- The column ordering expected in the import file on the Master is defined by the following (highest to lowest priority)
 - 1. Ordering detected in header row of import file (ie the first row of file contains valid comma or tab separated column header names are as per the below section 3.1)
 - 2. Ordering stored in system nvram (see section 3.2 below for how to specify this),

- 3. The Default column ordering
[usertype,name,default_pin,reference,mobilekey,expiry,cards,res_fixed,res_adhoc]

3.1 Import File Columns Headers – Names and Default Order

The import file provided to Smartalock Master uses below columns. This is also in the default order if a header row is not provided in the file.

Usertype	name	firstname	lastname	default_pin	reference	mobilekey	expiry	cards	res_fixed	res_adhoc
----------	------	-----------	----------	-------------	-----------	-----------	--------	-------	-----------	-----------

Note that only **one** of “name”, “firstname”, “lastname”, “reference” or “cards” fields are required to create a user. All other fields are optional and should be blank if not required. The number of columns in each import line should match the number of columns in the header row otherwise an import error will be triggered for the line.

Field Descriptions

Field	Required?	Description
usertype	Required if no header row specified	Must be present and value for all rows is “ user ”
name	Either name or firstname/lastname must be populated	contains the users full name (as displayed by Smartalock) [note: for systems that cannot export full name in a single column, use firstname/lastname]
firstname	Either name or firstname/lastname must be populated	Contains the users firstname(s)
lastname	Either name or firstname/lastname must be populated	Contains the users lastname
default_pin	Optional	the user’s default PIN to be used for new reservations – if specified then this will reset any user reservations to use this PIN, if not specified and this is a new user, a PIN will be automatically generated. If not specified and this is existing user, then PIN will not change.
Reference	Optional	a reference into the customer’s system – e.g. an employee number. This field is optional but see below for how import rows are matched to existing user records.
mobilekey	Optional	a system generated UUID that links this user record to the user’s mobile phone app. If this is an existing user and this field is blank, the existing user’s mobile key is not altered
expiry	Optional	a user expiry date after which a user record and associated cards and reservations will be deleted. The date must be in ISO8601 format (YYYY-MM-DD) – e.g. 2017-10-31

cards	Optional	A pipe separated list of card serial numbers (CSNs) associated with this user. If populated will replace current CSNs. Use “-” to delete existing cards and leave blank to retain existing list of cards
res_fixed	Optional	a pipe separated list of lockers to permanently reserve for this user. The locker format is <slave>/<locker number> or simply <locker number> if the site uses unique locker numbering – e.g. “1/L12” (slave 1, locker labelled L12) or “L2-123” (locker labelled L2-123 as long as there is only one locker on site with this label). Use “-” to remove any existing reservations for this user. Leave blank to leave reservations unaltered
res_adhoc	Optional	as for “res_fixed” but create a temporary reservation for the default dynamic allocation duration (typically 1 day)
email	Optional	Users email address. Used for emailing the user directly from the system – ie for activation codes for the Smartalock/Floorsense App
group	Optional	Users group on the Master controller – used to apply different locker or desk policy by user group within the floorsense application. The group name must match an existing (already created) user group
bk_fixed	Optional	A desk number for a fixed desk booking for the user. The format is the unique existing desk number including any prefixes. Do not include this field if the desk number does not exist in system yet.

3.2 Setting the import columns headers to match source system

Sometimes the customers source system will not be able to export column headers that match the required Master without the customer having to do a lot of manual manipulation of the export file prior to import.

So long as the source system can export the data **without any** column header row (ie line 1 of the file is the first user record), it is possible to tell the Master controller in advance how to process each column via an NVRAM command.

To configure this, connect to the Masters outside IP address via SSH with the provided ssh credentials. From the command line issue the “nvramp set import_columns” command. For example, if the export file from the source system has the first column containing users first name, the second column containing their last name, the 3rd column their current swipe card CSN number and 4th column a unique ID from source system (ie employee ID), then the command to use would be:

```
nvramp set import_columns=firstname,lastname,cards,reference
```

After configuring the nvram set command, the master server should be rebooted. The export file can then be imported using one of the import methods described below.

3.3 Types of Import Processing:

Two types of imports can be processed:

- **an incremental import** - the import file contains only changes to the user database. Any existing user records not mentioned in the import file will not be altered

- **a full import** - the import contains the entire list of users. Any existing user records **not** mentioned in the import file **will be deleted** from the Smartalock database. When a user record is deleted their associated RFID cards and reservations will also be automatically deleted

By default imports are treated as incremental. To complete a full import use the manual command line method described below.

3.4 Existing User Matching:

If the import process is updating an existing database (incremental update) then it will most likely need to match records in the import file with existing user records. It does this in the following order:

- by "reference" - if the customer's unique reference is present this is used as a key, if not (or no existing user record with this reference exists),
- by "name" - the system attempts to locate existing users by exact name match. Note if there are two users in the database with the same name this method will fail. Otherwise,
- by "mobilekey" if present, otherwise,
- by "rfid" if the rfid column contains only a single CSN

This can be important as many of the fields are optional, so if the import file attempts to update a user and a duplicate name exists, then the mobilekey, rfid card number or external reference will be the tie breaker to decide which user record to update.

3.5 Deleting users during an import

There are three methods available to delete users and their associated reservations and cards during the import process

- a.) Perform a 'full' import and omit the users that need to be deleted
- b.) Specify the value of 'delete' in the usertype column instead of the normal value of 'user'. This will lookup existing user details using the method described in section 3.4 and if the user is found they will be deleted. If not found then the import will fail.
- c.) Set an expiry date for the user in the 'expiry' import column. The expiry date can either be in the past for an immediate expiry or at a scheduled date in the future.

3.6 Example format of a file with column headers:

The next page shows a mixed import file generated in excel (save as CSV or TSV). Each line is a valid row. For example row 7 will create a user Adams Allwell, with PIN 6020 and a unique reference number from external source database 424404249. This user has 1 swipe card number (9511120031), 2 locker reservations (L-55 and L-53) and a fixed desk reservation on desk L16.W.025. The email address is supplied so the user can be directly emailed with an app activation code to activate their Floorsense or Smartalock App.

Options:
user
delete
cleaner

A random PIN will be created
for each user if not supplied

MATCH PRIORITY 2
firstname space
lastname

MATCH PRIORITY 1
A Unique reference
number for matching on
subsequent imports

UUID from phone
registration

MATCH PRIORITY 3
CSN number of users
swipe card. Can have
multiple values
seperated by Pipe

Fixed or Adhoc Locker
reservation. Multiple
lockers seperated by Pipe

A free text field that is
searchable via the App,
Kiosk or other user lookup
API

User email address for
emailing activation links to

User Group the user
belongs to (Default is
inserted if missing)

Fixed desk
booking desk
number

user-export (7)

usertype	name	default_pin	reference	mobilekey	expiry	cards	res_fixed	res_adhoc	description	email	group	bk_fixed
user	Aaron Townley	9367				4225 2216			Aaron Townley	atownley@aicd.com.au	Default Group	
user	Abba Morffew	6035	2870361483			1070816812		L-19 L-02	Developer IV	amorffewd9@jugem.jp	Default Group	
user	Abby Kamal-Windle	72				26175			Strategy & Risk	Abby.Kamal-Windle@apra.gov.au	Default Group	
user	Abelard Dooman	6159	1893686426			7600761881			Graphic Designer	adoomanaf@studiopress.com	Default Group	
user	Abrahan Nutter	4054	427275830			2408723299		L-56 L-54	Budget/Accounting Analyst IV	anutterkq@gmpg.org	Default Group	
user	Adam Heath	9388				22664			Property Procurement & Facilities	Adam.Heath@apra.gov.au	Default Group	
user	Adams Allwell	6020	424404249			9511120031		L-55 L-53	Speech Pathologist	aallwell13@cnn.com	Default Group	L16.W.025
user	Adel Kiddy	8127	8440906153			7406498714		L-45 L-52	Pharmacist	akiddy6n@netlog.com	Default Group	
user	Adelbert McAsgill	2452	4630896252			8532291643		L-36 L-35	Accountant I	amcasgillfq@mediafire.com	Default Group	
user	Adelheid Dybald	959	2565014414			8283879059		L-26 L-14	Chief Design Engineer	adybaldri@dion.ne.jp	Default Group	

4.0 Importing Methods (SFTP/SCP/HTTP)

Once a compatible CSV/TSV file has been created from the source system it can be imported into the Smartalock Master controller via one of following methods:

- Manual import via web interface (Section 4.1)
- Automated import (no prompts) via HTTP POST method (Section 4.2)
- Manual import via Command Line (Secure Copy – SCP, and SSH) (Section 4.3)

4.1 Manual Import via HTTP(s)

- Go to <http://<hostname>/config/userdb.html> (or https://) Note: replace <hostname> with the outside IP address or hostname of your Smartalock Master Controller.
- Select either Incremental or Full import
- Choose the location of the import file (must be CSV or TSV format – don't try to import xls)
- Press the "Import" button
- Details of the import result will be displayed

4.2 Automated import via HTTP(s)

- Send an HTTP(s) POST to <http://<hostname>/api/user-import> with multipart/form-data encoding with the following parameters

type=incr (or type=full)

file=<TSV or CSV file>

action=Import

The POST will return text data indicating import statistics

4.3 Manual Import via SSH (Command Line)

- First upload the import file to the Master Controller via secure copy (SCP) - e.g. from a command line terminal use the SCP command, otherwise use a SCP client application of choice (ie such as Putty)

From command line use following. Replace [user] with your provided administrator account and [ip address] with the outside IP address of the Master controller. Ensure the ":" is at the end to make the filename also import.tsv on the Master controllers file system. The user password will be prompted for.

```
scp import.tsv [user]@[ip address of master]:
```

- Log into the Smartalock Master Controller via SSH (ssh [user]@[ip address of Master])

- Run the import using the command:

```
sladmin import -f import.tsv
```

(for Incremental import) or for full import run below command:

```
sladmin import -f import.tsv -l
```

(for Full import use the "-l" switch and end)

- Import statistics are displayed on the console

4.4 How to Create Manual Import File to Test

Example Import Files:

- a.) Create a user called "Test User" with default PIN 1234, employee number 100010, card serial number bf1275ac with two permanent lockers "L4-123" and "L4-124"

```
usertype<TAB>name<TAB>default_pin<TAB>reference<TAB>cards<TAB>res_fixed
user<TAB>Test User<TAB>1234<TAB>100010<TAB>bf1275ac<TAB>L4-123|L4-124
```

- b.) Update the user "Test User" leaving any PIN and employee number alone. Add two RFID cards with serial numbers "bf1275ac" and "c172c261" and delete any fixed reservations

```
usertype<TAB>name<TAB>>cards<TAB>res_fixed
user<TAB>Test User<TAB>bf1275ac|c172c261<TAB>-
```

5.0 Exporting the User Database:

The user database can be exported in tab separated text file for customer use. The same export file can be edited and then used as a manual import file. The export format is designed to be "round-tripped" so that an export file is also a valid import file. This provides a quick way to manually batch edit user records. The export format is always in the .TSV format.

- Manual export via web interface (Section 5.1)
- Automated export (no prompts) via HTTP POST method (Section 5.2)
- Manual export via Command Line (Secure Copy – SCP, and SSH) (Section 5.3)

5.1 Manual export via HTTP(s)

- Go to <http://<hostname>/config/userdb.html> Note: replace <hostname> with the IP address of hostname of your Smartlock Master Controller.
- Select the TSV export option
- Press the "Export" button

System exports are always in TSV format. This can easily be edited in a text editor or Excel.

5.2 Automated export via HTTP(s)

- Send an HTTP(s) POST to <http://<hostname>/api/user-export> with the following parameters
format=tsv
action=Export

5.3 Manual Export via SSH

- Log into the Smartlock Master Controller via SSH
- Run the command "sladmin export" to export to the console
- Run the command "sladmin export -f <filename>" to export to the named file (which can then be downloaded from the master server using SCP)

6.0 LDAP Importing and Syncing

LDAP connections to external sources such as Microsoft AD or Google GSuite is configured via the Master controller interface. This section is at the System Configuration->Users->LDAP Integration.

The customer should populate the Server configuration page including the FQDN/IP address, port and LDAP Username/Password that has sufficient read only rights to read from the configured baseDN of the tree.

Smartalock/Floorsense supports connecting via standard LDAP (not recommended as insecure) or LDAP over SSL / LDAP with STARTTLS (recommended).

A search scope can be configured to restrict how far Smartalock/Floorsense will query into the customers directory tree. If no scope is provided the search/sync will include all children nodes.

LDAP / AD Server Configuration

Domain Controller IP Address or FQDN	
Server Port	
	(leave blank for default)
LDAP Protocol	Nothing selected
LDAP Username	
LDAP Password	
Base DN	
Search Filter	
Search Scope	Nothing selected
Save Test	

LDAP Attribute Map

Smartalock Field	LDAP Attribute Name
Unique Reference	
Display Name	
First Name	
Last Name	
Email	
User Description	
Swipe Card Number	
Locker Reservations(s)	
Locker PIN	
Import Type	Nothing selected

*LDAP Attribute is not standard in Active Directory. This Attribute will need to be provided by the AD directory administrator

LDAP integration is setup in conjunction with Smartalock technicians and the customers AD/LDAP administrator. The Attribute map is used to convert an AD/LDAP attribute to a field in the Smartalock/Floorsense database. The sync is not 2-Way. The AD/LDAP database remains as the source of truth and data does not flow back from Smartalock/Floorsense to the AD/LDAP directory.

The syncing schedule and rules for full vs incremental imports are configured by Smartalock/Floorsense engineers during system commissioning and are not presently end-user Admin configurable.

7.0 REST API Creating and Deletion of Users

It is possible to manipulate the master controller user database via the REST API interface, by using the following API calls. Full details of the Smartalock/Floorsense API interface is published online at <https://apiguide.smartalock.com>

Method	Endpoint	Description
GET	user-list	Returns all system users including their name, uid, current PIN number, uidtoken, last login, type, expiry (if any) and any override to the number of locker reservations (reslimit) that the user is allowed
GET	user	Gets the user details for the specified User uid. Returns the following user parameters: • reslimit - the maximum lockers this user is allowed (may override controller, group or master limits) • pin - the users current locker PIN number • name - the users name • expiry - if the users account will automatically expire then the expiry date in unixtime • usertype - options are user and cleaner • last login - unixtime when user last accessed system • uidtoken - the users token used in the Smartalock/Floorsense smartphone app
POST	user-create	Creates a new user on system – see apiguide.smartalock.com for details
POST	user-delete	Deletes an existing user on system – see apiguide.smartalock.com for details
POST	user	Updates an existing user
GET	user-export	Exports all system users in a more compact format than user-list

An API account needs to be created on the customers master controller and credentials generated before any API calls can be made.

8.0 System Security:

You must be an authorised user to access the User Import/Export. The following access control mechanisms are implemented.

- IP Restriction - by default there is no IP level restriction for the SSH, HTTP, HTTPS services on the Smartalock Master Controller. These could be restricted by the customer's internal corporate firewall or alternatively an IP restriction can be configured on the Master controller or Cloud firewall by request.
- Import via HTTP - basic authentication is required. Password will be provided by Smartalock/Floorsense on system commissioning
- Import via SSH/command line - SSH credentials are required. Username and Password will be provided by Smartalock/Floorsense on system commissioning.
- REST API - credentials are required. API Username and Password will be provided by Smartalock/Floorsense on system commissioning. A token must be generated and used in the header of all API calls to system. See apiguide.smartalock.com for more details.