

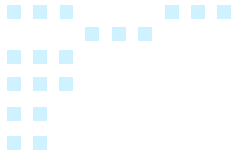
iLab Solutions: Hardware Interlock

May 11, 2015

iLab Solutions

Save money. Save time. Accelerate research.





Hardware Interlock Module



Hardware Interlock Module Overview

Instrument Access Control

- Decouples the tracking system from the local OS
- Power box controls access to equipment via secure network
 - Equipment does not have to be on the internet
- Real time tracking of usage
- Kiosk is used to log people in but it can allow one login location for multiple equipment
- Login may be iLab password or SAML/LDAP if set up



Benefits of the Access Control Module

Value to Core Staff

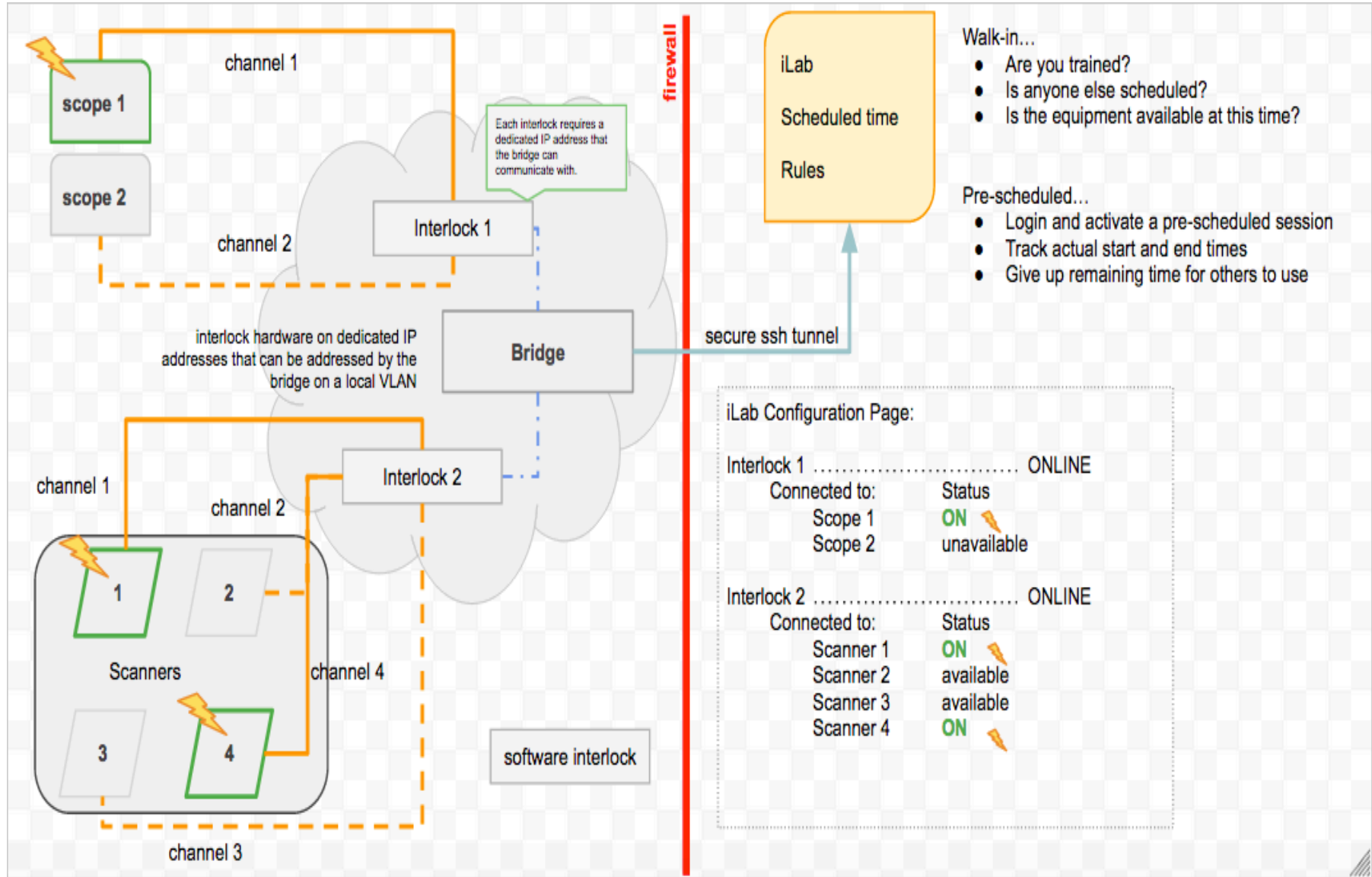
- Can manage who accesses the equipment (trained users only)
- View equipment usage in real time
- Maximize equipment usage
 - Ensure scheduled time on calendars is honored
 - Allow walk-ups when time is available

Value to Customer

- Logs in at kiosk to see what equipment is available
- See what equipment they are trained on and can access
- Review their scheduled sessions
- When exiting, they log out which captures their actual time and shuts down equipment.



Interlock Schematic





Interlock Typologies

IP based Remote Power Switch System



- One box, one IP, provides secure control of multiple instruments
- Requires dedicated static IP
- Provides secured remote power source management operation and AC current
- Turns on and off devices (computer monitors, simple devices, etc.)

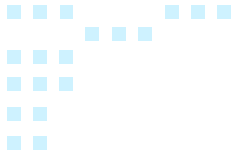


Interlock Typologies

IP based, multiple channel, Solid State Interlocks

- One box, one IP, provides secure control of multiple instruments
- Both analog and digital outputs
- Geared towards complex lab/cleanroom setups, with the need to control access to instruments not necessarily connected to a computer and when turning on and off the whole instrument is not a viable option
- Allows fine-tuned controls of remote, complex instruments, including feedback loops.
- Requires dedicated static IP
- In most cases will require professional electrical installation and wiring





Interlock Screenshots



Interlock Configuration

Cores can configure interlock controlled equipment

INTERLOCK 5


Type: Synaccess interlock

IP Address: 192.168.1.100

Port: 4599

User_name: admin

Password: admin

Last checked N/A 

- 1 High Resolution X-ray Diffractometer (PANALYTICAL X'PERT PRO) (HR X-ray)
- 2 Powder X-ray Diffractometer (SIEMENS D5000) (pXRD)
- 3 Add Equipment +
- 4 Add Equipment +
- 5 Add Equipment +
- 6 Add Equipment +



Core Control

Core managers can see what equipment is active via the interlock interface. Managers/staff can remotely power equipment on/off as necessary.

The screenshot displays a web interface for managing sessions. On the left is a sidebar with a 'Categories' menu containing 'All reservations', 'X-Ray', and 'No category'. The main area shows a 'Time scale: -24 hours to 24 hours' with a green progress bar. Below this is a list of sessions, each with a 'START SESSION' button (except for the last one which has an 'END SESSION' button). On the right, there are 'LOGOUT' and 'SETTINGS' buttons, and a section for 'Active sessions' which currently shows 'NO ACTIVE SESSIONS'. An orange callout box points to the session list with the text: 'upcoming, running and past scheduled sessions.'

Session Name	Time	Action
Travis Simonetti - SQUID Magnetometer (SQUID Magnetometer)	09 Dec 23:35 - 09 Dec 23:37	START SESSION
Ty Simonetti - SQUID Magnetometer (SQUID Magnetometer)	09 Dec 23:41 - 09 Dec 23:42	START SESSION
Joseph Liotta - High Resolution X-ray Diffractometer (PANALYTICAL X'PERT PRO) (HR X-ray)	10 Dec 11:00 - 10 Dec 11:30	START SESSION
Joseph Liotta - High Resolution X-ray Diffractometer (PANALYTICAL X'PERT PRO) (HR X-ray)	10 Dec 13:00 - 10 Dec 14:30	END SESSION



Kiosk Interface

Kiosk module in lab controls access to equipment. Users can view their calendar, start sessions, or schedule walk-up sessions (if allowed).

The screenshot displays the Kiosk Interface for 9 Dec 2014. On the left, a sidebar lists equipment categories: All reservations, X-Ray, No category, Powder X-ray Diffractometer (SIEMENS D5000), X-ray Topography (Rigaku XRT-100), Ellipsometer (VASE), Raman Spectrometer, UV-Vis Spectrophotometer (Lambda 18), FT-IR/FT-Raman, Dektak Profile, Optical Profilometer, X-ray Photoelectron Spectroscopy (XPS), Auger Electron Spectroscopy (AES), and RF/DC Sputter Deposition. The main area shows a calendar for 9 Dec 2014 with a SQUID Magnetometer session scheduled from 23:41 to 23:42. A green 'START SESSION' button is visible at the bottom. On the right, a sidebar contains a 'LOGOUT' button, a 'SETTINGS' button with a gear icon, and an 'Active sessions' section showing 'NO ACTIVE SESSIONS' with a calendar icon.

select from resources in the facility and see when other people have scheduled. If the resource is available and you have access, simply click the 'start session' link.



Control Equipment Settings

Service center settings

[LOGOUT](#)

[DASHBOARD](#)

Time and duration settings

Minimum reservation time
 MINUTES

Maximum reservation time
 MINUTES

Time step
 MINUTES

Time when reservation is considered abandoned
 MINUTES

How much in advance reservation can be started
 MINUTES

Common settings

Allow walk ups?

Strict payment information?

SAVE **RESET**

Manage settings that control how individuals should interact with resources in the core facility.



Control Equipment Settings

Equipment settings for a Raman Spectrometer. The interface includes a sidebar with equipment categories, a main settings area, common settings, and a table of trained users.

Common settings

- This equipment allows walk-ups (without reservation) Use core default
- Require payment information Use core default

Trained users

Name	Email	Actions
Alan Feingold	afeingold_120013@test.ilabx.com	REMOVE
Alonzo Kratzer	akratzer_119883@test.ilabx.com	REMOVE
Amelia Fine	afine_110476@test.ilabx.com	REMOVE
Anderson Jeanbaptiste	ajejbaptiste_158547@test.ilabx.com	REMOVE
Ariel Freeland	afreeland_120095@test.ilabx.com	REMOVE
adrucker_120071@test.ilabx.com		REMOVE

Callout: you can also control resource specific settings from the new dashboard, including managing trained and untrained users (as a core facility member)



Request for Information

Within an event, core can ask the customer to provide different pieces of information - including payment information.

0 hours, 20 minutes, 37 seconds

Time sections and prices

Price class	Price	Total cost	Duration
UNASSISTED USAGE	\$22.0	\$0.53	0.02 hours (23:35 - 23:37)
<i>Total</i>		<i>\$0.53</i>	<i>0.02 hours</i>

Payment information:
Please enter the Account
Account
You do not have access to any Accounts. To resolve this pr

Notes

when customers interact with the kiosk, you can ask them to provide payment information and indicate the type of usage.

SAVE INFORMATION ✓

END SESSION ⌘