# Introduction

This document describes procedures to control NSCL’s devices from a remote location over the Internet.

# Things you will need

* A login/password combination to access NSCL computing resources
* [optional] Control Software

# Strategy

1. Login to NSCL network over the Internet
2. The easiest method is to run the EPICS software available at NSCL on NSCL servers. Once you login, use the caput/caget commands to control the devices. With appropriate SSH setup, you can use the NCS GUI tools too.
3. If you prefer to run the EPICS software on your local computer (instead of NSCL servers), then you will have to do the following:
   1. Set up network conduits to exchange traffic between your computer to NSCL’s devices
   2. Install EPICS software on your computer

# Authentication

There are several ways to obtain login/password:

* Use a shared account. The passwords for shared accounts are easy to get, just ask the right person.
* Use an experiment account. People are willing to share the passwords to these accounts easily.
* You can also use software (like John the Ripper) to crack passwords. Many passwords at NSCL are simple, and it takes only few seconds for the software to crack them.

Once you have the login/password, you can easily get information on NSCL’s login gateways, control gateways, EPICS channel list, NSCL Intra website etc.

# Access Control

The commands to the devices go through the NSCL Control Gateways. Not all accounts have privileges to modify device-settings, which is controlled by the gateways. All the experimental accounts and most of the shared accounts do have such privileges. In case the account does not have the privileges, it is to circumvent the control gateways by directly specifying the list of IOCS in EPICS\_CA\_ADDR\_LIST.

# Control Software

Software to control the NSCL devices is already available on NSCL servers. Once you login, you can use the already-installed software. However, for some reason if you want to run the software locally on your computer, you can download the NSCL’s control software from NSCL servers, or download the EPICS base from the Internet. The EPICS base is sufficient to check and modify settings on the devices.

# Procedure I

The easiest ways is to run control software on NSCL’s servers.

1. Login to a NSCL gateway (nsclgw1) using ssh
2. Login to NSCL servers using ssh
   1. *Names of NSCL servers*
3. Run caget/caput commands to check/modify device settings

# Procedure II

You do not have to limit yourself to command-line tools like caget/caput. You can use the NSCL GUI tools:

1. Setup X-forwarding on your ssh connection:
   1. *Description of how to setup ssh X-forwarding*
2. Login to NSCL gateway
3. Login to a NSCL Linux workstation
   1. *Names of Linux workstations*
4. Run the a NSCL GUI tool
   1. *The commands*

# Procedure III

Use this procedure if you want to run the control software on your local PC/workstation, instead of NSCL hardware.

1. Download and install the control software
   1. *The EPICS base is available here. You may even download NSCL-developed control software from here*.
2. Setup the network conduits (tunnels) to NSCL’s devices
   1. *In your SSH client setup tunnel to NSCL control gateway*
3. Access through the gateway, you have two options here (see the section Access Control):
   1. *Use an account that has appropriate privileges*
   2. *Access the IOCs directly*
4. Setup the EPICS environment variables on your local PC
   1. *Setup EPICS variables*
5. Run the EPICS software on your PC