

## Blacknest BDS Development Programming Overview 2

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### 1. References

- The BEAM Blacknest support website at: <https://portal.beam.ltd.uk/support/blacknest>. This provides detailed information on the BDS system. Most of the systems documentation is at: <https://portal.beam.ltd.uk/support/blacknest/files/bds/doc>. The latest BDS 3.x.x API is currently documented at: <https://portal.beam.ltd.uk/support/blacknest/files/bds/doc-3.x.x>.

### 2. Introduction

This document supports the Blacknest BDS programming CodeClub2 session. It provides background information on BDS API programming in Python. The examples make use of the test data imported using the bdsTest system as described later in this document. A local bdsServer can be setup for experimentation with the BDS API.

We will talk about the BDS 3.x.x API although most of this is applicable to the older 2.x.x API.

### 3. BDS Examples

A set of BDS examples is provided in the bds-devel package installed as: “dnf install bds-examples”. These will be located at: /usr/bds/bdsExamples and can be copied to a users home directory for tests.

To use the C++ examples you will need to edit the Makefile and comment out and uncomment the following lines:

```
# When running in source tree
#TOP = ..
#include ${TOP}/Makefile.config

# When on standard BDS installed system
TOP = /usr/bds
include Makefile.config
```

We have also packaged these along with some Blacknest examples at:

<https://portal.beam.ltd.uk/support/blacknest/files/bds/downloads/bdsExamples.tar.gz>

The Blacknest codeclub2 meeting will go through some of these examples.

## 4. BDS TestData

There is a set of test sensor data and metadata available that can be installed on a bdsServer. To do this see the <https://portal.beam.ltd.uk/support/blacknest/files/bds/doc-3.x.x/BdsTestSuite.pdf> manual.

Basically:

1. Install the bds-test package: “dnf install bds-test”.
2. Import the metadata; “(cd /usr/bds/bdsTest; ./bdsTestCreateMetaData -user testAdmin:beam00)”
3. Import example sensor data: “(cd /usr/bds/bdsTest; ./bdsTestImport)”

This test data is under the Network “TT” and the BdsTestSuite document describes the data.

## 5. Local BDS Test Server

Normally a bdsServer program runs on the main Blacknest BDS server host to provide access to all sensor data and metadata. However for test and experimentation purposes this can be installed on a local host assuming this is running one of the supported Linux systems. The

<https://portal.beam.ltd.uk/support/blacknest/files/bds/doc-3.x.x/BdsSystemAdmin.pdf> manual provides detailed information on this. Basically you have to:

1. Install the bds-server RPM package on the host. “dnf install bds-server”.
2. Start the Mariadb/Mysql database engine if not already running. “systemctl start mariadb”
3. Create a local BDS database: “(cd /usr/bds/bdsSql; make init)” using the databases root password if this has been set.
4. Populate the BDS database: “(cd /usr/bds/bdsSql; make create)”
5. Start the bdsServer: “systemctl start bdsServer”. You can also run this in the foreground with debug output enabled: “bdsServer -f -d 0x03”.
6. You can install the BdsTest data if wanted.