

Blacknest Data System (BDS)

BdsDataAccess Program – 3.0.12 – 2022-06-23

1. Introduction

The BdsDataAccess program provides a simple command line data access client for the BDS system. It allows seismic sensor data and meta data to be accessed and read from the BDS system. The BdsDataAccess program is a client of the BdsServer and connects through the DataAccess API in order to fetch the requested data.

2. Usage

The BdsDataAccess program can be run by any user that has permissions to access the BDS system. The BdsDataAccess program accepts the following command line options:

-help	Help on command line parameters
-force	Force operation. Will overwrite the data file if it exists.
-host <hostname>	BDS Server host name
-user <user:password>	The BDS user id and password
-command <command>	The command (listNetworks, listStations, dataSearch, dataInfo, channelInfo, channelInfoFull, responses, dataGet, dataPlot, dataGetFormatted, statistics, serverConfiguration, metadataGetFormatted, dataAvailability)
-startTime <time>	The StartTime
-endTime <time>	The EndTime
-select <network:station:channel:source>	Select a data set. Can have multiple -select's
-event <n>	Select a particular event given its ID
-name <name>	Select a particular event where its title regular expression matches the name given.
-format <format>	The output format for getDataFormatted. (BKNAS)
-fullBlocks	Normally the export will output data starting and ending at the sample times requested even if these are within blocks of data. The sample chosen will be interpolated from the blocks time stamp and the sample rate. If the -fullBlocks option is used the output data will start/end at the nearest block boundary to the times given.
-noMetadata	Normally data export will include extra Metadata such as the responses in PoleZero or FAP formats. This flag disables the export of such metadata.

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-numSegments <num>	By default the dataAvailability command will return a set of contiguous data segments that exists per channel selected. If -numSegments is used the time period will be split into this number of equal time period segments and the status of data within these segments will be returned.
-excludeChannels <list>	A comma separated list of regular expressions defining Channels that should be excluded from a selection.
-o <fileName>	The output file name for some commands

The BdsDataAccess program will read the BDS_HOST environment variable at start-up. This variable, if set, defines the default BdsServer host name to contact. The default is “localhost” if this is not set.

The program will carry out the operation as defined in the “-command” argument.

Most of the commands require a set of selection criteria to be defined. The “-startTime” and “-endTime” options define a period of time. The times for these arguments should be given in ISO 8601 date time format. Examples of acceptable values include: “2008-11-03T10:00:00.000000”, “2008-11-03”, “2008-11-03T10:00:00”. Multiple “-select” options are allowed. Each of these define a Network, Station, Channel and Source set. A null entry for any of these parameters is taken as meaning any value. You can also use regular expressions to define the fields.

For most commands the -event <id> option can be used to select a set of channels. The time range and channels selected will be obtained from the Event with the given event ID.

Generally the BdsDataAccess program outputs the results on the stdout stream using a comma separated value (CSV) scheme. The following gives a summary of the commands available:

- **listNetworks:** This lists all of the Seismic Networks Organisations defined.
- **listStations:** This list all of the Stations that match the selection criteria defined.
- **dataSearch:** This list all of the contiguous sets of channel data available that match the selection criteria defined.
- **dataInfo:** This will return the standard information on the data channels selected from the Seismic Sensor data files.
- **dataInfoFull:** This will return the standard and extra information on the data channels selected from the Seismic Sensor data files.
- **channelInfo:** This will return the core MetaData available for the selected data channels.
- **channelInfoFull:** This will return most of the MetaData available for the selected data channels.
- **responses:** This will display or export to a file the Sensor pole-zero responses. If the **-format** option is given then the program will export the responses in the given format into a file or files. The formats supported are: SAC-POLEZERO and IMS-POLEZERO. A default file name is used if none is given with the **-o** option. The file name, if given, can be of the format: “response-{station}-{channel}-{source}-{startTime}.sac” The appropriate parameters will be substituted for the brace enclosed parameter names.

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- **dataGet:** This will return one block of data in ASCII for the channels defined. If the channels are in sample multiplexed form, this will be returned in sample multiplexed form, otherwise it will be output in channel multiplexed form. This will also output ASCII LOG data channels in ASCII formatted blocks.
- **dataGetFormatted:** This will return a set of data from the channels in the requested format. The “-format” option defines which data format to use. The BdsServer is responsible for the actual data conversion and so the formats supported depend on the format converters present in the BdsServer. The “-o” option allows the resulting data to be stored in a named file.
- **dataPlot:** This will fetch a single block of data, from the set of data from the channels requested, and generate a plot of the data in a *.png file as named with the “-o” option. This is for use in the BdsWeb program.
- **listFormats:** Lists the available data formats for export.
- **statistics:** Displays the system statistics, including state information.
- **serverConfiguration:** Displays the BDS servers configuration.
- **metadataGetFormatted:** Exports the selected Metadata in one of the chosen and supported formats.
- **dataAvailability:** This returns a CSV tabulated list of the data available as a set of contiguous data segments. If -numSegments <n> is used the time period will be split into <n> segments of equal time period and the status of data within these segments will be returned (full, partial, none)
- **eventsList:** This lists events in the system. The -startTime and endTime parameters are used to select events with an eventTime in the given range. The -id flag can be used to select a particular event as can the -name option which will regular expression pattern match against the event’s titles.
- **eventShow:** This shows the fields of selected events in the system. The -startTime and endTime parameters are used to select events with an eventTime in the given range. The -id flag can be used to select a particular event as can the -name option which will regular expression pattern match against the event’s titles.

The “-force” option allows the program to overwrite an existing file when the “-o” option is used.

3. Return Value

The program will return a status value of 0 if all was Ok. It will return a non zero value on error, the BDS error number, together with a message output on stderr.

4. Further Information

For further information please look at the BDS system documentation at:
<https://portal.beam.ltd.uk/support/blacknest>.