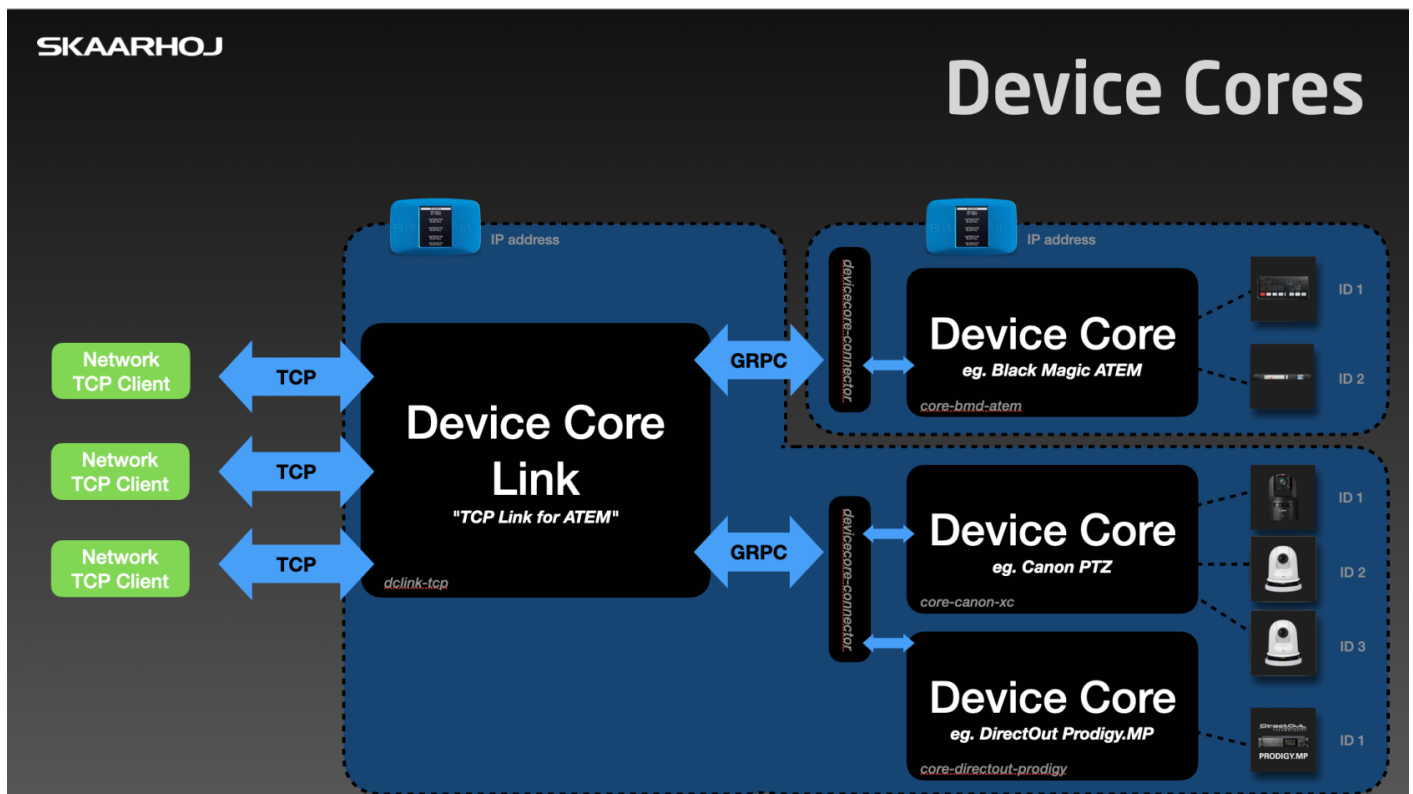


# Device Core Link (DCLink)

The Blue Pill app called *dclink-tcp* is designed to provide a simple, unified TCP based ASCII interface to any broadcast or AV device supported by SKAARHOJ. It simply translates SKAARHOJ's proprietary intermediate device protocol into structured ASCII commands for setting, getting and also subscribing to changes of values. This makes it incredibly easy for integrators to tap into any device, we have already written support for!

For a long time, we have provided the product ["TCP Link for ATEM"](#) (formerly known as "ATEM-TCP Link") which is the inspiration for this application. You can even run *dclink-tcp* in a [special "TCP Link for ATEM" mode](#) to support much of the legacy protocol of that product for drop-in replacement situations.



*dclink-tcp* lets one or more TCP clients connect to it and facilitates a simple, human readable way of setting and getting values from any number of devices of mixed type through the intermediate proprietary protocols SKAARHOJ has developed for Blue Pill.

## Command Examples

Set the program video input on ATEM switcher (with device ID 2) on M/E 1 to input 3:

DC:bmd-atem/2/ProgramInputVideoSource/1/ = 3

Set Skin tone mode to "Low" on a panasonic PTZ camera:

DC:panasonic-ptz/1/SkinToneMode/=Low

Subscribe to any change on a Blackmagic Design video hub:

subscribe DC:bmd-videohub/1/

Above commands are sent from the same TCP connection since it can access all devices found on the devicecore-connector end-point

# Setup


## Install the "dclink-tcp" application

On your Blue Pill, go to Packages and search it up, install it and start it

 Running	dclink-tcp	Device Core Link	1.0.0-pre3-test ▼
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## Check that devicecore-connector is also installed and running

This could also be on another Blue Pill on which you are hosting the device cores.

 Running	devicecore-connector	connects cores to reactor on different bluepills	1.0.0 ▼
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## Configure dclink-tcp

Click on "dclink-tcp" in Packages and you will see the config screen. Add a Link Server entry and enable it. You may leave the rest of the fields alone in the standard case with local device core hosting. Otherwise consider changing Device Core Connector IP:Port and also the server port (in case you have multiple Link Servers you will need that).

## LinkServers

Enable



Enables the server.

Friendly Name

Server Port

8898

TCP Server Port

Device Core Connector

localhost:8502

IP and port of endpoint where devicecore-connector is running. If empty, localhost:8502 will be used.

Max Clients

Max number of systems allowed to connect. Zero is equal to no limits.

Lock to IPs

A semi-colon separated list of IP addresses the panel is locked to. Empty list is equal to no restrictions.

Remove

Add Entry

### Open nc, telnet or Putty to connect to it

Type in "list" + enter to see which device cores and devices are available and whether they are connected.

```
kasper — nc 192.168.11.5 8898 — nc — nc 192.168.11.5 8898 — 108x18

[~ > nc 192.168.11.5 8898
Welcome to SKAARH0J Device Core TCP Link, version v1.0.0-pre7 (x-dc102d5) - skaaros_pro
Type 'help' + Enter to see available commands

list

| IOREFERENCE BASE | MODEL | CORE NAME | ID | CONNECTED |
|-----|-----|-----|-----|-----|
| DC:bmd-atem/1/ | ATEM Mini (2) | BMD ATEM | 1 | YES |
| DC:bmd-atem/2/ | ATEM 2M/E Production Studio 4K | BMD ATEM | 2 | YES |
| | (13) | | | |
| DC:bmd-videohub/1/ | Videohub 16x16 (2) | Blackmagic Design Videohub | 1 | YES |
| DC:panasonic-ptz/1/ | AW-UE70 (1) | Panasonic PTZ | 1 | YES |
| DC:panasonic-ptz/2/ | AW-UE70 (1) | Panasonic PTZ | 2 | NO |
```

See parameters with "listio"

Type "listio" + the base IOreference (fx. "DC:bmd-videohub/1/") to see which parameters you can read, write, the value types, which value ranges exists etc.

```
kasper — nc 192.168.11.5 8898 — nc — nc 192.168.11.5 8898 — 135x23

listio DC:bmd-videohub/1/

| CATEGORY | IOREFERENCE | VALUE TYPE | READ | WRITE | RANGES | SHORT NAME |
|-----|-----|-----|-----|-----|-----|-----|
| Presets | DC:bmd-videohub/1/presetLabel/[Preset]/ | String | Yes | Normal | | Preset Label |
| Presets | DC:bmd-videohub/1/storePreset/[Preset]/ | - | - | Oneshot | | Store Preset |
| Presets | DC:bmd-videohub/1/recallPreset/[Preset]/ | - | - | Oneshot | | Recall Preset |
| Presets | DC:bmd-videohub/1/isPreset/[Preset]/ | Binary | Yes | - | | Preset Exists |
| Routing | DC:bmd-videohub/1/routeInputToOutputOpt/[Output]/ | Opt | Yes | Normal | | Route Input to Output Opt |
| Routing | DC:bmd-videohub/1/inputLabel/[Input]/ | String | Yes | Normal | | Input Label |
| Routing | DC:bmd-videohub/1/routeInputToOutput/[Output]/ | Integer | Yes | Normal | [1:16] | Route Input to Output |
| Routing | DC:bmd-videohub/1/outputLabel/[Output]/ | String | Yes | Normal | | Output Label |
| config | DC:bmd-videohub/1/connection/ | Binary | Yes | - | | Connected |
| tests | DC:bmd-videohub/1/device_test/ | - | - | Oneshot | | Device Test |
```

Type "help" to see commands

```
kasper — nc 192.168.11.5 8898 — nc — nc 192.168.11.5 8898 — 142x24
help
|-----|-----|-----|
| COMMAND | SHORTHAND | DESCRIPTION |
|-----|-----|-----|
| listDevices | list | Lists available device cores, device ids, the model and connection status |
| listDevicesJSON | | Like above command, but output in JSON |
| listIOReferences DC:[devicecore]/[id] | listio | Lists all IO references (parameters) for the given device core and device ID |
| listIOReferencesJSON DC:[devicecore]/[id] | | Like above command, but output in JSON |
| [IOReference] = [Value] | | Set value of IO reference |
| [IOReference] | | Get value of IO reference (add dimensions to narrow result) |
| subscribe DC:[devicecore]/[id]/[paramname] | sub | Subscribe to parameter |
| unsubscribe DC:[devicecore]/[id]/[paramname] | unsub | Unsubscribe to parameter |
| unsubscribe All | unsub | Unsubscribe to all parameters |
| listSubscriptions | listSubs | Unsubscribe to all parameters |
| help | | Show this screen |
| ping | | Server responds with 'ack' |
|-----|-----|-----|
```

## Subscribe to changes

It's very useful to subscribe to changes on an individual parameters or everything from a given device core. Try fx. "subscribe DC:bmd-videohub/1/" if you have a device IO reference called "DC:bmd-videohub/1/". This will immediately deliver the values of all parameters and keep sending updates if they change:

```
kasper — nc 192.168.11.5 8898 — nc — nc 192.168.11.5 8898 — 142x24
DC:bmd-videohub/1/isPreset/4/=false
DC:bmd-videohub/1/isPreset/5/=false
DC:bmd-videohub/1/isPreset/17/=false
DC:bmd-videohub/1/isPreset/13/=false
DC:bmd-videohub/1/isPreset/14/=false
DC:bmd-videohub/1/isPreset/18/=false
DC:bmd-videohub/1/connection/=true
DC:bmd-videohub/1/outputLabel/4/=Kiloview 1
DC:bmd-videohub/1/outputLabel/12/=N/C (dead ?)
DC:bmd-videohub/1/outputLabel/13/=N/C
DC:bmd-videohub/1/outputLabel/16/=Studio 2
DC:bmd-videohub/1/outputLabel/5/=Teradeck Cube
DC:bmd-videohub/1/outputLabel/9/=Support
DC:bmd-videohub/1/outputLabel/10/=Marketing
DC:bmd-videohub/1/outputLabel/2/=Wall Monitor
DC:bmd-videohub/1/outputLabel/6/=MegaPanel
DC:bmd-videohub/1/outputLabel/7/=N/C
DC:bmd-videohub/1/outputLabel/14/=N/C
DC:bmd-videohub/1/outputLabel/1/=Main Rack
DC:bmd-videohub/1/outputLabel/3/=NC
DC:bmd-videohub/1/outputLabel/8/=N/C
DC:bmd-videohub/1/outputLabel/11/=Develop
DC:bmd-videohub/1/outputLabel/15/=Studio 1
```

To change input on video hub output 12 you would send this string:

```
DC:bmd-videohub/1/routeInputToOutput/12/=1
```

# Licensing

**Licenses for unlimited use of DCLink on a Blue Pill device currently costs 499 EUR / 609 USD** (January 2024). Please contact [support@skaarhoj.com](mailto:support@skaarhoj.com) or [sales@skaarhoj.com](mailto:sales@skaarhoj.com) to place your order and get a license assigned. Remember to include your Blue Pill serial number in the request.

The dclink-tcp application will always give you about **10 minutes of free and unlimited TCP usage** after a 20-60 second quarantine period from application (re-)start. After 10 minutes you won't be able to receive or send messages over TCP. Re-starting the dclink-tcp package in the Blue Pill Web UI will reset the period.

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Revision #12

Created 26 January 2023 09:44:51 by Kasper

Updated 9 January 2024 11:35:56 by Kasper