SPX Graphics Controller

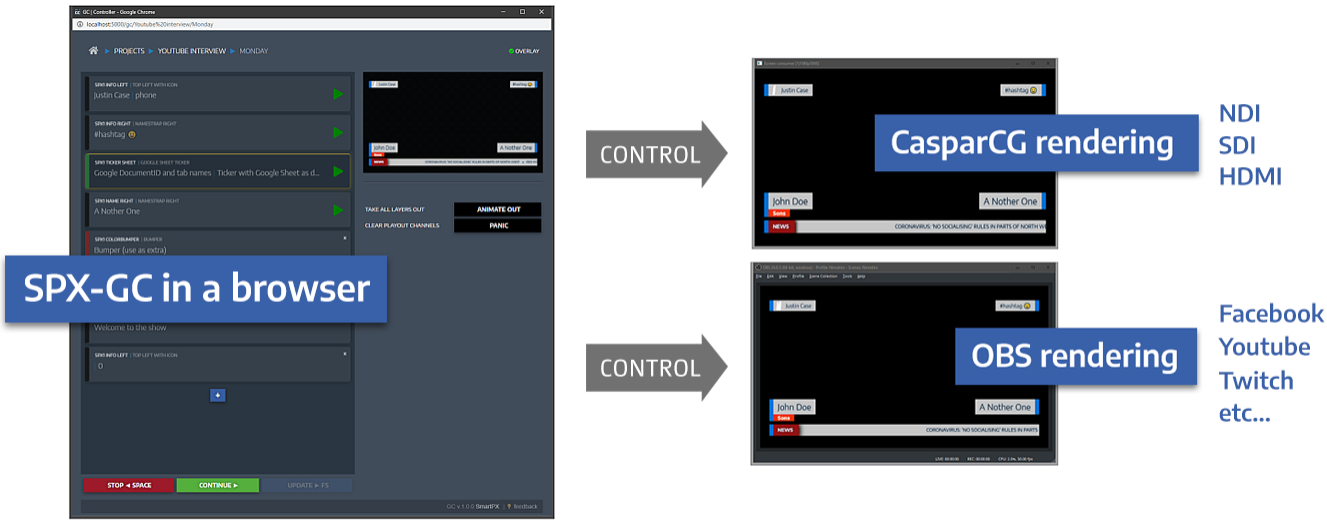
Manage and control graphics for CasparCG and streaming applications.

Readme updated Apr 04 2022.

> See RELEASE_NOTES.md for latest changes and items currently in development. Latest binary release **v.1.1.0** Download from spxgc.com/download or see the builds here.

SPX is professional graphics controller for live television productions and web streaming. Browser based GUI can control HTML graphics templates on CasparCG server(s) and/or live stream applications such as OBS, vMix or Wirecast.

spx.graphics



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- MIT License

SPX Graphics Controller can be used to playout lower thirds, bumpers, logos and other on-screen graphics in live web streams or live TV broadcasts. Content for the graphic templates are entered into *elements* which are stored on *rundowns* within *projects*.

Software is based on a NodeJS server and can be run on Windows, Mac or Linux computers, on-premise or using cloud instances for remote work scenarios.

Graphic templates are typical HTML templates used with CasparCG and other HTML compatible renderers. Integrating existing templates with SPX is done by adding *a template definition* (javascript-snippet) to them.

Originally SPX was developed by SmartPX for YLE, a public broadcaster in Finland. Thanks **Markus Nygård** for the challenge! 🤘

> If you need custom HTML templates or functionality get in touch tuomo@smartpx.fi.

Live demo 🔥

SPX running in the cloud: **http://35.228.47.121:5000**

> Please be aware there is just *one instance* running for demo purposes, so expect clashes and overall quirky experience if multiple users are logged in at once. Changes made in demo are reset automatically few times a day. (Also pay attention to the version number, it may not be the latest version.)

Template Store & Testdrive 🔥

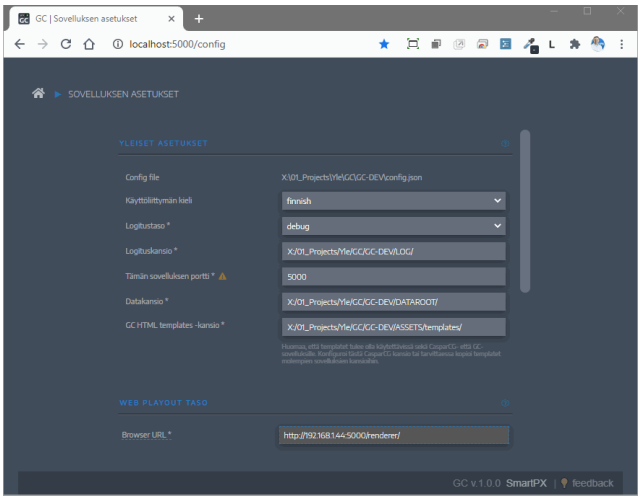
A marketplace for free and premium SPX templates and plugins is opened at spxgc.com/store. Each store item can be testdriven, see these examples:

Template	Type	Link
Bug - You have logo. Why not show it?	Free	Test drive
ImageLayer - Pick an image and play.	Free	Test drive
Texter - An essential template for unbranded text.	Premium	Test drive
TwoTone - You have logo. Why not show it?	Premium	Test drive

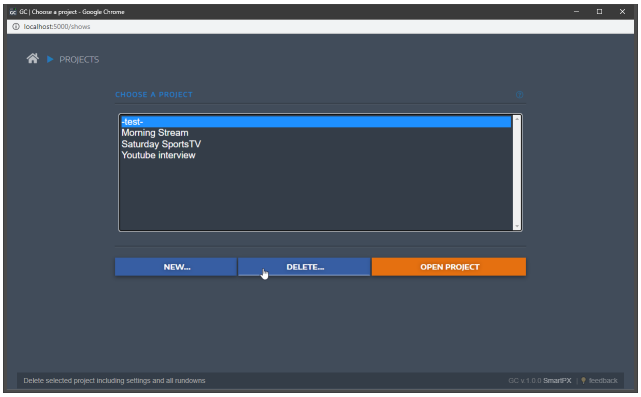
More ▶ spxgc.com

> Please be aware: just _one instance_ running for demo purposes, so expect clashes and overall quirky experience if multiple users are logged in at once. Changes made in demo are reset automatically few times a day.

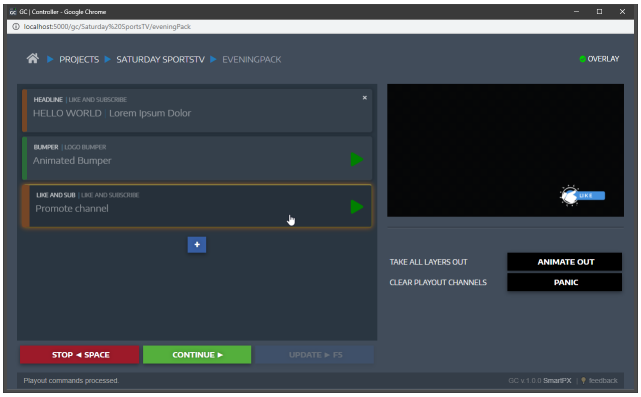
Screenshots



SPX's UI is browser based and can be operated with a mouse or keyboard. Additonal *extra controls* can be added as *plugins* to execute specific tasks or to trigger events in external devices.



Content is managed in *projects*. Each project can have unlimited amount of *rundowns* and *graphics templates*. Projects and their rundowns and settings are stored in *dataroot -folder*.



Main Controller: rundown with few items and a local preview. Items can be edited and controlled also with keyboard shortcuts. Fullscreen viewing mode recommended. Buttons below preview are customizeable.

An introduction video on Youtube. There are more images in the screenshots -folder.

Installation

SPX can be installed using a **ready-to-go binary package** which includes all required software components. Developers can alternatively get the full source code and run SPX with `npm scripts`, see section install source code.

> Source is updated more frequently than binary packages. See package.json file for current version.

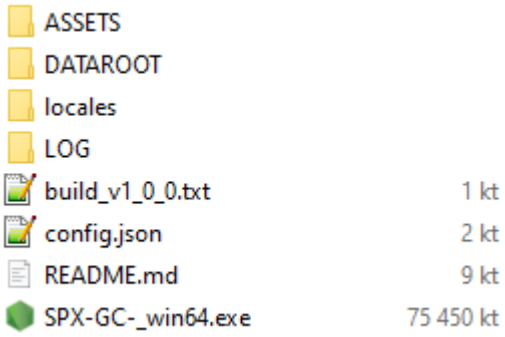
Available pre-built packages:

Package	Build date	Notes
Windows SPX_1_1_0_win64.zip	Feb 23 2022	The app is cross-platform and is mostly developed and tested on Windows. Approx 56% users are on Windows.
Linux SPX_1_1_0_linux64.zip	Feb 23 2022	Tested with some flavours of Debian and Ubuntu but user's input is appreciated here, see feedback. 38% of users are on Linux
MacOS SPX_1_1_0_macos64.zip	Feb 23 2022	If any installation issues, please see this Knowledge base article. 6% of current users are on Mac.

> For links to older packages see RELEASE_NOTES. Please get in touch if you have problems downloading or installing these files.

Option 1: **Install a pre-built package**

- Download a zip-file for your system using one of the links above.
- Create a new folder for the app (for example on Windows `C:\SPX\`, or on Linux `/SPX`).
- > **PLEASE NOTE** if using `C:\Program Files\` folder on Windows you may need to start SPX with administrative priviledges, since SPX will generate files in that folder structure.
- > **AVOID SYMBOLIC LINKS** Some filesystem related operations are known to fail is SPX (at least on Windows) when using `SUBST` or `net use` to assign a drive letter to a folder.
- Extract the zip-file to that folder.
- Locate the executable (for example `SPX_win64.exe` on Windows) and double click it to start the SPX server. A console window should open (and remain open) and show some startup information.
- Chrome browser can be enabled to launch automatically at server start-up. See `launchchrome` setting in config.json.
- When running application the first time it will create a file structure shown in the below screenshot. Note: unzipping and running SPX does *not* usually require admin priviledges (See note above).
- **On Linux** you *may* need to add execute permission to the file (`sudo chmod a+x SPX_linux64`) and launch it in a console (`./SPX_linux64`). See this KB article
- **On MacOS** you *may* need to add execute permission to the file (`sudo chmod a+x SPX_macos64`) and launch it in the Terminal (`./SPX_macos64`). See this KB article
- See next steps in the section first launch.



Option 2: **Install from source code**

Developers can get the source code from the repository with git and run the application using NodeJS and npm.

> **PLEASE NOTE:** The source code in this repository is always in a **WORK IN PROGRESS** state and features may or may not work. For production work it is recommended to always use known prebuilt binaries, which are more carefully tested. See also Release Notes.

- Create an empty folder on your system and fetch the source code using a `git clone` command:

```
git clone https://github.com/TuomoKu/SPX-GC.git
```

- After downloading the source, install required additional dependencies (node_modules) with

```
npm install
```

- See `package.json` for available scripts, but in **development** the typical start script would be `npm run dev` which will use *nodemon* to restart the server when changes are made to source files.

```
# on Windows:
npm run dev

# On a Mac there is currently an issue when running SPX with nodemon which causes
command line arguments to get mixed up. On Mac run the app with Node traditionally
without hot reloading:
node server.js
```

pm2 process manager

- Installation of `pm2` process manager (https://pm2.keymetrics.io/) can help in advanced production scenarios.
- To run the server in **production mode** use `npm start` which will run the server in the background with `pm2` process manager which will automatically restart the server if a crash occurs. Deeper usage and

configuration options of *pm2* is outside the scope of this readme-file.

```
npm start
```

Run multiple instances

- To run several instances of SPX (on different ports) with `pm2` prepare a `ecosystem.config.js` -file to same folder as config.json with details of each instance, such as:

```
// Example "ecosystem.config.js" file for pm2 to run multiple instances of SPX.

module.exports = {
  apps : [
    {
    'name': 'GC1',
    'script': 'server.js',
    'args': 'config.json'
    },
    {
      'name': 'GC2',
      'script': 'server.js',
      'args': 'config5001.json'
      }
  ]
};
```

Then launch multiple instances with pm2:

```
pm2 start ecosystem.config.js
```

Stop all running instances

```
pm2 kill
```

First launch

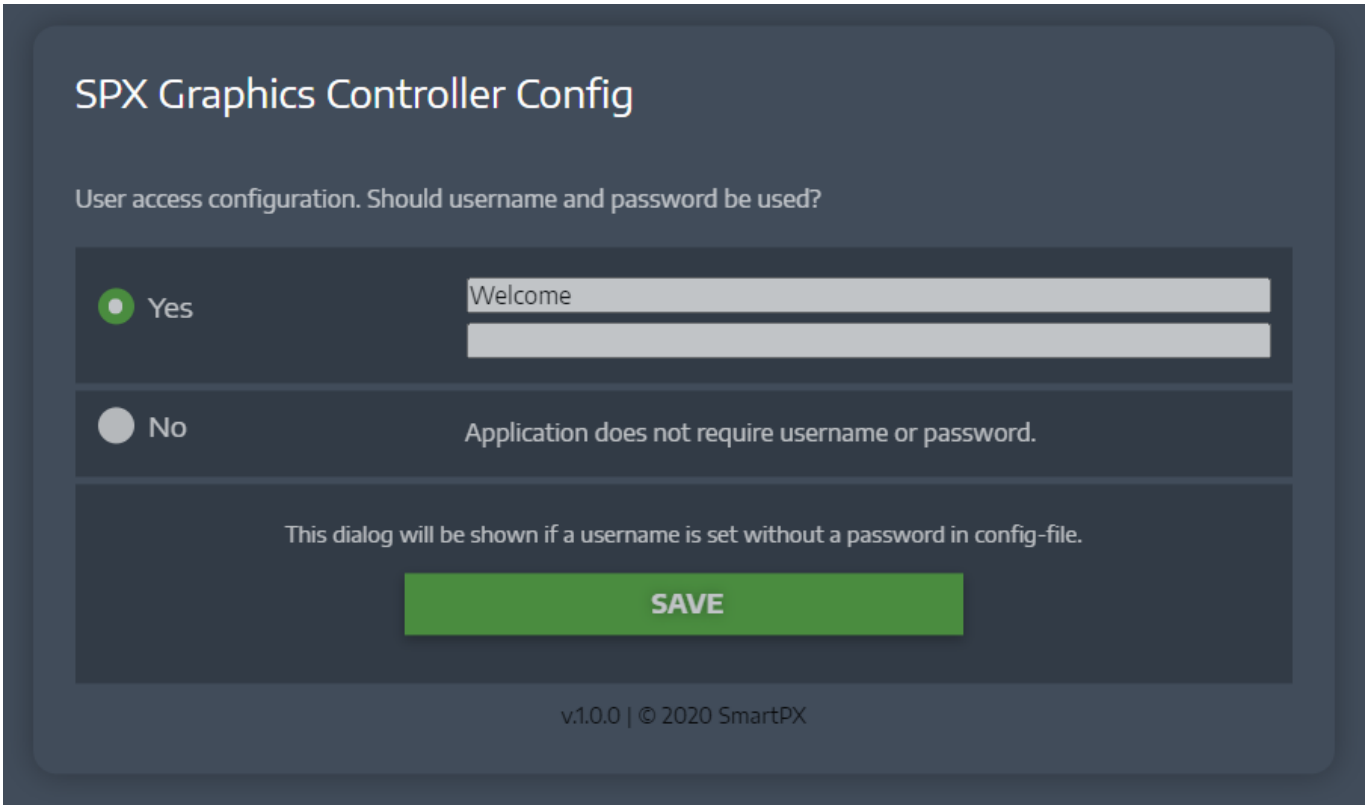
- Open web browser (such as Chrome) and load SPX gui from url shown in the console at the start-up:

```
--------------------------------
  SPX url:
```

```
  http://127.0.0.1:5656
--------------------------------
```

> Port 5656 is the default value in config and can be changed.

If installation and server start-up worked, you should see a Config screen in your browser asking a preference regarding user access.



There are two alternatives:

- `YES`: Username and password are reguired to access the application.
- `NO`: Application will not require a login.
- This config screen is shown
    - at first startup, or
    - when `config.json` is missing, or
    - when `config.json` **has** username but password is left **empty**

Depending on the selection made, you will either be asked to login or you land to the Welcome page and you are free to explore the application. If password is given it will be stored in the config-file in unreadable, encrypted format.

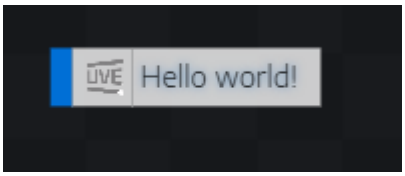
> By default the dataroot has one "Hello world" -project with "My First Rundown" in it for demonstration purposes.

Start making configuration changes or creating projects and adding templates and adding those to rundowns for playout.

You can also follow these steps to get yourself familiarized with the application:

1. Open SPX in browser, typically at http://localhost:5656
2. Choose 'no login' policy by selecting **No** option and click **Save**

3. Go to **Projects**
4. Add a new project, for instance `My First Project`. (Project's settings opens.)
5. Click **[+]** button to add the first template to the project
6. Browse to `smartpx > Template_Pack_1` -folder and choose `SPX1_INFO_LEFT.html` -template
7. Go back to **Projects**
8. Double click `My First Project` to open it
9. Add a new rundown to this project, for instance `My First Rundown`. (The new empty rundown opens.)
10. Click **[+]** button to add an item to the rundown
11. Pick **SPX1_INFO_LEFT** -template
12. Double click rundown item to edit it, enter "Hello world!" and click **Save** to close the editor
13. Play the item with **SPACEBAR** or by clicking on **PLAY** button at the bottom of rundown list.



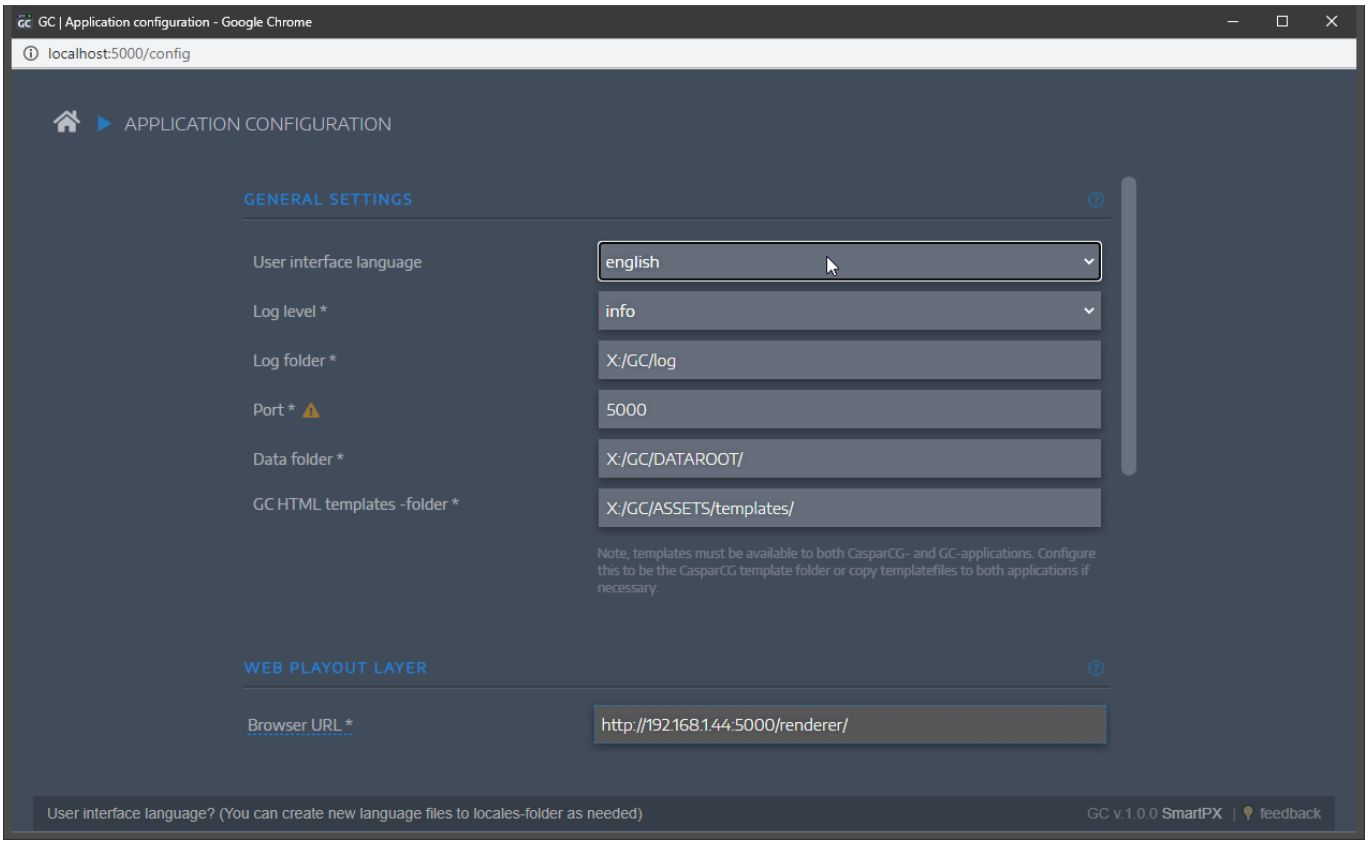
Congratulations! Now go back to your project's settings and add more templates to it...

> When a new version becomes available it will be shown on the Welcome page of the application.

App configuration options

> Application **DOES NOT** come with `config.json` and it will be generated at server start up.

SPX uses a `JSON file` to store configuration settings, such as folder paths, playout server settings or user interface language options. Most of the settings can be changed from the configuration page.



Some rarely used settings are left out from configuration page and can be changed by manually modifying the *config file* in a text editor.

The default configuration file name is `config.json` but it is possible to run the server with a specific configuration file. For instance you might have two instances running on the same system, using shared project files and templates but on different server ports and using different renderers. (See also pm2 process manager)

To run the server with another config, provide the config file as the first command line argument, for example:

```
SPX-GC_win64.exe myOtherConfig.json
```

An example `config.json` of the SPX server

```
{
  "general": {
    "username": "admin",
    "password": "",
    "hostname": "My main machine",
    "langfile": "english.json",
    "loglevel": "info",
    "logfolder": "X:/GC-DEV/LOG/",
    "port": "5656",
    "dataroot": "X:/DATAROOT/",
    "templatefolder": "X:/GC-DEV/ASSETS/templates/",
    "templatesource": "spxgc-ip-address",
    "preview": "selected",
    "renderer": "normal",
    "resolution": "HD",
    "launchchrome": false,
    "disableConfigUI": true
  },
  "casparcg": {
    "servers": [
      {
        "name": "OVERLAY",
        "host": "localhost",
        "port": "5250"
      },
      {
        "name": "VIDEOWALL",
        "host": "128.120.110.1",
        "port": "5250"
      }
    ]
  },
  "globalExtras": {
    "customscript": "/ExtraFunctions/demoFunctions.js",
    "CustomControls": [
      {
```

```
        "ftype": "button",
        "bgclass": "bg_black",
        "text": "ANIMATE OUT",
        "fcall": "stopAll()",
        "description": "Take all layers out"
      },
      {
        "ftype": "button",
        "bgclass": "bg_red",
        "text": "PANIC",
        "fcall": "clearAllChannels()",
        "description": "Clear playout channels"
      }
    ]
  }
}
```

> **Please note**: the server will fail to start if config is not valid JSON. You can use JSONLint to validate JSON data.

Config parameters

`general.username / password` If *username* is present but the *password* is left blank, the app will ask for login policy, just as with first launch. When both are entered the *password* is saved here (encrypted) and a logic is required to start a session.

`general.hostname` *Mostly for future use* This will identify SPX instance for logging purposes.

`general.templatefolder` contains the HTML templates and their resource files (css, js, images, etc). This root folder is used by SPX's template browser and 'Explore templates folder' menu command (Win only). For playout folder see *templatesource* parameter below.

`general.templatesource` (Added in v 1.0.9) For CasparCG playout the templates can be loaded from the *filesystem* or via *http-connection* provided by SPX. Supported values are:

- `spxgc-ip-address` to automatically use SPX's IP address and http -protocol for playing out templates from SPX's template folder. This is the default behaviour.
- `casparcg-template-path` to playout templates from target CasparCG server's file system template-path. (See *caspar.config* file) Note, in this workflow the templates *must be in two places*: in SPX ASSETS/templates -folder *and* CasparCG's templates folder. And if a changes are done to either location, those changes should also be done to the other. `rsync` or other mirroring technique should be considered...
- `http://<ip-address>` manually entered address can be used when the automatically generated IP address is not usable. For instance Docker containers or VM hosted instances may expose internal IP address which can not be accessed from outside.

> Please note *templatesource* only affects CasparCG playout and not web playout. Also file:// protocol is more restrictive in using external data sources and it can yield javascript errors, such as CORS.

`general.preview` Version 1.1.0 introduced the first implementation of preview. Any output renderer is treated as a preview renderer if `preview=true`parameters is present in the renderer URL. CasparCG preview server is not implemented in v.1.1.0 but the `renderer?preview=true` URL can be added to CasparCG "manually" using ACMP protocol commands. `Preview` value dictates which event on the rundown triggers a preview in a the preview renderer. Values available.

- `selected` (the default value) Preview will play whenever a *focus* is changed on the rundown.
- ~~`next`~~ Preview will play *the next item* from the rundown when an item is played. (Option coming later)
- ~~`none`~~ preview will not be triggered (Option coming later)

`general.renderer` Version 1.1.0 introduced an option to have the local renderer in traditional position at the top right corner of SPX UI **or** taken out to a floating window. This is stored to config file and each consecutive controller reload will act according to set preference. Possible values are

- `normal` an inline renderer view
- `popup` renderer in a floating window "popup" (notice, it is possible that popup blocker prevent this from working as expected)

`general.langfile` is a file reference in `locales`-folder for a JSON file containing UI strings in that language. Folder is scanned at server start and files are shown in the configuration as language options. There are some hardcoded strings in the UI still which are gradually improved. Some texts are "user settings" (plugin and extension UI texts, template instructions) and cannot be added to the locale strings.

If you want to add your own language you have to options: You can copy an existing file to another name and modify it's contents or better yet: make a copy of a Google Sheet language document of locale strings and use that to create the locale file. You can also **contribute** to the project by submitting your language back to the project. See the Google Sheet for instructions.

Localization credits:

Language	Contributor	Bundled in version
Dutch	Koen Willems, Netherlands	v1.0.12

`general.loglevel` default value is `info`. Other possible values are `error` (least), `warn`, `verbose` and `debug` (most log data). Log messages are shown in the SPX console window and are stored into log files in logfolder. The active file is named `access.log`. Log files can be useful in troubleshooting, `verbose` is the recommeded level for troubleshooting. If further analysis is needed `debug` level produces even more information. Remember to set log level back to `info` since heavy logging will increase disk usage and may effect software performance.

`globalExtras{}` are additional user interface controls, or *plugins*, shown below preview window in all project as opposed to projectExtras which are project specific. Each item has an UI component (a button) and associated function call available in the specified `javascript file`. When a new `config.json` is created it has some demo extra controls to introduce related consepts and possibilities.

> **PLEASE NOTE:** Global extras will be replaced by Plugins in future versions, since they are easier to install and maintain.

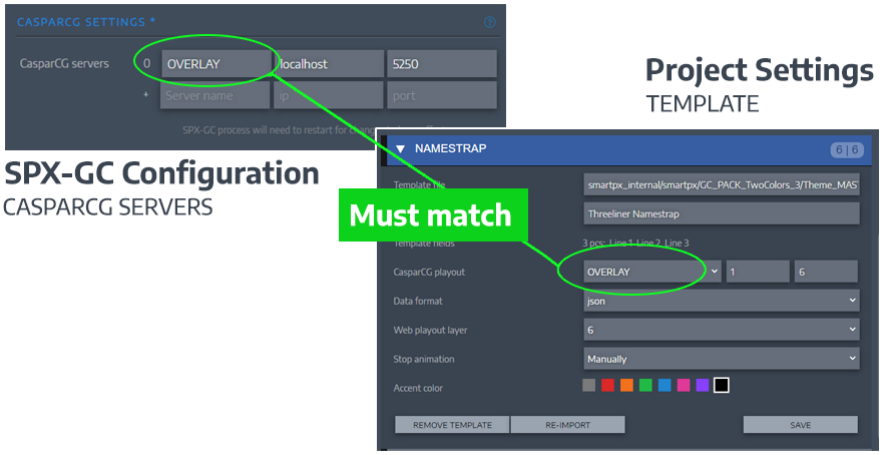
Adding CasparCG server(s)

> ⚠ If SPX is used with CasparCG **version 2.3.x LTS is recommended.** See CasparCG Releases.

Starting from v.1.0.12 SPX does not have a CasparCG server assigned by default in the configuration. To add CasparCG server(s) go to Configuration and scroll down to CasparCG servers. Add a new server by giving it name such as `OVERLAY`, `ip-address` (or `localhost`) and a `port` number (5250 is CasparCG's default port). Click on Save at the bottom of the page and there will be an empty line to add another server. Add as many as you have in your production, such as OVERLAY (for CG's), VIDEOWALL, FULLSCREEN etc...

> The name `OVERLAY` is preferred, since this name is used in all SPX Store templates and the default template pack which comes with the application. **Note:** use only alphanumeric names for CasparCG servers, without special characters or spaces.

Each SPX template has a setting for choosing a target CasparCG server. This server is assigned in the template settings within Project Settings. (Default value comes to the project from the HTML sourcecode of the template as the 'playserver' -parameter of the TemplateDefinition object.) The name must match with one of configured servers for the playout to work.



If you have problems during playout it is recommeded to set log level higher and observe SPX console window messages for potential cause.

> **REMEMBER** SPX server process must be restarted whenever changes are made to configuration.

Projects and rundowns

All content in SPX is stored as files in `dataroot` folder which is specified in the configuration.

- **Projects** are *subfolders* in the dataroot-folder
- **Rundowns** are *files* in project subfolders.

Projects can be added and removed on the *Projects* page and rundowns can be added and removed inside project on the *Rundows* page. Most changes are saved automatically. If the UI becomes unresponsive it is usually fixed by refreshing the current page (Ctrl+R).

```
File structure of dataroot:
```

```
▸ LOG
▸ ASSETS
▾ DATAROOT
  ├─▸ Project A
  ├─▸ Project B
  └─▾ Project C
      ├──  profile.json
      └─▾ data
          ├─ Rundown 1.json
          └─ Rundown 2.json
```

> Typically users don't need to do any manual file management using computer's filesystem.

Project specific settings, such as assigned templates and project extras are stored into `profile.json` within each project folder.

A static background image can be assigned to a project in the Project Settings. A use case for this might be a chroma image to help in chroma keying in a vision mixer such as ATEM. Another creative use is to have a logo or border or other design element onscreen all the time. A transparent PNG (with an alpha channel) can be used. The background image must be placed to ASSETS/media/image/hd folder and it will appear in the dropdown.

Templates can be added to a project on the project settings page. When a template (a .html file) is browsed and selected, the system will scan the file and search for a template definition which will tell SPX what kind of input fields should be generated for that template and how the template is planned to be played out. Template defaults are stored to project's `profile.json` (as "copy") and if HTML template's definition related details are changed afterwards the template must be imported to the project again. The system does not re-scan added templates.

> If selected template does NOT have template definition it will cause an `error:templateDefinitionMissing` -message. See section html templates.

showExtras are additional user interface controls, or *plugins*, shown below preview window in current project as opposed to globalExtras which are shown in every project. Each item has an UI component (a button) and associated function call available in the specified `javascript file`.

An example projects settings `<PROJECT>/profile.json`:

```
{
  "templates": [
    {
      "description": "Hashtag one-liner",
      "playserver": "OVERLAY",
      "playchannel": "1",
      "playlayer": "7",
      "webplayout": "7",
      "out": "4000",
      "uicolor": "7",
      "onair": "false",
      "dataformat": "xml",
```

```
        "relpath": "myTemplates/ProjectA/hashtag.html",
        "DataFields": [
          {
            "field": "f0",
            "ftype": "textfield",
            "title": "Social media hashtag",
            "value": "#welldone"
          }
        ],
      }
    ],
    "showExtras": {
      "customscript": "/ExtraFunctions/demoFunctions.js",
      "CustomControls": [
          {
            "description": "Play simple bumper",
            "ftype": "button",
            "bgclass": "bg_orange",
            "text": "Bumper FX",
            "fcall": "PlayBumper",
          },
          {
            "description": "Corner logo on/off",
            "ftype": "togglebutton",
            "bgclass": "bg_green",
            "text0": "Logo ON",
            "text1": "Logo OFF",
            "fcall": "logoToggle(this)"
          },
          {
            "description": "Sound FX",
            "ftype": "selectbutton",
            "bgclass": "bg_blue",
            "text": "Play",
            "fcall": "playSelectedAudio",
            "value": "yes.wav",
            "items": [
                {
                    "text": "No!",
                    "value": "no.wav"
                },
                {
                    "text": "Yesss!",
                    "value": "yes.wav"
                }
            ]
          },
        ]
      }
  }
```

> The above project has just one template (`hashtag.html`) assigned with three extra controls of different types.

Custom control's ftype can be

- **button**: a simple push button (with `text` as caption)
- **togglebutton**: button with separate on / off states
- **selectbutton**: a select list with an execute selection button
- **ftypes**
  - `hidden` value is used, title shown
  - `textfield` a typical input field
  - `dropdown` options provided as an array
    - `"items":[ {"text": "Hundred", "value": 100}, {"text": "Dozen", "value": 12} ]`
    - `value` is one of the item array values
  - `caption` text of "value" is shown in UI. Useful with static graphics.

Templates

SPX uses HTML templates for visuals.

Templates can have any features supported by the renderers, such as Canvas objects, WebGL animations, CSS transforms and animations, animation libraries, such as GSAP, ThreeJS, Anime, Lottie/Bodymovin and templates can utilize ajax calls for data visualizations and other advanced uses.

SPX comes with a starter template package for reference. See folder ASSETS/templates/smartpx/Template_Pack_1

Video: Use existing HTML templates.

```
Recommended folder structure for templates

▸ LOG
▸ DATAROOT
▾ ASSETS
   ├─▸ video
   ├─▸ media
   └─▾ templates
       ├─▸ smartpx
       ├─▸ yle
       └─▾ myCompany
           ├─▸ ProjectA
           └─▾ ProjectB
               ├─▸ css
               ├─▸ js
               ├─ Template1.html
               └─ Template2.html
```

> The templates must be within `ASSETS/templates` folder structure. It is preferred to have a single subfolder for all *your* templates (myCompany in the example above) and futher subfolders for different *template packs* or *visual styles* within it (ProjectA, ProjectB in the example).

SPX user interface and web playout always loads templates from `ASSETS/templates` folder, but CasparCG playout can be configured to playout *copied* templates from template-path folder configured in CasparCG Server caspar.config -file.

SPXGCTemplateDefinition -object in templates

> **IMPORTANT:** Each HTML template must have an `JSON data object` present in the HTML-files source code, within the HEAD section. Video: use existing HTML templates covers also this topic.

TemplateDefinition configures how a template is supposed to work within SPX; what kinds of controls are shown to the operator and how the graphic should playout, on which server and layer for instance. These values are template's `defaults` and can be changed in the Project Settings view after the template is added to the project.

> See details about supported values below the snippet.

```
<!-- An example template definition object for SPX. -->
<!-- Place it as the last item within the HEAD section -->

<script>
    window.SPXGCTemplateDefinition = {
        "description": "Top left with icon",
        "playserver": "OVERLAY",
        "playchannel": "1",
        "playlayer": "7",
        "webplayout": "7",
        "steps" : "1",
        "out": "manual",
        "uicolor": "2",
        "dataformat": "json",
        "DataFields": [
            {
                "ftype" : "instruction",
                "value" : "A example demo template definition. Learn what it does
and make use of it's capabilities."
            },
            {
                "field" : "f0",
                "ftype" : "textfield",
                "title" : "Info text",
                "value" : ""
            },
            {
                "field": "f1",
                "ftype": "dropdown",
                "title": "Select logo scaling",
```

```
                "value": "0.3",
                "items": [
                    {
                        "text": "Tiny logo",
                        "value": "0.3"
                    },
                    {
                        "text": "Huge logo",
                        "value": "1.2"
                    }
                ]
            },
            {
                "field" : "f2",
                "ftype" : "textarea",
                "title" : "Multiline field",
                "value" : "First line\nSecond line\n\nFourth one"
            },
            {
                "ftype" : "divider"
            },
            {
                "field": "f3",
                "ftype": "filelist",
                "title": "Choose background image from global ASSETS-folder",
                "assetfolder" : "/media/images/bg/" ,
                "extension" : "png",
                "value": "/media/images/bg/checker.png",
            },
            {
                "field": "f4",
                "ftype": "filelist",
                "title": "Choose CSS stylesheet from template's relative styles-
folder",
                "assetfolder" : "./styles/" ,
                "extension" : "css",
                "value": "./styles/defaultStyle.css",
            },
            {
                "field": "f5",
                "ftype": "number",
                "title": "Rotation degrees",
                "value": "45",
            },
            {
                "field": "f6",
                "ftype": "checkbox",
                "title": "Show logo",
                "value": "1",
            },
            {
                "field": "f7",
                "ftype": "button",
                "title": "Click me",
```

```
                "descr": "Describe button function here",
                "fcall": "myCustomHello('world')"
            }
        ]
    };
</script>
```

- **playserver**: one of the available CasparCG server names in config or "-" for none
- **playchannel**: CasparCG playout channel
- **playlayer**: CasparCG playout layer
- **webplayout**: a number between 1..20, or "-" for none

> `Layer` is a number between 1..20. Layer 1 is at the very back and 20 is the highest ("closest to the camera"). Layers can be changed for each template in each project separately in the Project Settings.

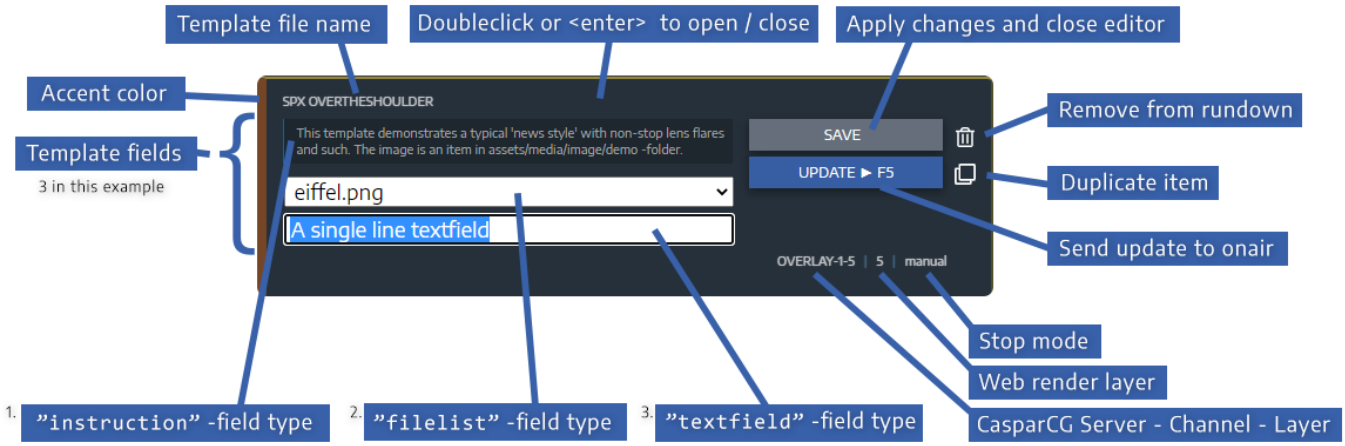
- **out**: how layer should be taken out:
  - `manual` default way: press STOP to animate out
  - `none` play only. Suitable for wipes / bumpers
  - `[numeric]` milliseconds until STOP is executed
- **steps**: how many phases in animation? For normal in-out templates this is 1. For templates with 2 or more steps the *Continue* button gets enabled.
- **dataformat**: how template is expecting data
  - `xml` the default
  - `json` used in some special templates
- **ftypes**
  - *ftypes* (for field types) define template's GUI controls in SPX controller
  - the values of first two fileds are used as content preview in the rundown, so the order of fields should be considered for the ease of use
  - The developer of the HTML template can consider how to utilize these values, for instance a `dropdown` control can be used to pick the name of the show host, or it can drive other values via javascript in the templates. See /ASSETS/templates/smartpx -folder for some inspiration.

Field type	Description	Example
`hidden`	A variable which is not editable by the user. *Value* is used by the template and, *title* shown as static text on UI.	`Red color (#f00)`
`caption`	The *value* is shown in UI. Caption can be used to display texts to operators of the template.	`This template does not have editable values`
`textfield`	A typical single line text input field.	`Firstname Lastname`

Field type	Description	Example
`dropdown`	A dropdown selector list. Options is an *items* array, each consisting of *text* (which is visible) and the *value* (which the template will use). The default selection is defined as `value` and it must be one of the values in the *items* array. See an example definition above.	`"items":[ {"text": "Hundred", "value": 100}, {"text": "Dozen", "value": 12} ]`
`textarea`	A multiline text control which accepts *return* key for new lines. (Added in 1.0.2)	`First line \n Second line`
`filelist`	A dropdown selector list for files of of given type *extension* in an *assetfolder* within ASSETS -folderstructure of SPX. This is useful for picking images or other media files in templates. (Added in 1.0.3). Version 1.0.15 introduced *relative folders*. If `assetfolder` path value starts with `"./"` the path is considered relative to the template root folder. This is useful for optional CSS styles or alternative images. See examples of both path styles above.	`sport_logo.png, news_logo.png`
`divider`	A utility ftype to add a visual divider to a template. Can be used to create visual seqments for ease of use. (Added in 1.0.3)	
`instruction`	*Value* can be used as a longer help text on the template but does not have any other functionality. (Added in 1.0.6)	`Max 100 characters to the field below.`
`number`	*Value* is exposed as a number field in the template UI. (Added in 1.0.7)	`45`
`checkbox`	`Title` is used as label in UI. *Value* is "0" or "1" when checked. (Added in 1.0.10)	☑ Show logo

> **Note** additional user interface controls may be added in future releases.

Anatomy of an example rundown item



Using SPX with OBS / vMix / Wirecast...

SPX's animated graphics and overlays can be integrated used in streaming and videoconferencing with any video- or streaming application which has a support for "Browser" or "HTML Sources". SPX provides a URL address which is entered to the streaming software as a layer / input / source. In OBS use `Browser source`, in vMIX it's called `Web Browser input` and in XSplit it's a `Webpage source`...

```
http://localhost:5656/renderer
```

If you have several inputs (for instance for multiple presenters) you can limit which layers get's rendered to different screens with the `layers` parameter in Renderer url, for instance:

```
http://localhost:5656/renderer/?layers=[2,4,20]
```

Control SPX with external devices such as Elgato Stream Deck...

SPX (v.1.0.8+) rundowns can be loaded and controlled with external devices with http GET/ POST commands. See available commands here:

```
http://localhost:5656/api/v1
```

SPX can also be used with Bitfocus Companion, see https://bitfocus.io/companion. Companion version 2 will have a built in module with presets for SPX.

> **OSC -protocol** is not supported in SPX 1.0.x but will be added in a future version.

Plugins and Extensions

Version 1.0.10 introduced `ASSETS/plugins` -folder for additional functionality, such as custom function triggering `plugin buttons` and `extensions` which are additional user interfaces or panels. For instance Scoreboard is a sports clock extension with an independent user interface. Another example is a SocialPlayout - an upcoming extension for moderating and LIVE playout of social messages from various social media platforms, such as Twitter, Instagram, Facebook, Youtube, etc.

Each plugin has a subfolder with at least an init.js file and optionally other folders and files, such as html, css and js.

`plugins/lib` -folder contains common SPX user interface elements used by plugins. More functionality and UI controls will be added here in future releases. These can be checkboxes, dropdown selectors etc.

Issues and Feedback

A Knowledge Base at spxgc.tawk.help is a growing collection of self-help articles in various SPX related topics.

Github issue tracker should be used for bug reports. For other feedback such as feature requests or other comments (for now at least) please use Google Forms feedback form at https://forms.gle/T26xMFyNZt9E9S6d8. All constructive feedback is highly appreciated!

Gotcha's & Known Issues (things to be aware of)

- If UI becomes wonky reload the view (F5 / Ctrl+R).
- There is spagetti code whenever worked tired. Try to accept it...
- Undocumented features do exist. (templateEvents, TTS, pm2, cfg:hostname/usercommapass/greeting...)
- This list shouldn't be. At least not here.

Roadmap

New releases will try address found issues and bugs in older versions and they will also introduce new features and functionality. See table for some planned features and use feedback to submit suggestions.

> **DISCUSS FEATURES:** Visit spx.kampsite.co to discuss and propose new features and vote them up 🚀

When a new version becomes available it will be promoted on the Welcome page of the application (if access to internet). Several versions can be installed (into different folders) and if there are no backwards compatibility issues between versions they can be configured to use the same dataroot -folder for projects/rundowns.

Release	Planned features (subject to change)	Timeframe
1.1	~~Mac install folder issue (#3) fix~~. ~~Help page update~~, ~~internal logic change to fix playlist item issue (#1)~~, ~~http protocol for CasparCG templates~~, simple rundown view for mobile / tablet browsers, automatically running rundowns, item grouping, ~~textarea control~~, ~~item / file duplication~~. Project and ~~rundown~~ rename. ~~Export/import CSV~~	TBD
X.X	Under consideration: OSC support, Built-in NDI support, mediafile picker, video playback control templates, ~~graphics preview~~, ~~MIDI interface~~, global extras editor in appconfig, ~~public API for controls~~, ~~HTML template store~~, community marketplace. Video tutorials. ~~Knowledgebase~~. Forum. Slack support channel. Free lunches.	TBD

Strikethrough items are already done.
Visit spx.kampsite.co to discuss the roadmap.

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