oVirt

Extending oVirt UI with backup & recovery operation plugin - vProtect example

Marcin Kubacki
Chief Software Architect

September/2020

Agenda

- Getting started with plugin development
- vProtect overview
- vProtect UI Plugin overview
- Demo

Getting started with plugin development

Getting started with plugin development

- Clone ovirt-engine-ui-extensions github repository from https://github.com/oVirt/ovirt-engine-ui-extensions using command `git clone`.

```
C:\projects>git clone https://github.com/oVirt/ovirt-engine-ui-extensions.git
Cloning into 'ovirt-engine-ui-extensions'...
remote: Enumerating objects: 11, done.
remote: Counting objects: 100% (11/11), done.
remote: Compressing objects: 100% (10/10), done.
remote: Total 1111 (delta 2), reused 9 (delta 0), pack-reused 1100 eceiving objects:  98% (1089/1111)
Receiving objects: 100% (1111/1111), 981.16 KiB | 2.44 MiB/s, done.
Resolving deltas: 100% (669/669), done.
```

- Install npm packages using command `yarn install` in the project directory.

```
C:\projects\ovirt-engine-ui-extensions>yarn install
yarn install v1.19.1
warning ..\package.json: No license field
[1/4] Resolving packages...
[2/4] Fetching packages...
info fsevents@2.1.3: The platform "win32" is incompatible with this module.
info "fsevents@2.1.3" is an optional dependency and failed compatibility check. Excluding it from installation.
info fsevents@1.2.13: The platform "win32" is incompatible with this module.
info "fsevents@1.2.13" is an optional dependency and failed compatibility check. Excluding it from installation.
[3/4] Linking dependencies...
warning "patternfly-react > table-resolver@3.3.0" has unmet peer dependency "redux@>= 3.0.0 < 4.0.0".
[4/4] Building fresh packages...
warning Your current version of Yarn is out of date. The latest version is "1.22.4", while you're on "1.19.1".
info To upgrade, download the latest installer at "https://yarnpkg.com/latest.msi".
Done in 148.68s.
```

Getting started with plugin development - overview

- **ui-extensions** directory with the **Dashboard** page (plugin).
- Build this project using using command `yarn build` -> output in **dist** directory
- Ready plugins reside in **/usr/share/ovirt-engine/ui-plugins** directory in the oVirt Manager server

- Transforming Dashboard (dashboard* or ui-* files) plugin to Hello World (hello-world* files):
  - **hello-world-resources** directory - to be distributed
  - **hello-world.json** configuration file
  - **webpack.common.js** and **constans.js** configuration files - replace references to dashboard* with hello-world*
  - **hello-world.js** - entry component

Getting started with plugin development - hello-world.js

- dashboard.js

```
pluginInit.run().then(() => {
  const loadingPlaceholder = (
    <div className='text-center'>
      <h2>{msg.dashboardDataLoading()}</h2>
      <div className='spinner spinner-lg' />
    </div>
  )

  const errorPlaceholder = (
    <div className='text-center'>
      <h2>{msg.dashboardDataError()}</h2>
      <span style={{ fontSize: 15 }}>
        {msg.dashboardDataErrorDetail()}
      </span>
    </div>
  )

  ReactDOM.render(
    <DashboardDataProvider loading={loadingPlaceholder} error={errorPlaceholder}>
      <Dashboard />
    </DashboardDataProvider>,
    appRoot
  )
})
```

- hello-world.js

```
pluginInit.run().then(() => {
  ReactDOM.render(
    <div>
      Hello World!
    </div>,
    appRoot
  )
})
```

Getting started with plugin development - webpack config

- Modify dashboard entries to respective hello-world

```
entry: {
  'plugin': [...commonModules, './src/plugin.js'],
  // 'dashboard': [...commonModules, './src/dashboard.js'],
  'hello-world': [...commonModules, './src/hello-world.js']
},
```

```
new HtmlWebpackPlugin({
  filename: 'plugin.html',
  template: 'static/html/plugin.template.ejs',
  extraParams: { gitInfo, rpmInfo },
  inject: true,
  chunks: ['webpack-manifest', 'vendor', 'plugin']
}),
// new HtmlWebpackPlugin({
//   filename: 'dashboard.html',
//   template: 'static/html/dashboard.template.ejs',
//   extraParams: { gitInfo, rpmInfo },
//   inject: true,
//   chunks: ['webpack-manifest', 'vendor', 'dashboard']
// }),
new HtmlWebpackPlugin({
  filename: 'hello-world.html',
  template: 'static/html/hello-world.template.ejs',
  extraParams: { gitInfo, rpmInfo },
  inject: true,
  chunks: ['webpack-manifest', 'vendor', 'hello-world']
}),
```

Getting started with plugin development - oVirt menu item

- At integrations/places.js file comment out method responsible for adding Dashboard menu item.

```
function addDashboardPlace () {
  // getPluginApi().addPrimaryMenuPlace(msg.dashboardTitle(), dashboardPlaceToken, `${pluginBasePath}/dashboard.html`, {
  //   // place the menu item before existing ones
  //   priority: -1,
  //   // customize the prefix displayed in search bar
  //   searchPrefix: 'Dashboard',
  //   // make users land on this place by default
  //   defaultPlace: true,
  //   // make sure the menu item has the right icon
  //   icon: 'fa-tachometer'
  // })

  getPluginApi().addPrimaryMenuPlace('Hello World', 'hello-world-place-token', `${pluginBasePath}/hello-world.html`, {
    priority: -1,
    searchPrefix: 'Hello world',
    defaultPlace: true,
    icon: 'fa-tachometer'
  })
}
```

- Place token is a string that is displayed after „#” character in oVirt web engine URL.
- Using this route we will load our hello-world template, which is an react app with hello-world.js entry.

Getting started with plugin development - build

- `yarn build` ->

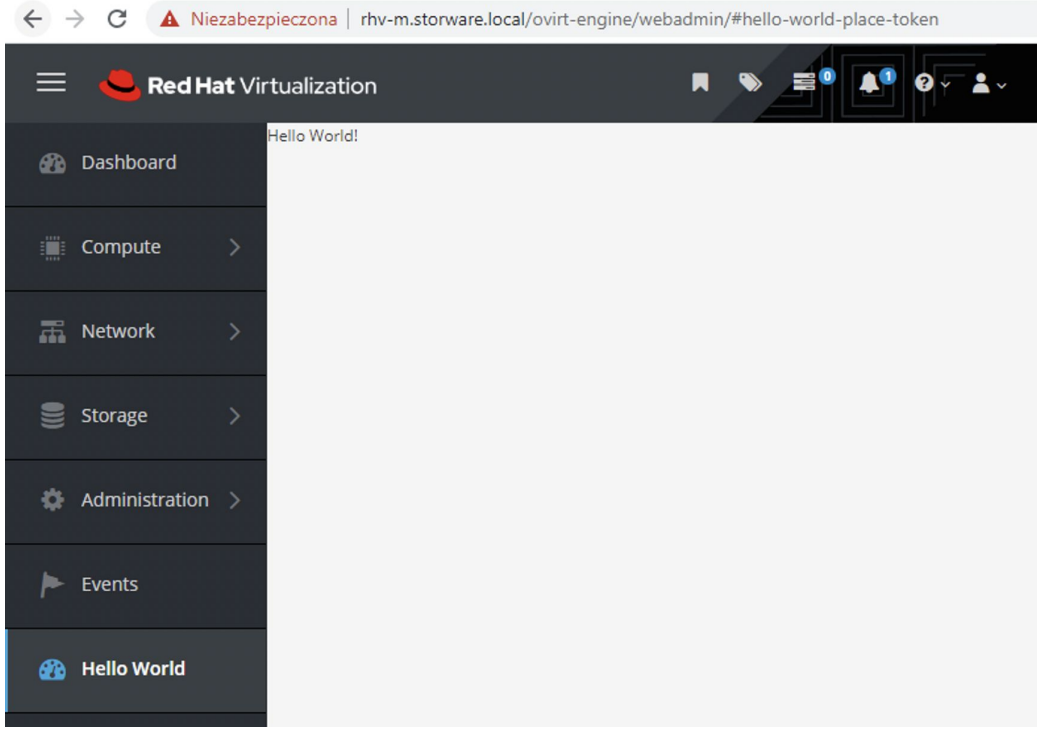
- It will generate the hello-world-extensions.json file inside. It will look like static/hello-world-extensions.json - place to pass config params to plugin

```
{
 "name": "hello-world",
 "url": "plugin/hello-world/plugin.html",
 "resourcePath": "hello-world-resources",
 "lazyLoad": false,

 "config": {
  "useFakeData": false,
  "clusterUpgradePlaybook": "ovirt-cluster-upgrade"
 }
}
```

Getting started with plugin development - deploy

- Copy file and directory to oVirt Manager and it should be displayed

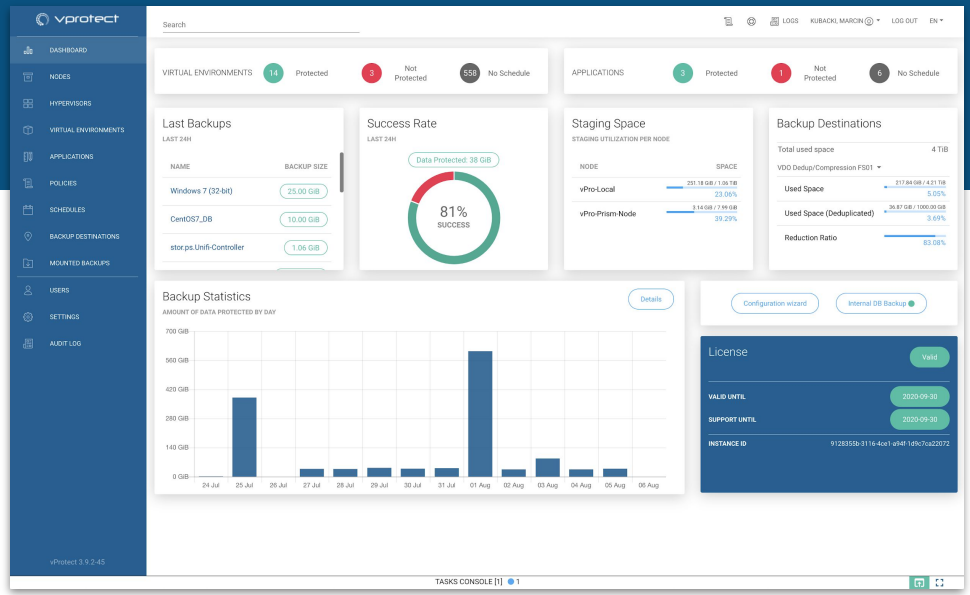


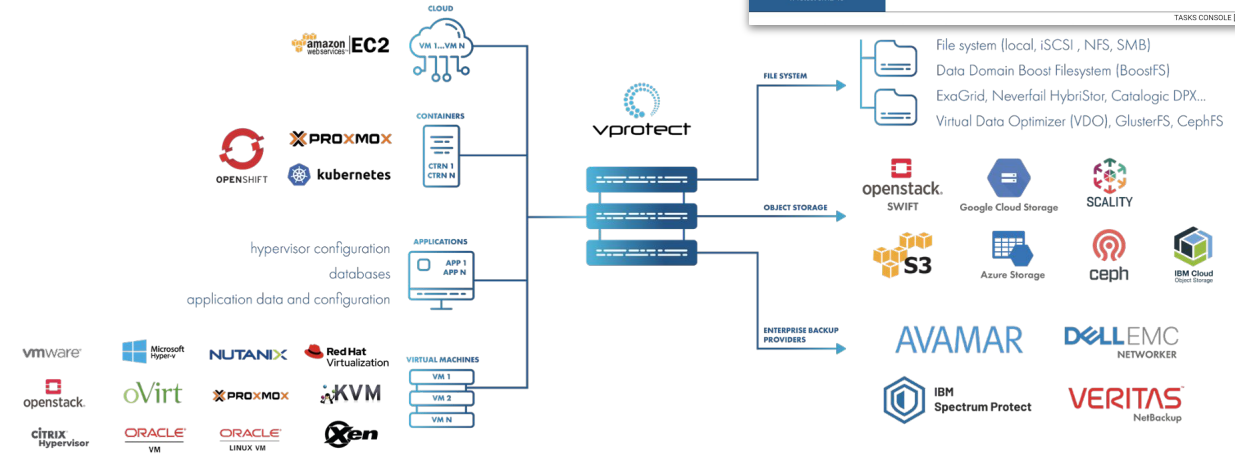
vProtect overview

vProtect overview

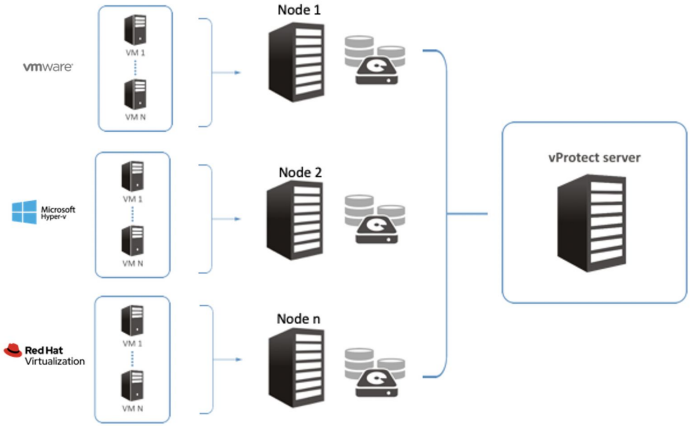
Backup solution for multiple virtualization platforms including oVirt-based, such as RHV or OLVM:

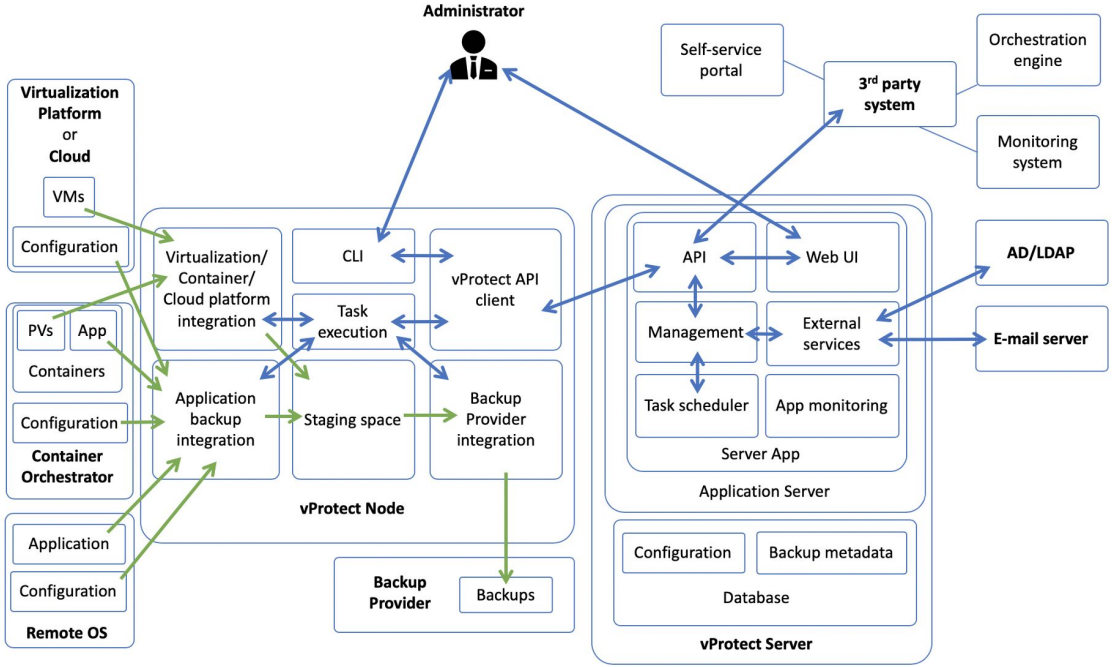
- Agent-less backups
- File-level restores
- Snapshot management
- Multiple backup providers supported
- Application-level backup mechanism





vProtect architecture



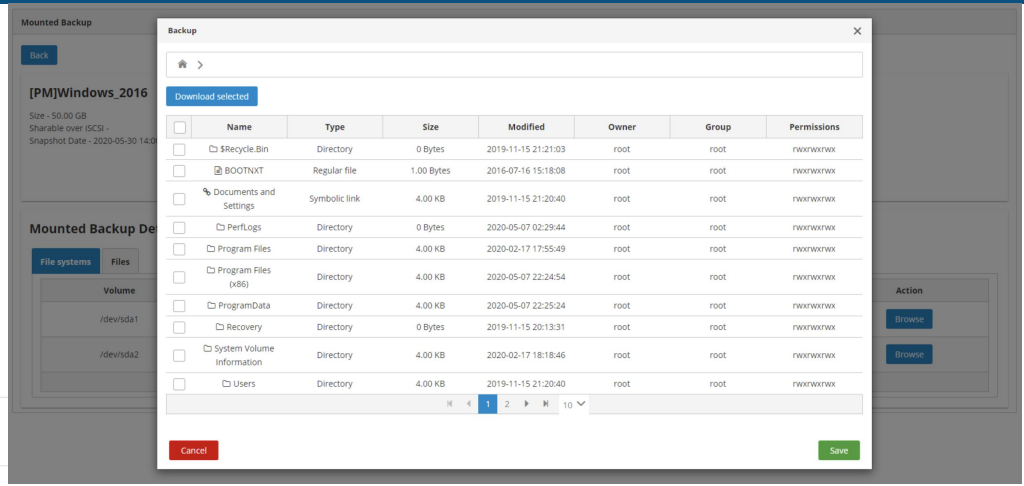


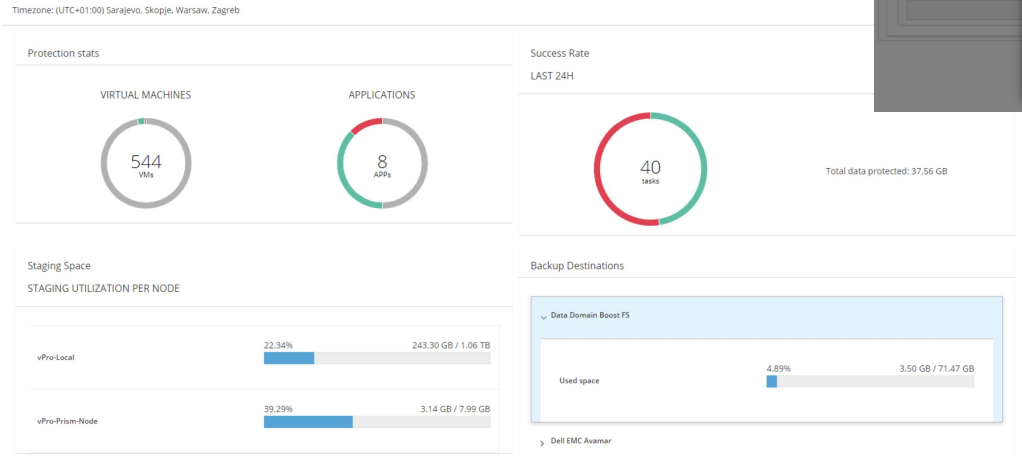
vProtect UI plugin overview

vProtect UI plugin overview

Technology stack of the project includes:

- React / Redux
- SASS
- PatternFly3 and Prime React components
- Yarn package manager
- Webpack

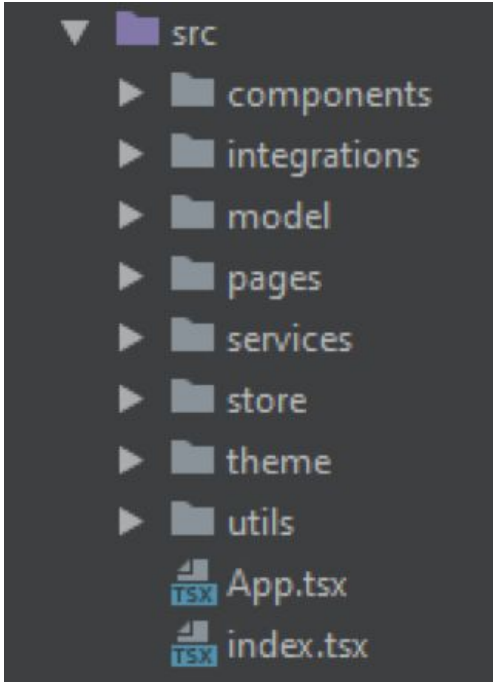




vProtect UI code structure

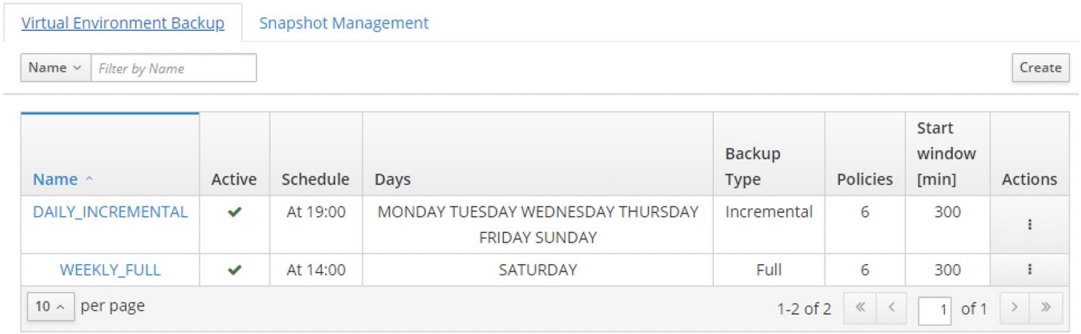
- Reusable components used throughout the project.
- Integrations with the oVirt web engine.
- Object models.
- Services for communication with the vProtect API.
- Redux store for application state management.
- Theme to customize style of components.
- Initial oVirt engine plugin template was written in JavaScript but we're migrating it to TypeScript.

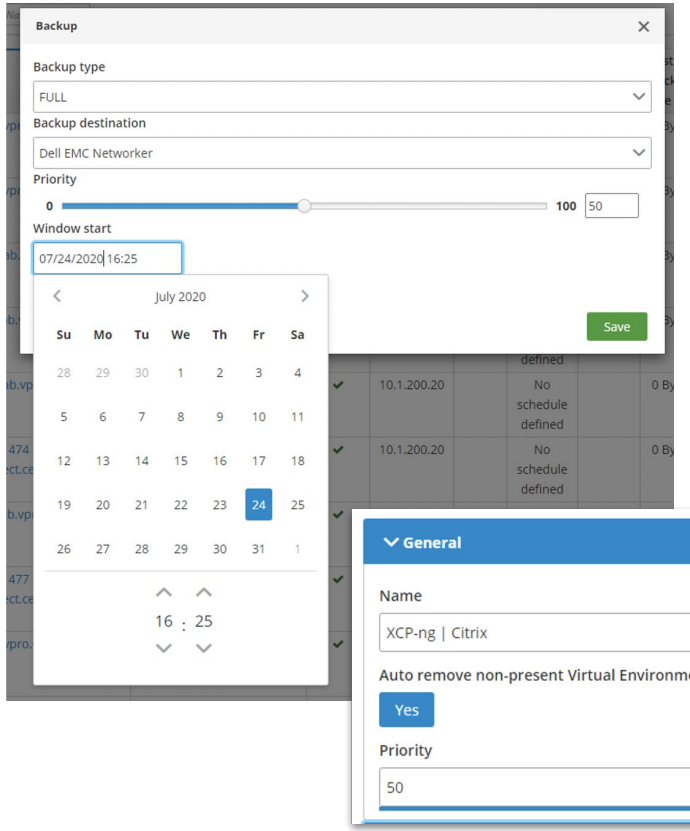
Github page:
https://github.com/Storware/ovirt-engine-ui-vprotect-extensions



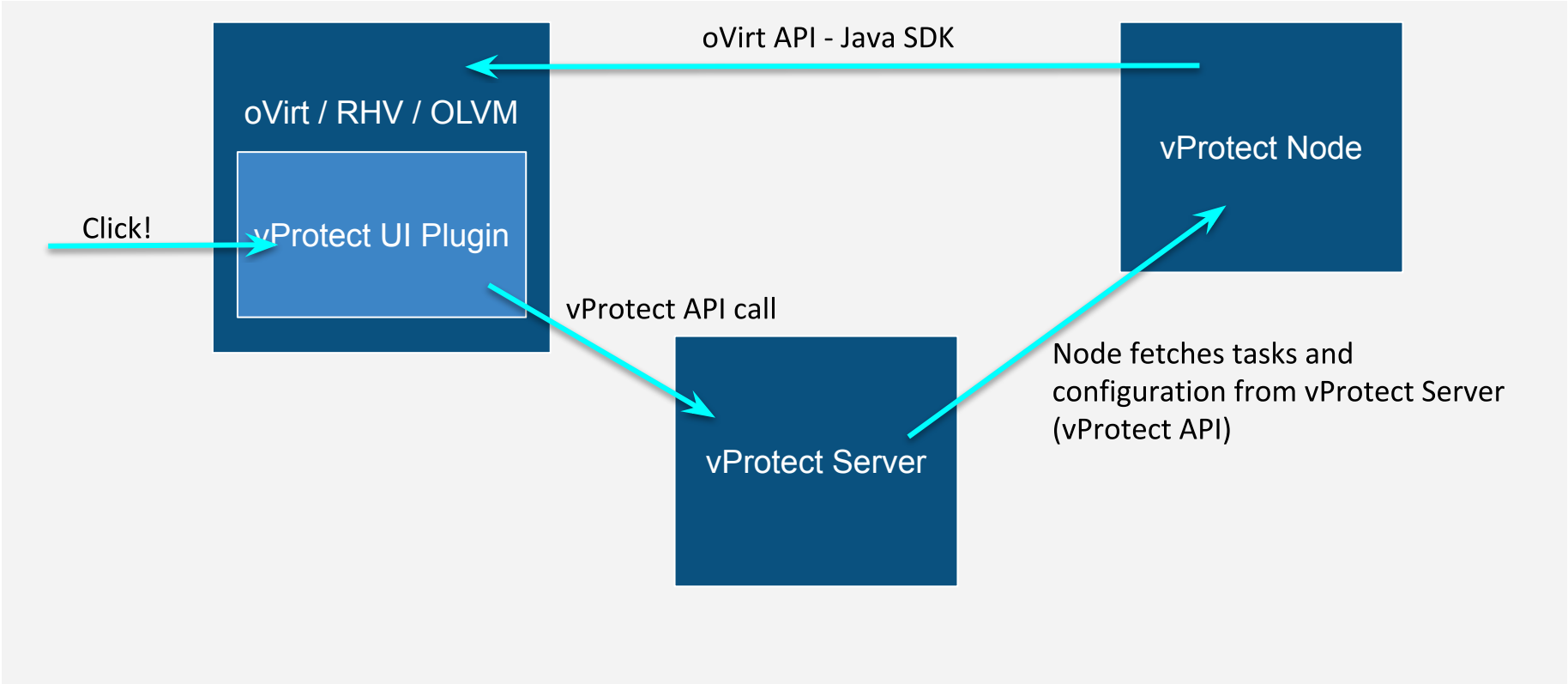
PatternFly3 and PrimeReact components

- oVirt web engine mainly uses PatternFly3 components
- we also used PrimeReact components
  - some components not implemented in PatternFly for React, i.e. DateTimePicker.





Communication workflow



oVirt SDK for Java

- SDKs available for different languages
- You also can invoke APIs directly (HTTP) or with Ansible
- Java example:

```
public Vm getVm(String id) {
    return conn.systemService().vmsService().get().send().vm();
}
```

- pom.xml:

```
<dependency>
    <groupId>org.ovirt.engine.api</groupId>
    <artifactId>sdk</artifactId>
    <version>4.2.5</version>
</dependency>
```

Demo

oVirt

Thank you!

https://ovirt.org

users@ovirt.org

@ovirt

https://www.openvirtualization.pro
https://storware.eu

info@storware.eu

@OpenVirtPro @Storware