

oVirt

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

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# 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`.

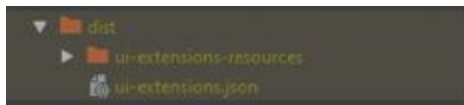
```
C:\projects>git clone https://github.com/oVirt/ovirt-engine-ui-extensions.git
Cloning into 'ovirt-engine-ui-extensions'...
remote: Enumerating objects: 11, done.
remote: Counting objects: 100% (11/11), done.
remote: Compressing objects: 100% (10/10), done.
remote: Total 1111 (delta 2), reused 9 (delta 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warning Your current version of Yarn is out of date.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



```
[root@rhv-m ui-plugins]# pwd
/usr/share/ovirt-engine/ui-plugins
[root@rhv-m ui-plugins]# ls
rhvm-doc-plugin  rhvm-doc-plugin.json  ui-extensions-resources  ui-extensions.json
```

- 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

```
appInit.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

```
appInit.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.

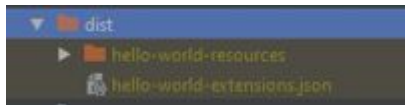
```
function addDashboardPlace () {  
  // getPluginApi().addPrimaryMenuPlace(msg.dashboardTitle(), dashboardPlaceToken, `${pluginBasePath}/dashboard.html`, {  
  // // place the menu item before existing ones  
  // priority: -1,  
  // // customize the prefix displayed in search bar  
  // searchPrefix: '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 ->

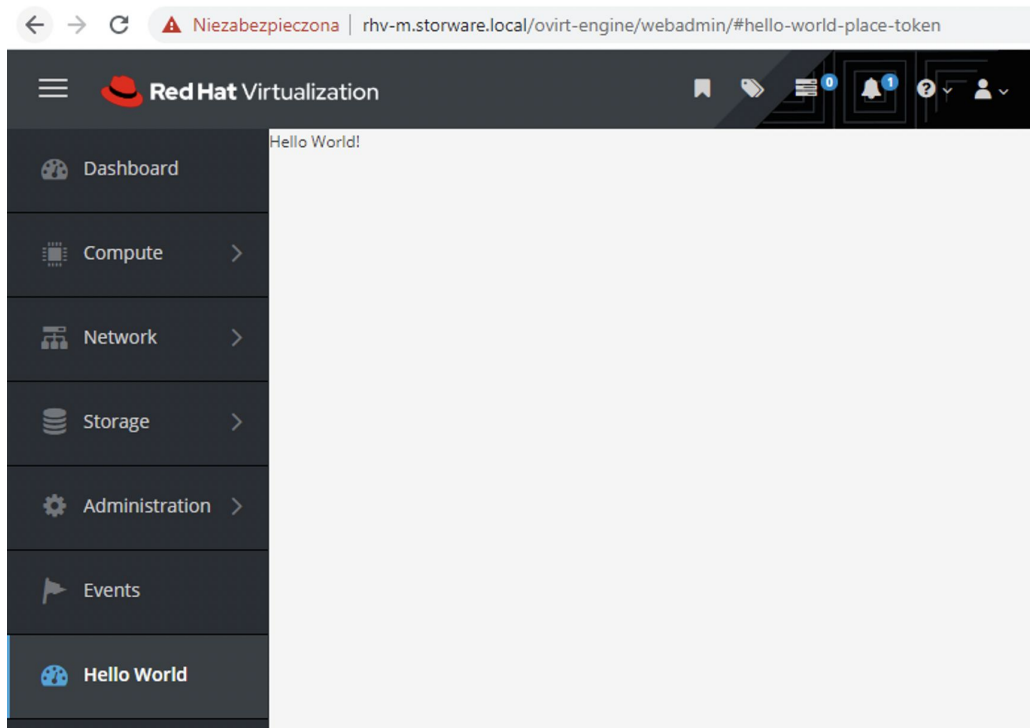


- It will generate the hello-world-extensions.json file inside. It will look like static/hello-world-extensions.json - place to pass config params to plugin

```
{
  "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



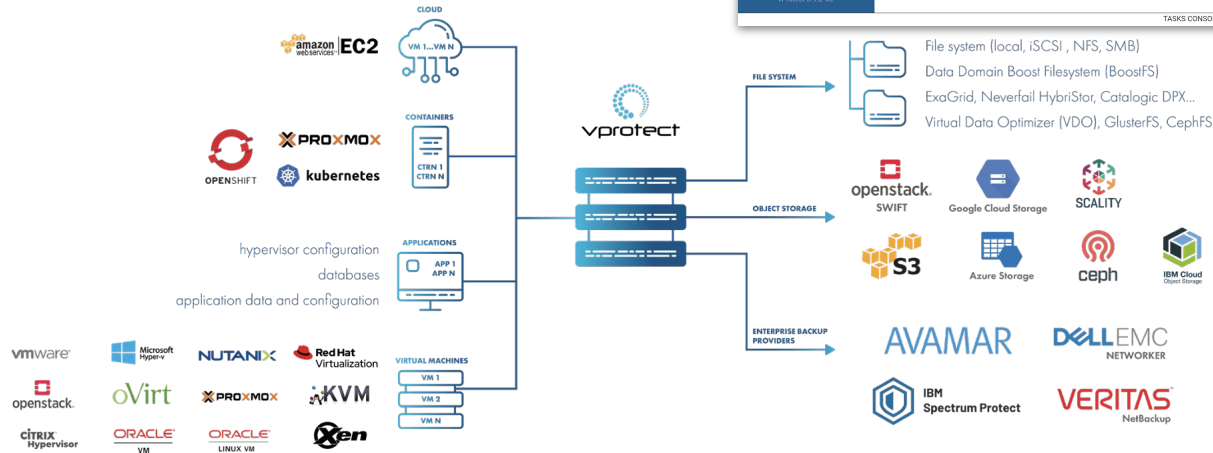
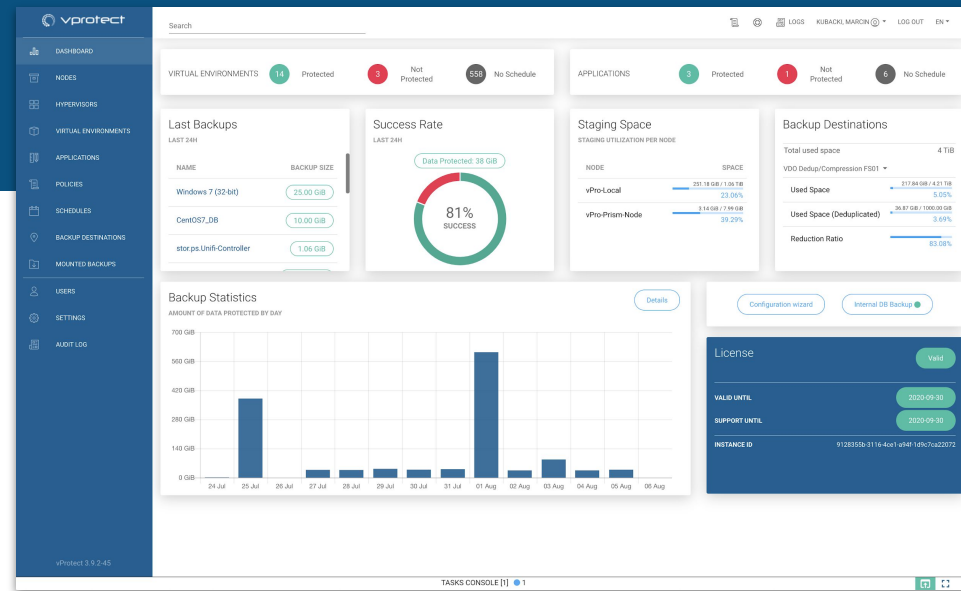
# vProtect overview

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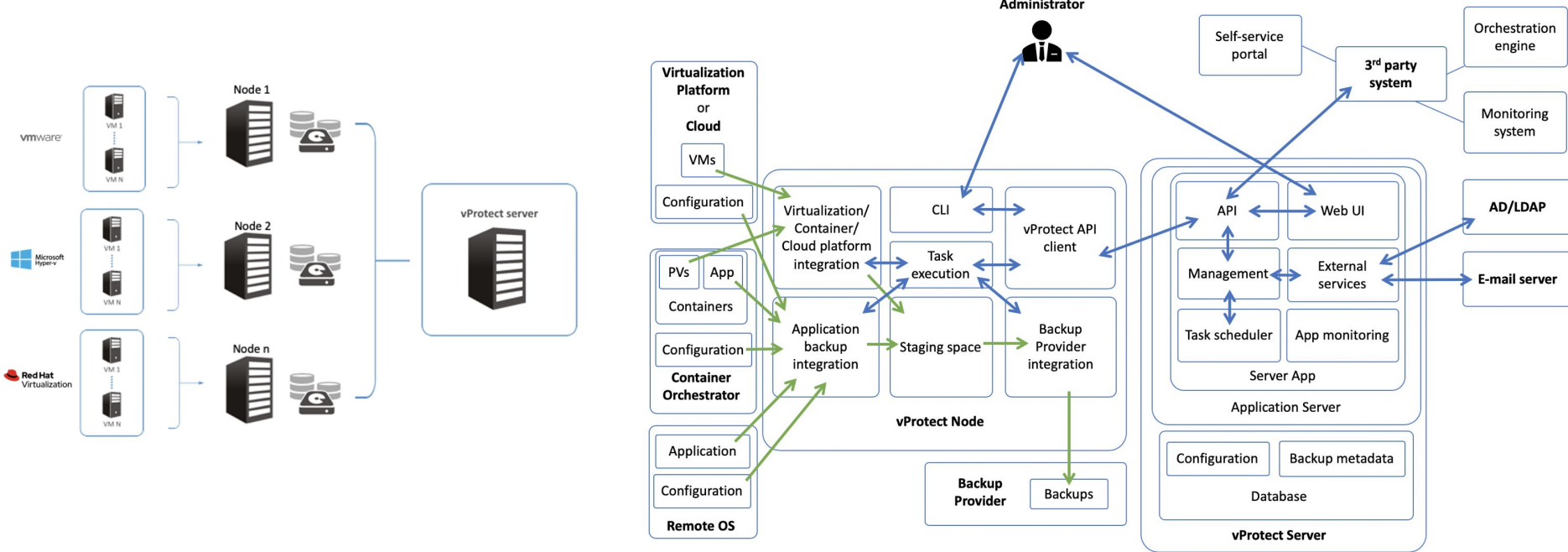
# vProtect overview

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

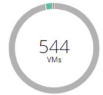
Technology stack of the project includes:

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

Timezone: (UTC+01:00) Sarajevo, Skopje, Warsaw, Zagreb

Protection stats

VIRTUAL MACHINES

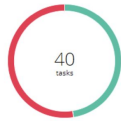


APPLICATIONS



Success Rate

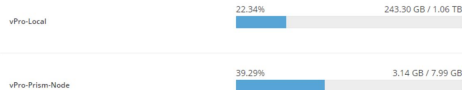
LAST 24H



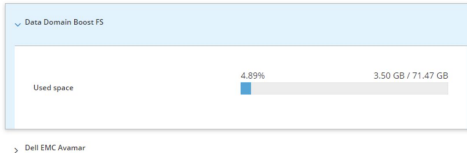
Total data protected: 37.56 GB

Staging Space

STAGING UTILIZATION PER NODE



Backup Destinations



The screenshot displays the vProtect UI interface. On the left, a sidebar shows a tree view of a mounted backup for '[PM]Windows\_2016'. The main area shows a file explorer view with a table of files and folders. A 'Backup' dialog box is open in the foreground, showing a list of files and folders for selection. The table in the dialog has the following columns: Name, Type, Size, Modified, Owner, Group, and Permissions.

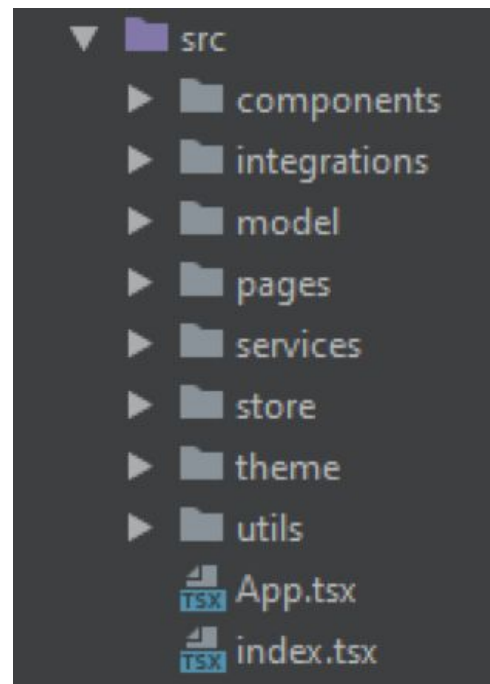
Name	Type	Size	Modified	Owner	Group	Permissions
\$Recycle.Bin	Directory	0 Bytes	2019-11-15 21:21:03	root	root	rwxrwxrwx
BOOTNXT	Regular file	1.00 Bytes	2016-07-16 15:18:08	root	root	rwxrwxrwx
Documents and Settings	Symbolic link	4.00 KB	2019-11-15 21:20:40	root	root	rwxrwxrwx
PerfLogs	Directory	0 Bytes	2020-05-07 02:29:44	root	root	rwxrwxrwx
Program Files	Directory	4.00 KB	2020-02-17 17:55:49	root	root	rwxrwxrwx
Program Files (x86)	Directory	4.00 KB	2020-05-07 22:24:54	root	root	rwxrwxrwx
ProgramData	Directory	4.00 KB	2020-05-07 22:25:24	root	root	rwxrwxrwx
Recovery	Directory	0 Bytes	2019-11-15 20:13:31	root	root	rwxrwxrwx
System Volume Information	Directory	4.00 KB	2020-02-17 18:18:46	root	root	rwxrwxrwx
Users	Directory	4.00 KB	2019-11-15 21:20:40	root	root	rwxrwxrwx

# 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.

Virtual Environment Backup Snapshot Management

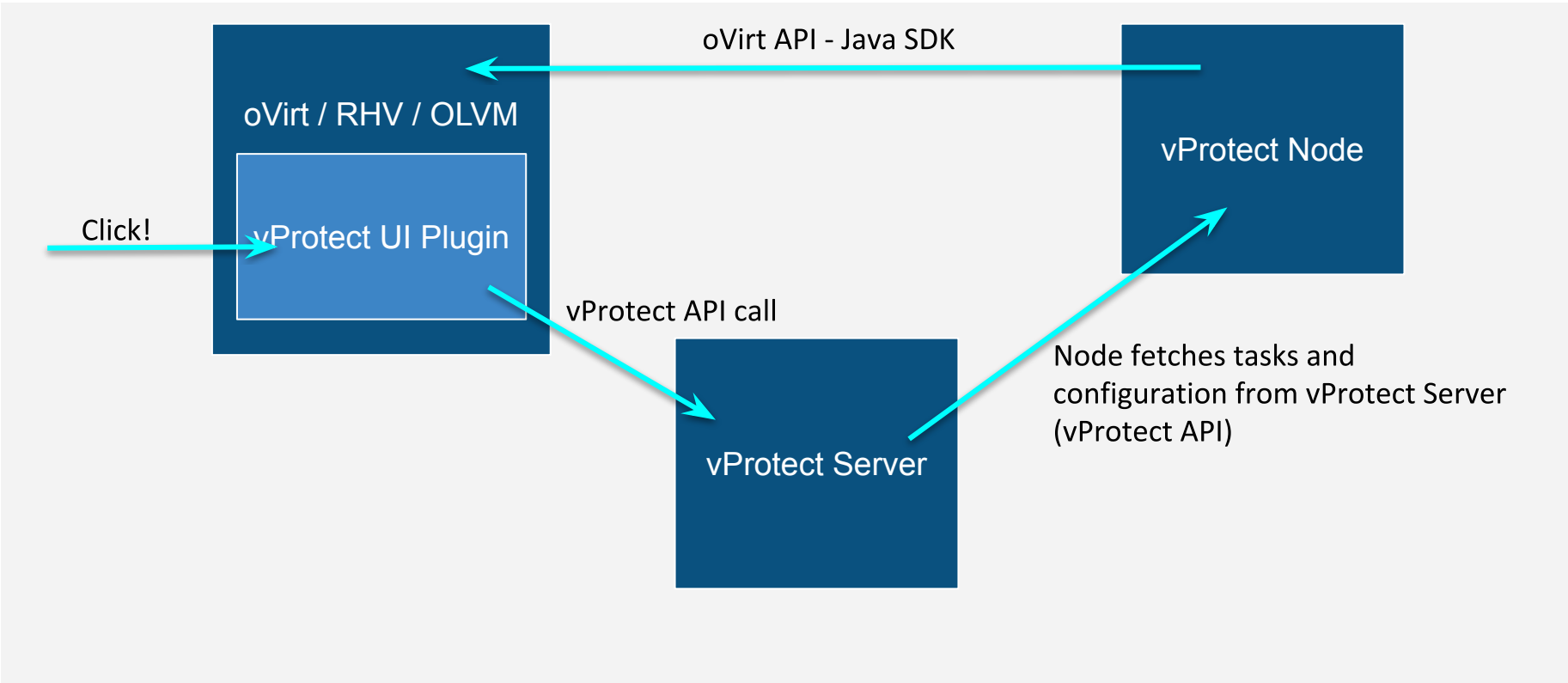
Name  Filter by Name

Name ^	Active	Schedule	Days	Backup Type	Policies	Start window [min]	Actions
DAILY_INCREMENTAL	✓	At 19:00	MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SUNDAY	Incremental	6	300	:
WEEKLY_FULL	✓	At 14:00	SATURDAY	Full	6	300	:

10 ^ per page 1-2 of 2 << < 1 of 1 > >>

The screenshot shows a 'Backup' configuration window. The 'Backup type' is set to 'FULL'. The 'Backup destination' is 'Dell EMC Networker'. The 'Priority' is set to 50. The 'Window start' is '07/24/2020 16:25'. A calendar is open for July 2020, with the 24th selected. A 'Save' button is visible. Below the calendar, a 'General' panel is open, showing the name 'XCP-ng | Citrix', a checked option for 'Auto remove non-present Virtual Environments', and a priority of 50.

# 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

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oVirt

# Thank you!

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<https://ovirt.org>

[users@ovirt.org](mailto:users@ovirt.org)



@ovirt

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

[info@storware.eu](mailto:info@storware.eu)

@OpenVirtPro @Storware