4. – Server side integration

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4.1 – HTTP API

You can use HTTP request to create a server, symlink dynamically if you don't want to write a plug-in for the gateway.

To use the HTTP server, you'll need to configure a password in gateway.conf:

```
Password = yourPassword
```

Then you can use MD5 hash of this password with the HTTP API.

Create servers on gateway:

http://gatewayAddress/SERVER?id=serverId&displayName=Name&server=hostName&gatewayPwd=passwordInGateway.conf&...

gatewayPwd is hexadecimal MD5 hash of the password which is configured in gateway.conf.

To delete a server add "&action=delete" to the URL; to update a server, add "&action=update" to the URL.

List servers:

http://w-think/SERVER?action=list&gatewayPwd=21232f297a57a5a743894a0e4a801fc3&id=ATPlus

It returns the asked server if id is specified:


```
{"id":"ATPlus","displayName":"ATPlus","server":"cloud.thinrdp.net","shadowing":false,"protocols":"rdp","icon":"kbd.png","rdp":{"username":"demo","password":"demo"}}
```


It returns all servers if id is not specified:


```
{
  "display" : true,
  "type" : "NORMALLIST",
  "cols" : [
    {"name" : "id"},
    {"name" : "displayName"},
    {"name" : "server"},
    {"name" : "remoteProgram"},
    {"name" : "command"}
```

```
  ],
  "rows" : [
    ["ATPlus", "ATPlus", "192.168.12.117", "", ""],
    ["WordPad", "WordPad", "192.168.0.118", "", "wordpad.exe"]
  ]
}
```

Create symlink on gateway:

http://gatewayAddress/SYMLINK?symlink=symlinkId&server=existingServerId&validTime=20m&gatewayPwd=passwordInGateway.conf&...

You can also use "validFrom", "validTo" parameters. Please check http://www.remotespark.com/view/doc/com/toremote/gateway/connection/SymLink.html for more information.

To delete a symlink, add "&action=delete" to the URL; to update a symlink, add "&action=update" to the URL.

List symlinks:

http://w-think/SYMLINK?action=list&gatewayPwd=21232f297a57a5a743894a0e4a801fc3&symlink=212a155ee951-40db-95ea-177183174fa7

It returns the asked symlink if symlink is specified:

```
{"id":"212a155e-e951-40db-95ea-177183174fa7","resourceId":"169.254.146.243","validFrom":"Aug 26, 2015 12:00:00 AM","parameters":""}
```

It returns all the symlinks if symlink is not specified:

```
{
  "cols":[
    {"name":"id"},
    {"name":"resourceId"},
    {"name":"password"},
    {"name":"validFrom"},
    {"name":"validTime"},
    {"name":"validTo"},
    {"name":"parameters"},
    {"name":"comment"}
  ],
```

```
  "rows":[
    ["212a155e-e951-40db-95ea-177183174fa7", "169.254.146.243", "", 1440568800000, "", 0, "",
""],
    ["c5c6bc9d-f8a7-42ca-af9c-bd28c86adab4", "169.254.146.243", "", 1452544860000, "", 0, "",
""]
  ]
}
```


List sessions:

http://w-think/SESSION?action=list&gatewayPwd=21232f297a57a5a743894a0e4a801fc3&id=a29575a9-08c2-4162-9bfb-4876820953db

It returns the single session information if session id is specified:


```
{"id":"a29575a9-08c2-4162-
9bfb4876820953db","server":"192.168.12.118","clientIp":"169.254.84.132","clientAgent":"Mozilla
\/5.0 (Windows NT 10.0; WOW64) AppleWebKit\/537.36 (KHTML, like Gecko) Chrome\/47.0.2526.111
Safari\/537.36","thumbnail":"","startTime":"Tue Jan 26 15:38:55 MST
2016","numericId":621779525,"user":"","domain":"","rdpId":1,"startTime2":1453847935826}
```


It returns all sessions if session id is not specified:


```
{
  "cols":[
    {"name":"id"},
    {"name":"server"},
    {"name":"clientIp"},
    {"name":"clientAgent"},
    {"name":"startTime"},
    {"name":"numericId"},
    {"name":"user"},
    {"name":"domain"},
    {"name":"join"},
    {"name":"protocol"},
    {"name":"symlink"},
    {"name":"thumbnail"}
  ],
  "size":1,
  "rows":[
```

```
    ["a29575a9-08c2-4162-9bfb-4876820953db","192.168.12.118","169.254.84.132","Mozilla\/5.0
(Windows NT 10.0; WOW64) AppleWebKit\/537.36 (KHTML, like Gecko) Chrome\/47.0.2526.111
Safari\/537.36","Tue Jan 26 15:38:55 MST 2016",621779525,"","","","RDP","",""]
  ]
}
```

It returns multiple session information if ids parameter is used:

http://w-think/SESSION?action=list&gatewayPwd=21232f297a57a5a743894a0e4a801fc3&id=a29575a9-08c2-4162-9bfb-4876820953db&ids=sessinId1,sessionId2

```
[{session1}, {session2}]
```

Upload license file:

http://wthink/CONTROL?licenseFile=base64encodedLicenseFile&gatewayPwd=21232f297a57a5a743894a0e4a801fc3

Please make sure you encode the value of licenseFile. For example:

```
encodeURIComponent(base64encodedLicenseFile)
```

The new license file information will be returned in JSON format if the license file was uploaded successfully.

To query the current license file information, you can use:
http://w-think/CONTROL?licenseFile=.&gatewayPwd=21232f297a57a5a743894a0e4a801fc3

Get gateway information

http://w-think/CONTROL?target=gateway

```
{"version":"5.8.0","buildNumber":"941","buildTime":"2020_03_04_10","startTime":1583342850085}
```

Password is not needed for this gateway information request.

Reset Two Factor Authentication

http://w-think/CONTROL?target=twofa&user=Username&gatewayPwd=21232f297a57a5a743894a0e4a801fc3

curl -k -G --data-urlencode "target=twofa" --data-urlencode "user=svtest\user1" https://127.0.0.1/CONTROL

Error handling:

HTTP request will return HTTP Status code 500 and {"error:": "error information"} in JSON if there is an error. For example, server or symlink with specified id was not found when you try to get a server or symlink.

HTTP request will return status code 200 if operation succeeded.

4.2 – Plug-in

The gateway is a multi-thread application, so make sure your plug-in is:

- Thread safe.
- Spawn a thread if the operation takes more than 5 seconds, otherwise, it could cause a network timeout exception and block the gateway.
- Use Collections.synchronizedList(),Collections.synchronizedMap, ConcurrentHashMap etc.
- Avoid anonymous class which could cause memory leak.
- Make your plug-in stateless if possible.
- Logging could be a bottle neck sometimes.

Please refer to the related links:

- 4.2.1 – Start gateway and the plug-in example project in Eclipse
- 4.2.2 – Handshake plug-in
- 4.2.3 – Deploy your plug-in

4.2.1 – Start gateway and the plug-in example project in Eclipse

Download the plug-in example:

http://remotespark.com/Plugin.zip

Extract the zip to your Eclipse workspace and run the follwing actions:

1. File -> Import
2. Click "Next"
3. "Browse" to your workspace directory
4. Select the Plugin project.
5. Click "Finish"
6. Right click on the Plugin project, "Run As" -> "Java Application"
7. Make sure "SparkGateway – com.toremote.gateway" is selected.
8. Click "OK"

Now the gateway with the plug-in is running in Eclipse. You can use the "Debug As" -> Java Application to debug your plug-in code.

Checklist:

- The SparkGateway.jar used by the plug-in project may be an old version (Plugin\libs\SparkGateway.jar). Please replace it with the one from your GatewayInstallDir\SparkGateway.jar, otherwise, some new APIs may not be available.

4.2.2 – Handshake plug-in

Handshake plug-in is invoked before establishing a RDP connection. It’s a good place to verify, modify or refuse the connection.

You can put any parameter you want when you create a connection on the client side. For example, you can put user’s session id (session on your portal) into a RDP connection:

```
var rdp = new svGlobal.Rdp(‘ws://myGateway/RDP?server=myServer&token=mySessionId&…’);
```

Then in the handshake plug-in, you can get the parameter and verify it through a web server on your portal.

```
class SimpleHandshakePlugin implements HandshakeInterface{
@Override
public Map<String, String> onHandshake(Map<String, String> parameters) throws ClientException{
  String token = parameters.get("token");
  if (isInvalidSession(token)){
    throw new ClientException("Invalid sessioin");
  }
  return parameters;
}
```

You can also encrypt the token from your portal (encrypted on server side), then decrypt it in the plug-in:

```
public Map<String, String> onHandshake(Map<String, String> parameters) throws ClientException{
  String token = decryptToken(token);//throw ClientException if not valid
  Map<String, String> paramsFromToken = parseToken(token);
  parameters.put(RdpParameter.server, paramsFromToken.get("server"));
  parameters.put(RdpParameter.user, paramsFromToken.get("user"));
  parameters.put(RdpParameter.pwd, paramsFromToken.get("pwd"));
  String userIp = parameters.get(RdpParameter.ARG_CLIENT_IP);
  //enable recording
  parameters.put(RdpParameter.sessionRecord, "1"); //enable session recording
  //specify the recording file name (optional)
  parameters.put(RdpParameter.RECRODING_FILE_NAME, "myFileName");
  return parameters;
}
```

Best practices:

- Make sure your plug-in code is thread-safe.
- Make sure your code can be executed in 3-5 seconds, otherwise, please consider running it in a thread.
- You can also use the HTTP API instead if possible.
- Please check the plug-in example on our web site for more details.

4.2.3 – Deploy your plug-in

Export the jar file:

1. Right click on the project, "Export", select "Runable JAR file" under Java.
2. Choose "SparkGateway - Plugin" in Launch configuration.
3. Choose export destination.
4. Click "Finish"

Make sure "Extract required libraries into generated JAR" selected in "Library handling"

It’s better to put your plug-in can be in a separated jar file. In this case, you should set up your plug-in file path in gateway.conf:

```
pluginFile=theLocationOfYourPlugin.jar
```

Here is how to export the plug-in into a separated jar file (without the content of SparkGateway.jar):

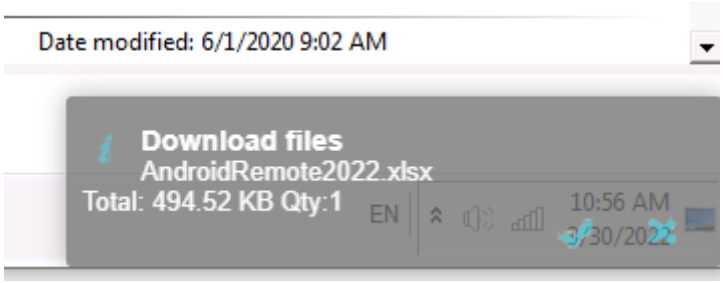
- Make sure only the “src” directory selected
- Click “Finish” and make sure you configure the pluginFile entry in gateway.conf

4.3 – Downloading files unprompted

Users can download files through custom apps and programs. This can be archived by using the clipboard redirection:

1. Make sure clipboard redirection is enabled, and `copyFile=true` in gateway.conf.
2. Set `fileUnprompted=xlsx,xls` (Excel files in this case, change to your related file types)
3. In the user's application, you need to provide a button or menu like "Download file", when the user clicks this button, their application needs to copy the file to the clipboard (remote computer's clipboard). Reference:

   https://stackoverflow.com/questions/25708895/how-to-copy-files-by-win32-api-functions-and-paste-by-ctrlv-in-my-desktop
4. The user will then see this message in the browser:



5. User clicks once again to download the file.

For this solution:

- No need to install plugins or anything on the RDP server.
- User needs two clicks to download the file. The browser can download the file directly without the extra click, but that usually will be blocked by the browser (popup window blocker).
- The application can also copy multiple files to the clipboard, and gateway will download them as a zip file (which includes all the files)
- No need to enable drive redirection.