# Intrusion Prevention System (IPS)

https://campus.barracuda.com/doc/96026213/

The Intrusion Prevention System (IPS) actively monitors local and forwarding traffic for malicious activities and can also block suspicious traffic. The IPS engine analyzes the network traffic and continuously compares the bitstream with its internal signatures database for malicious code patterns. You can create, edit, and override the default and custom IPS signature handling policies. After configuring your IPS policies, you can also apply them to your access rules. IPS policies are based on SNORT rules.

## IPS Features

#### TCP Stream Reassembly

The firewall engine provides support for TCP Stream Reassembly (SRA). In general, TCP streams are broken into TCP segments that are encapsulated into IP packets. By manipulating how a TCP stream is segmented, it is possible to evade detection, for example, by overwriting a portion of a previous segment within a stream with new data in a subsequent segment. This method allows the hacker to hide or obfuscate the network attack. The firewall engine receives the segments in a TCP conversation, buffers them, and reassembles the segments into a correct stream, for example, by checking for segment overlaps, interleaved duplicate segments, invalid TCP checksums, and so forth. Afterward, the firewall engine passes the reassembled stream to the IPS engine for inspection.

#### URL Obfuscation

The IPS engine provides various countermeasures to avert possible network attacks based on the following URL encoding techniques:

- Escape encoding (% encoding)
- Microsoft %u encoding
- Path character transformations and expansions ( /./ , //, \ )
- Premature URL ending
- Long URL
- Fake parameter
- TAB separation
- FTP Evasion

The IPS engine can avert FTP exploits where the attacker tries to evade the IPS by inserting additional spaces and Telnet control sequences in FTP commands.

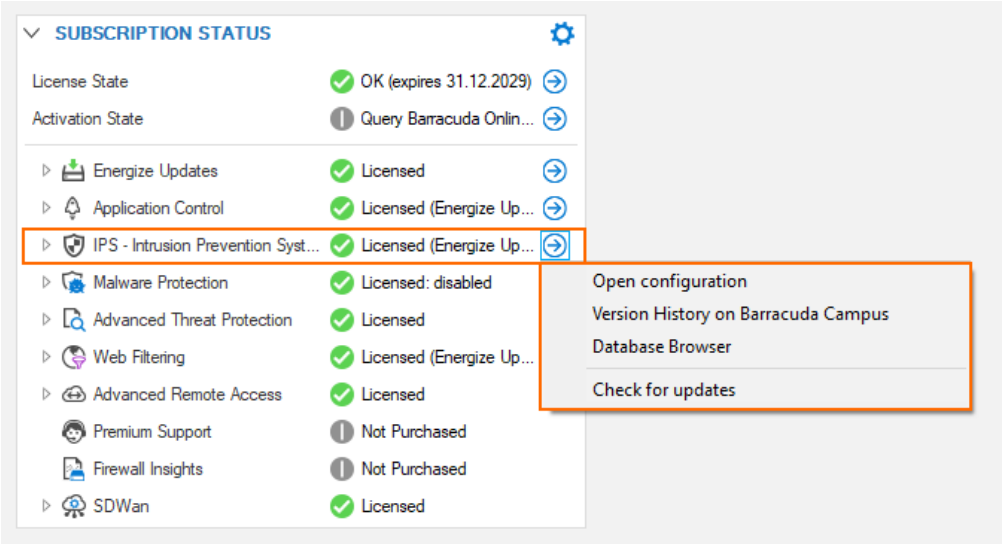
#### TCP Split Handshake

The IPS engine provides an evasion countermeasure technique that can block the usage of TCP split handshakes attacks. Although the TCP split handshake is a legitimate way to start a TCP connection (RFC793), it can also be used by hackers to execute various network attacks by gaining access to the internal network by way of establishing a trusted IP connection, thereby evading firewall and IPS policies.

## IPS in the DASHBOARD

Because the IPS system is part of a subscription license, its status is displayed in the related DASHBOARD element SUBSCRIPTION STATUS. When clicking the blue arrow icon to the right of IPS license status, a menu list displays the available options for IPS. Clicking one of these options will trigger different actions:

- **Open Configuration** – Opens the view for configuring the IPS system.
- **Version History on Barracuda Campus** – Opens a browser window displaying the version history on a Campus web page.
- **Database Browser** – Opens a window that lets you inspect the IPS database.
- **Check for Updates** – Checks for updates.

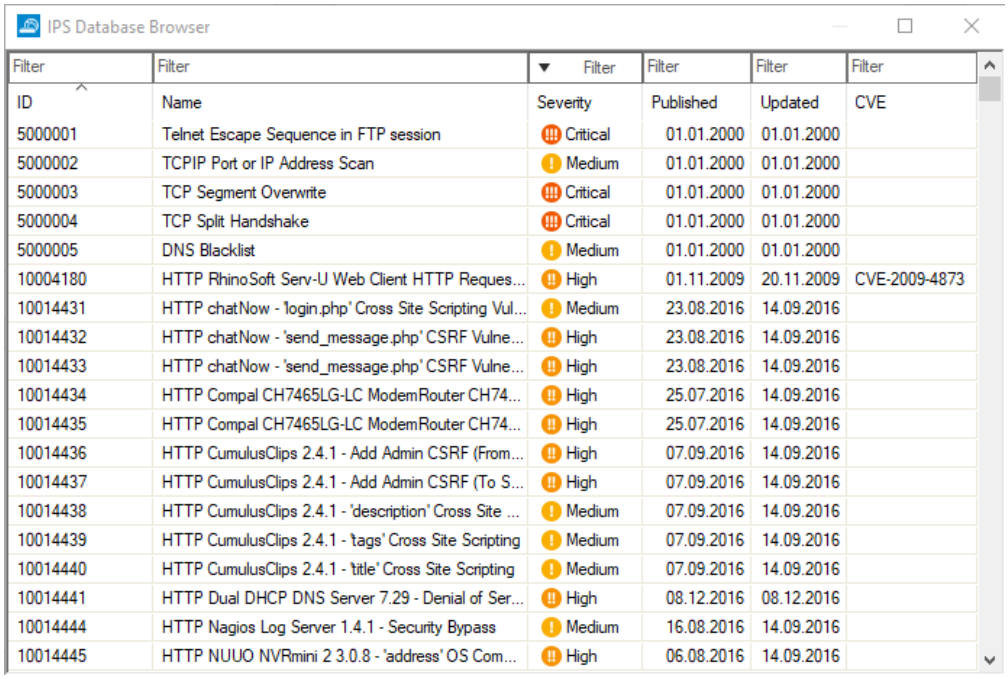



#### Version History on Barracuda Campus

You can inspect a version history on Barracuda Campus by clicking this link: https://campus.barracuda.com/to/ipsversions.

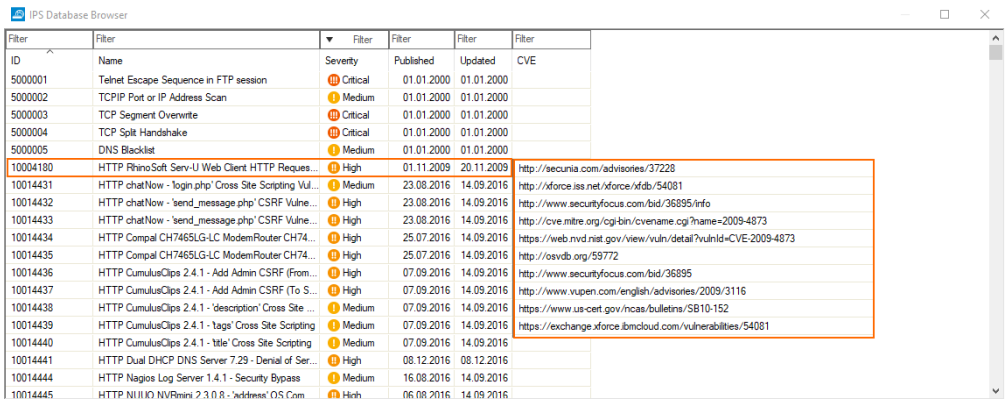
**Database Browser**

The database browser displays a list of known, common vulnerabilities and exposures (CVEs) that could be or become a threat. The list view provides the option of filtering and searching certain CVEs based on the string which you can enter at the top of a related column category.




| ID | Name | Severity | Published | Updated | CVE |
|---|---|---|---|---|---|
| 5000001 | Telnet Escape Sequence in FTP session | Critical | 01.01.2000 | 01.01.2000 | |
| 5000002 | TCPIP Port or IP Address Scan | Medium | 01.01.2000 | 01.01.2000 | |
| 5000003 | TCP Segment Overwrite | Critical | 01.01.2000 | 01.01.2000 | |
| 5000004 | TCP Split Handshake | Critical | 01.01.2000 | 01.01.2000 | |
| 5000005 | DNS Blacklist | Medium | 01.01.2000 | 01.01.2000 | |
| 10004180 | HTTP RhinoSoft Serv-U Web Client HTTP Reques... | High | 01.11.2009 | 20.11.2009 | CVE-2009-4873 |
| 10014431 | HTTP chatNow - 'login.php' Cross Site Scripting Vul... | Medium | 23.08.2016 | 14.09.2016 | |
| 10014432 | HTTP chatNow - 'send_message.php' CSRF Vulne... | High | 23.08.2016 | 14.09.2016 | |
| 10014433 | HTTP chatNow - 'send_message.php' CSRF Vulne... | High | 23.08.2016 | 14.09.2016 | |
| 10014434 | HTTP Compal CH7465LG-LC ModemRouter CH74... | High | 25.07.2016 | 14.09.2016 | |
| 10014435 | HTTP Compal CH7465LG-LC ModemRouter CH74... | High | 25.07.2016 | 14.09.2016 | |
| 10014436 | HTTP CumulusClips 2.4.1 - Add Admin CSRF (From... | High | 07.09.2016 | 14.09.2016 | |
| 10014437 | HTTP CumulusClips 2.4.1 - Add Admin CSRF (To S... | High | 07.09.2016 | 14.09.2016 | |
| 10014438 | HTTP CumulusClips 2.4.1 - 'description' Cross Site ... | Medium | 07.09.2016 | 14.09.2016 | |
| 10014439 | HTTP CumulusClips 2.4.1 - 'tags' Cross Site Scripting | Medium | 07.09.2016 | 14.09.2016 | |
| 10014440 | HTTP CumulusClips 2.4.1 - 'title' Cross Site Scripting | Medium | 07.09.2016 | 14.09.2016 | |
| 10014441 | HTTP Dual DHCP DNS Server 7.29 - Denial of Ser... | High | 08.12.2016 | 08.12.2016 | |
| 10014444 | HTTP Nagios Log Server 1.4.1 - Security Bypass | Medium | 16.08.2016 | 14.09.2016 | |
| 10014445 | HTTP NUUO NVRmini 2 3.0.8 - 'address' OS Com... | High | 06.08.2016 | 14.09.2016 | |

Clicking the tiny blue arrow to the right of a CVE entry makes another list display that contains numerous links that are directly associated with the CVE entry:




Clicking one of the links opens the favorite browser that will then try to load the associated web page.

## IPS in the Configuration Tree

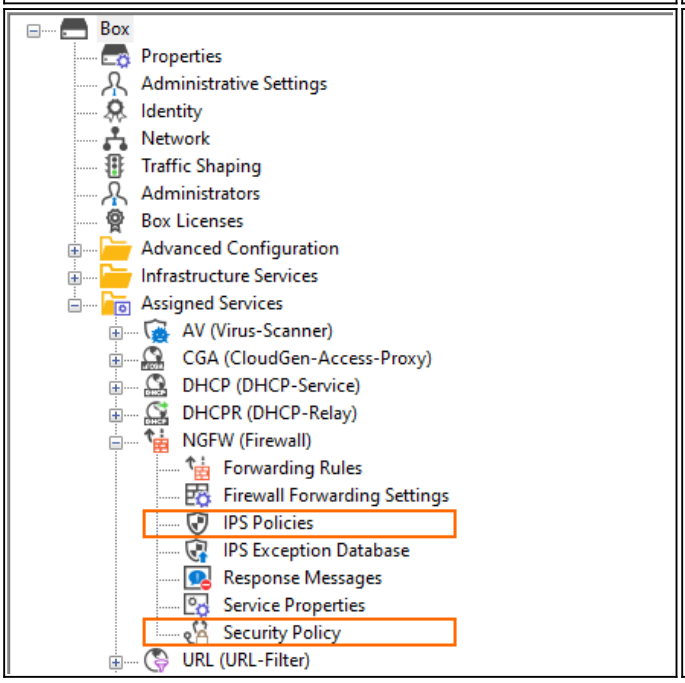
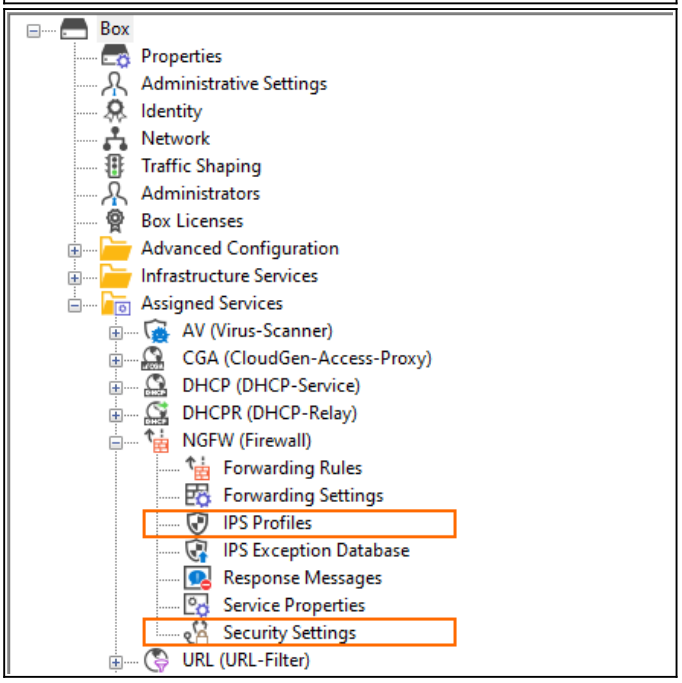
There are 3 special nodes in the configuration tree that are affected by the improvements of firmware 8.3.0.

- IPS Policies
- IPS Exception Database
- Security Policy

Some of these nodes have been renamed:

| Firmware Version | IPS Policies | Security Policy |
|---|---|---|
| < 8.3.0 (old naming) | IPS Policies | Security Policy |
| = 8.3.0 (new naming) | IPS Profiles | Security Settings |

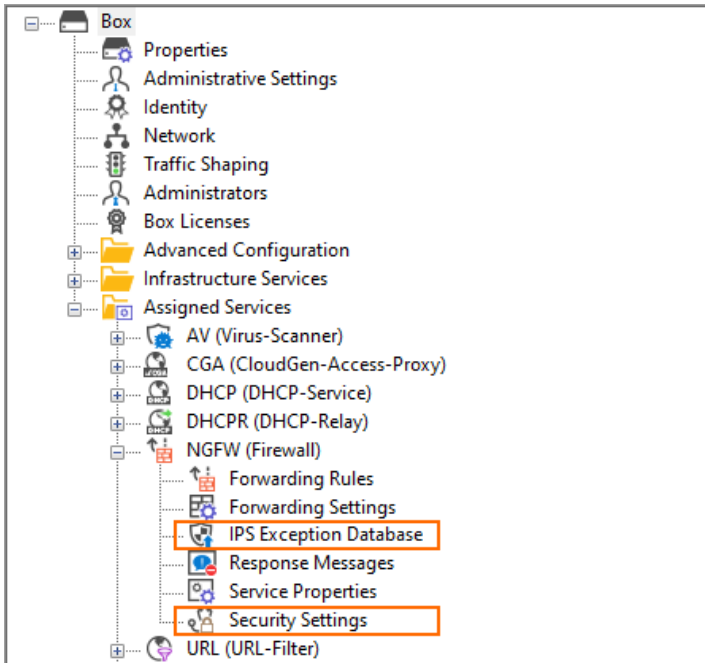
Compare the old and new nodes in the configuration tree:

| Configuration Tree Nodes with Old Naming | Configuration Tree Nodes with New Naming |
|---|---|
|  |  |





Because the IPS correlates with the CGF-Policies feature, the visibility of the IPS Profiles node in the configuration tree depends on the activation status of that feature. If the CGF-Policies feature is activated, then the node `IPS Profiles` will disappear in the configuration tree and only the nodes `IPS Exception Database` and `Security Settings` will remain visible:




## Configuring and Managing IPS

For step-by-step instructions on how to configure and manage IPS, see the following articles:

## Figures

1. ips_subscription_status_with_submenu.png
2. ips_data_browser_window.png
3. ips_database_browser_window_with_link_list_for_help.png
4. ips_new_node_naming_old.png
5. ips_new_node_naming_ips_profiles_security_settings.png
6. ips_configuration_tree_with_cgf_policies_enabled.png