

Reduce Tor-Specific IPC Parameters

Proposal: 0010

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Status: Implementation Complete

Implementation: <https://github.com/OperatorFoundation/shapeshifter-dispatcher/tree/v3>

Introduction

The PT 2.1 specification section on the IPC protocol has several parameters which were inherited from the PT 1.0 specification when Pluggable Transports were a Tor-specific technology. Therefore several parameters include names and language specific to Tor. This proposal reduces the number of these parameters in order to make the specification more neutral towards different use cases.

Motivation

Developers have expressed confusion about the use of Tor-specific parameters when transports are used with other applications. Additionally, developers have expressed hesitation at adding Tor-specific code to their own applications in order to make them compatible with the PT specification when their applications are not related to Tor. Removing Tor-specific parameters has been a requested feature since the PT 2.0 specification.

Proposed solution

A survey of the IPC parameters will identify and either remove or rename parameters that are specific to Tor.

Design

1. Remove TOR_PT_MANAGED_TRANSPORT_VER

Use the `-ptversion` command line flag instead.

2. Remove TOR_PT_STATE_LOCATION

Use the `-state` command line flag instead.

3. Remove TOR_PT_EXIT_ON_STDIN_CLOSE

Also remove the corresponding -exit-on-stdin-close command line flag.

This option is rarely used and is only kept due to it being inherited from the PT 1.0 specification. There is no need to have the dispatcher exit when stdin is closed as the dispatcher can be terminated in the normal manner by killing the process. The exit on stdin close option is a redundant and unnecessary mechanism to send the same signal.

Removing this parameter also necessitates changing the section of the specification on Pluggable Transport Shutdown to no longer require the application to close the stdin of the dispatcher process.

4. Remove TOR_PT_CLIENT_TRANSPORTS and TOR_PT_SERVER_TRANSPORTS

Use the -transports command line flag instead.

5. Remove TOR_PT_PROXY

Use the -proxy command line flag instead

6. Remove TOR_PT_SERVER_TRANSPORT_OPTIONS

Use the -options or -optionsFile command line flag instead.

One of the original motivations for using environment variables in the PT 1.0 specification was to keep parameters private between the application and the transport. The main information which may need to be kept private is the transport options, which could include secret information, such as the password for the server. By using the -optionsFile command line flag, options can be kept in a permissions-protected file instead of specified on the command line, allowing the information to be kept private from other processes on the system and thus serving the same purpose as the original motivation behind using environment variables.

7. Remove TOR_PT_SERVER_BINDADDR

Use the -bindaddr command line flag instead.

8. Remove TOR_PT_ORPORT

Also remove the -orport command line flag. Use the -target command line flag instead.

The “OR port” is a Tor-specific concept. When transports are used in other contexts, the OR port is replaced by the address of the application server. The `-target` command line flag is used similarly on both the client and server to specify where the dispatcher should connect to send incoming traffic.

9. Remove TOR_PT_EXTENDED_SERVER_PORT

Use the corresponding `-extorport` command line flag instead. The “extended OR port” is a Tor-specific concept. However, this functionality must be maintained as it is necessary for using transports with Tor.

10. Remove TOR_PT_AUTH_COOKIE_FILE

Use the `-authcookie` command line flag instead. This is Tor-specific functionality related to the use of Tor’s “extended OR port”. However, it must be maintained as it is necessary for using transports with Tor.

Effect on API Compatibility

These changes only affects the IPC protocol. There is no effect on APIs.

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These changes are not backwards compatible and therefore this revision of the IPC protocol would be a major change requiring a new major version numbers.

Alternatives considered

The alternative to removing the Tor-specific environment variables would be to rename them. For instance, the prefix could be changed from `TOR_PT` to just `PT`. This may seem like a smaller change overall, however it is still a breaking change which is not backwards compatible and would require a new major version number. When making a new major version of the PT specification, it is better to make the best change rather than the smallest one. The use of environment variables instead of command line flags has been a source of confusion for developers as it adds non-visible state that affects how the dispatcher will behave. Using only command line flags is more understandable to developers, which is why there were introduced as an alternative in the PT 2.0 specification. Eliminating the use of environment can be done at the same time as removing the Tor-specific names as they are mostly limited to environment variables.