Naver D2 Campus Fest

MPSec : One Stop MPTCP Service

MPSec

MPSec

Maintainer

https://github.com/MPSec/Dashboard

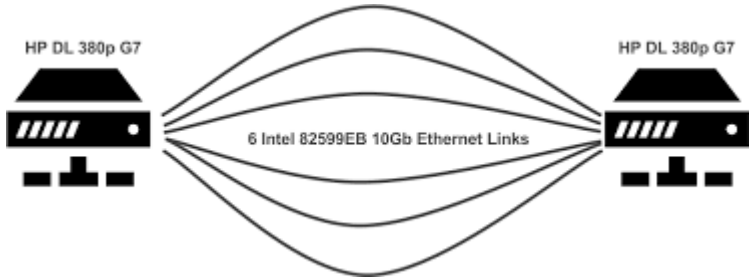
김준희
@wnsgml972

MPSec

Why develop?

MPSec

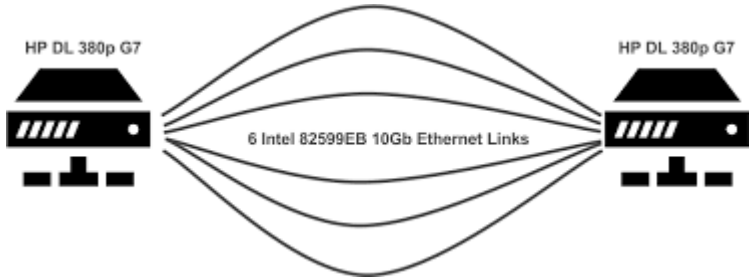
MPTCP



다중 경로 전송

대한민국 국방부
Ministry of National Defense

MPTCP

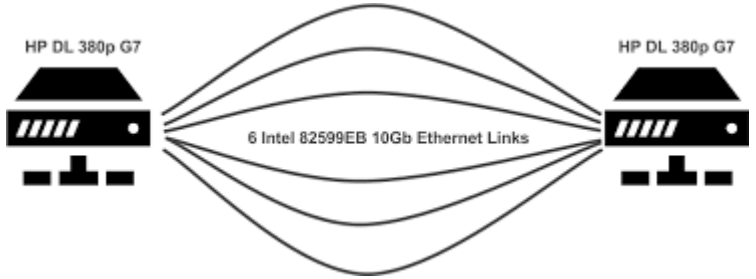


다중 경로 전송

고신뢰, 고생존성 지원
네트워킹 기술

MPSec

MPTCP

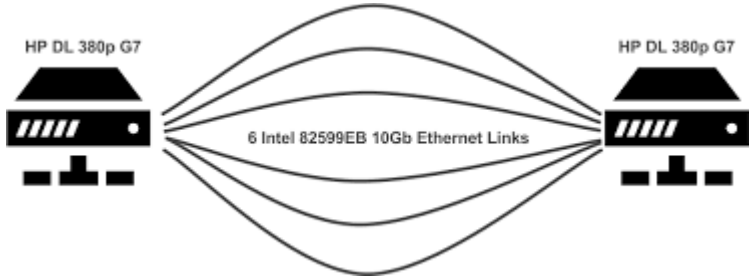


다중 경로 전송을 통한
막강한 이점들!

MPTCP를 활용하여 다양한 사람들과 많은 프로젝트를 진행해보고 싶다!!

MPSec

MPTCP



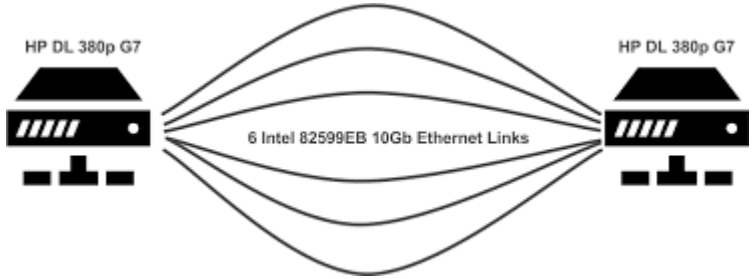
MPTCP를 사용하려면...

MPTCP의 핵심 특징 4가지

1. MPTCP kernel download
2. Kernel compile
3. Boot MPTCP kernel
4. Enable MPTCP
5. Network IP setting
6. MPTCP Path-Manager, Scheduler, Congestion control, Reordering setting
7. Interfaces bandwith measurement

MPSec

MPTCP



MPTCP Kernel부터
다운로드하고 커널 컴파일!

1. MPTCP kernel download
2. Kernel compile
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4. Enable MPTCP
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MPSec

MPTCP Repository

?

README

```
Linux kernel
============

This file was moved to Documentation/admin-guide/README.rst

Please notice that there are several guides for kernel developers and users.
These guides can be rendered in a number of formats, like HTML and PDF.

In order to build the documentation, use ``make htmldocs`` or
``make pdfdocs``.

There are various text files in the Documentation/ subdirectory,
several of them using the Restructured Text markup notation.
See Documentation/00-INDEX for a list of what is contained in each file.

Please read the Documentation/process/changes.rst file, as it contains the
requirements for building and running the kernel, and information about
the problems which may result by upgrading your kernel.
```

MPTCP 공식 홈페이지

Continue reading this page for the instructions on configuring your kernel for MultiPath TCP.

To install MPTCP, follow this procedure:

- Get the source by checking out the git-repository, or download one of the daily snapshots. You can also apply one of the patches based on different Linux versions, available here. We highly recommend to checkout the git-repository, as you can easily get our bug-fixes with a `git pull`.

  Access the git-repository with

```
git clone --depth=1 git://github.com/multipath-tcp/mptcp.git
```

- Then configure the Kernel by doing `make xconfig` or `make menuconfig` and enable MultiPath TCP:
  - You cannot set IPv6 as a module. Either compile it into the kernel, or disable it.
  - **enable** MPTCP protocol (`Networking support->Networking options->TCP/IP networking->MPTCP protocol (MPTCP)`) (if you cannot find that checkbox, then you have not correctly disabled one of the above options)
  - If you want to use the Linked Increase Algorithm (LIA) Congestion Control, that guarantees fairness across a shared bottleneck, you have to **enable** `Networking support->Networking options->TCP: advanced congestion control->MPTCP Linked Increase`. To enable it as the default congestion control, you should also enable it in "Default TCP congestion control", or you just type `echo 'lia' > /proc/sys/net/ipv4/tcp_congestion_control` in the running Kernel. Other options are "Opportunistic Linked Increase (olia)", "WVEGAS CONGESTION CONTROL (wvegas)" or "BALIA CONGESTION CONTROL (balia)".
  - Choose a path-manager, by enabling "MPTCP: advanced path-manager control". More info can be found here.
  - **enable** Policy-Routing (`Networking support->Networking options->IP: advanced router->IP: policy routing (IP_MULTIPLE_TABLES)`) to correctly configure your routing tables (see below).
- Compile, install and reboot your kernel, as it is recommended by your distribution. You can then use `make deb-pkg` to generate `.deb` packages, `make rpm-pkg` for `.rpm` packages, etc. For more details, there are many more details on the wiki of your distribution, e.g. for Ubuntu, look here from the step to *Build the linux-image*, for CentOS, look here, etc.
- You have to correctly configure your routing table. Have a look here

?

MPSec

쉽지 않은 접근

모두가 쉽게 구성할 수 있는 더 좋은 서비스를 만들어보자

How?

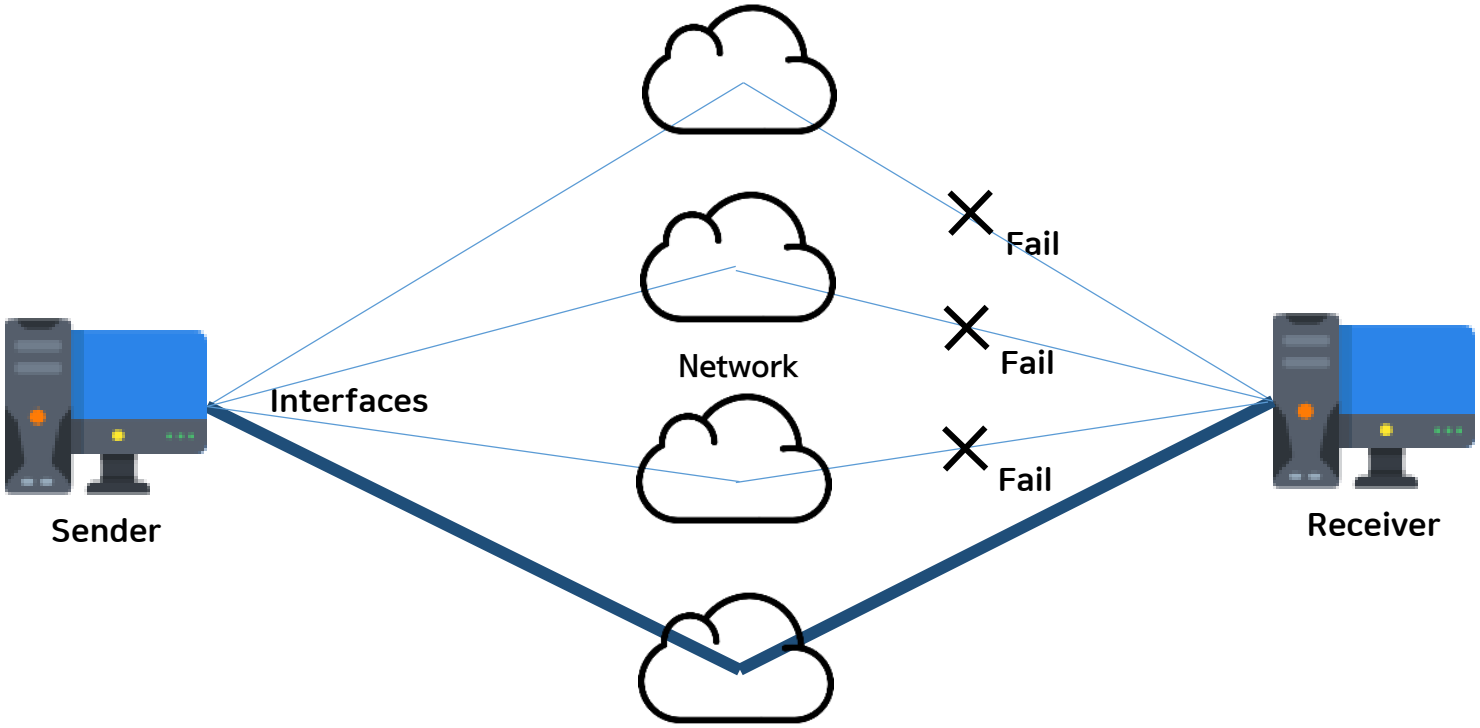
MPSec이란?

1. Reliability
2. Performance
3. Security
4. Optimal Service

MPSec이란?

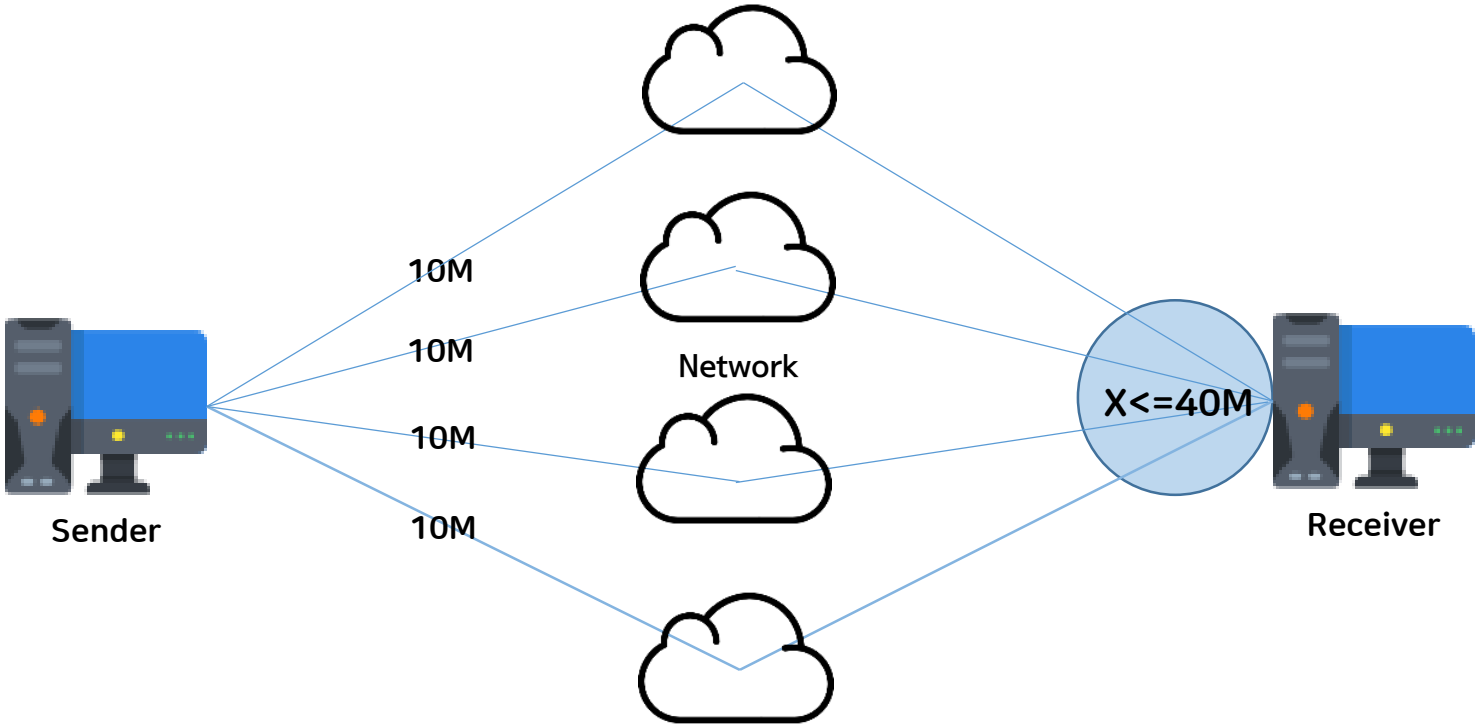
1. Reliability
2. Performance
3. Security
4. Optimal Service
5. User Friendly

Use MPSec



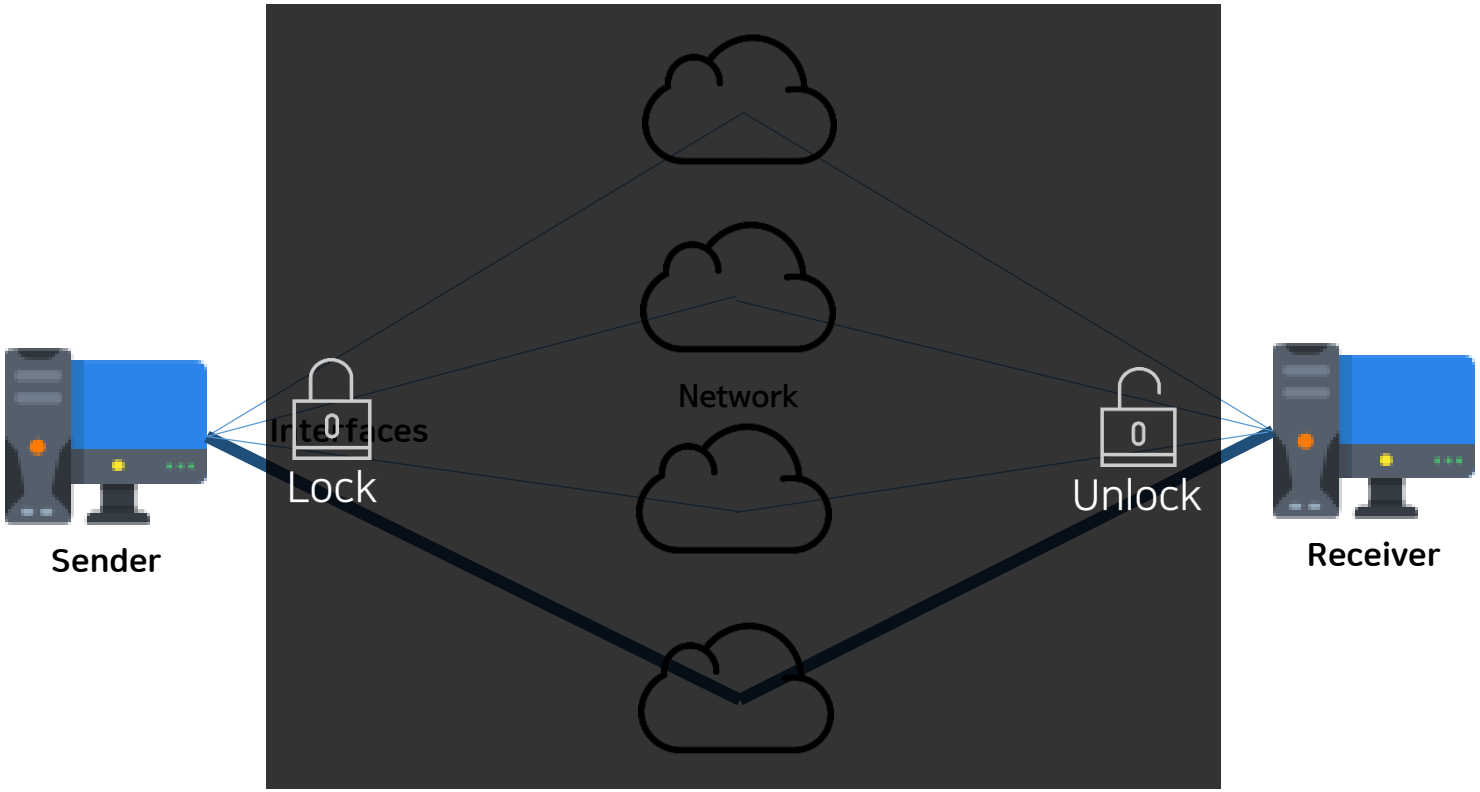
대체 경로 서비스 : Reliability

Use MPSec



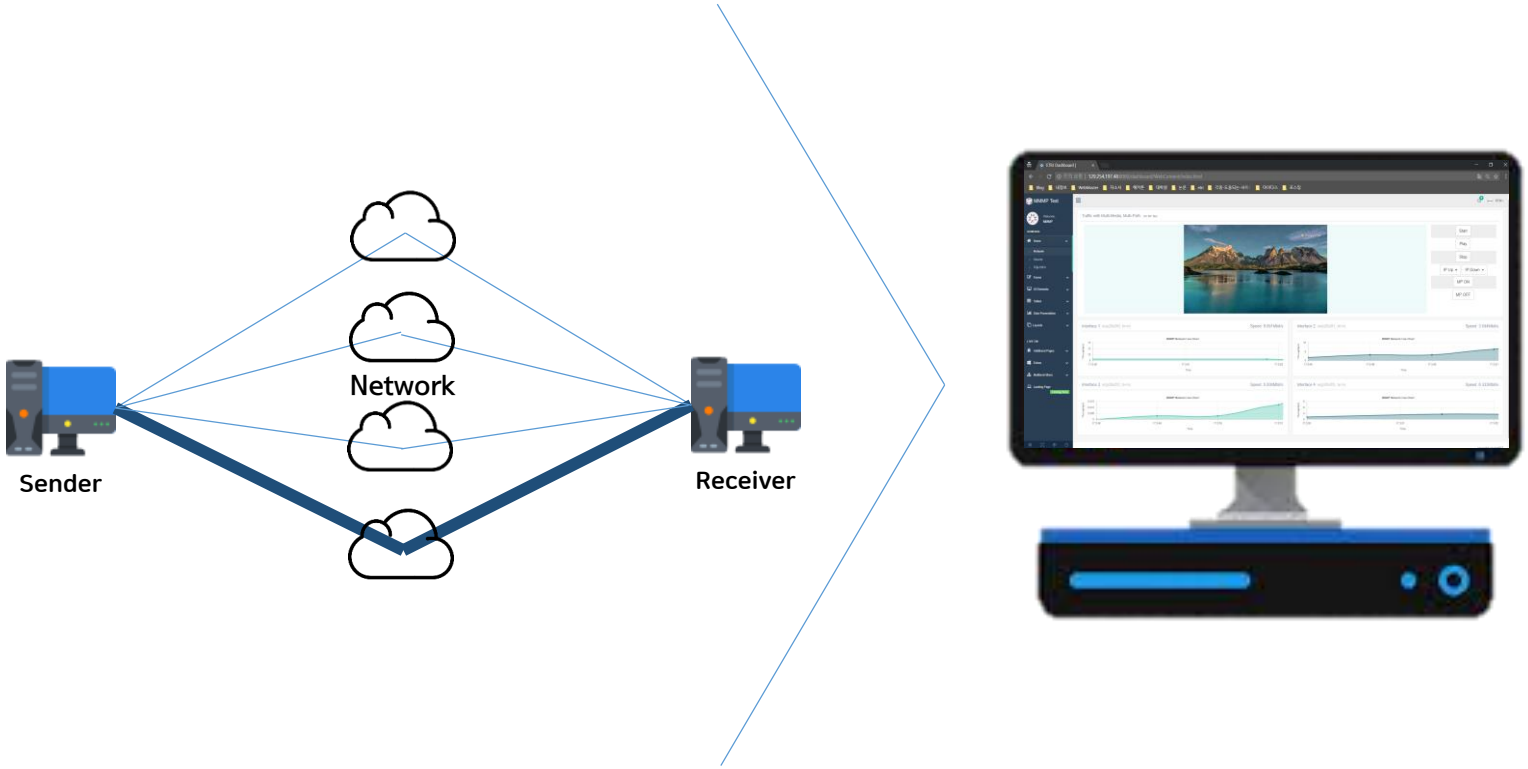
다중 경로 서비스 : Performance

Use MPSec



Packet 보안 서비스 : Security

Use MPSec



Dashboard를 통한 가시화 :

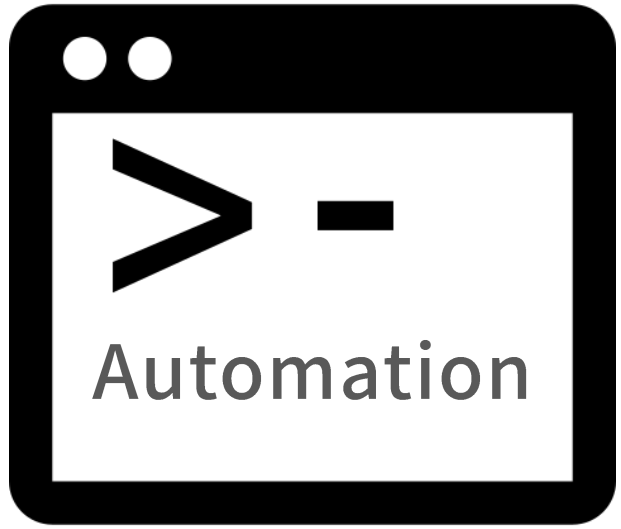
Optimal Service

Use MPSec

Install Program
[net-tools strongswan build-essential libncurses5 libncurses5-dev kernel-package bin86 libssl-dev pCap …]

System Config
[IP Config, IP Name, IP Index, Bandwidth, Linux Load Average…]

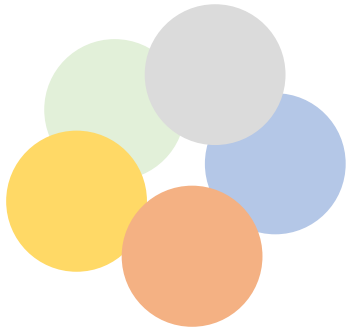
Start Program
[Path-Manager, Scheduler, Congestion Control, Reordering]



매우 간단한 환경 구성 : User Friendly

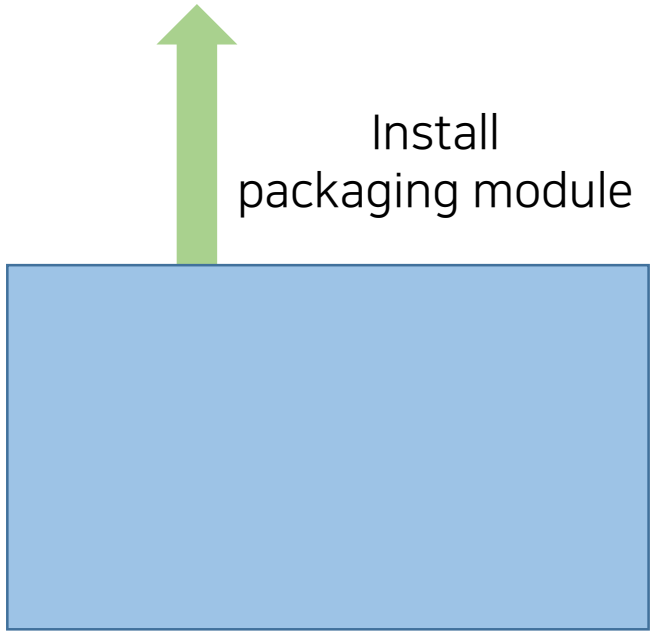
Use MPSec

매우 간단한 환경 구성 : User Friendly



1

Install
packaging module

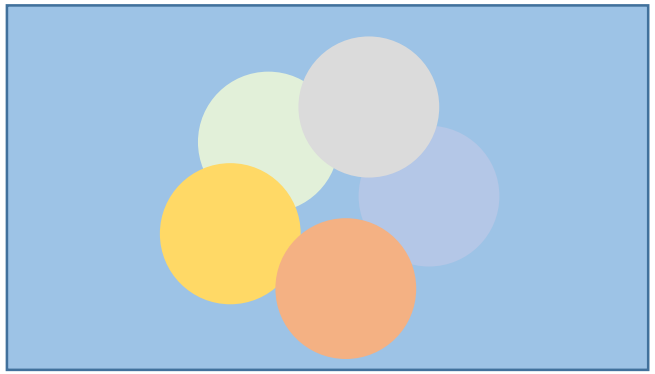


PC

2

Build module,
Setting IPSec, web server,
path, authority

Set Up
packaging module

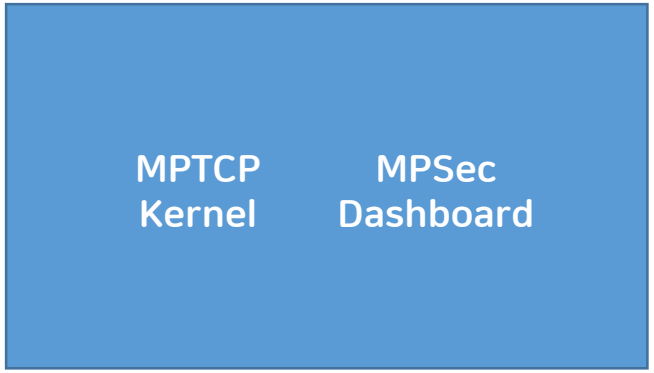


PC

3

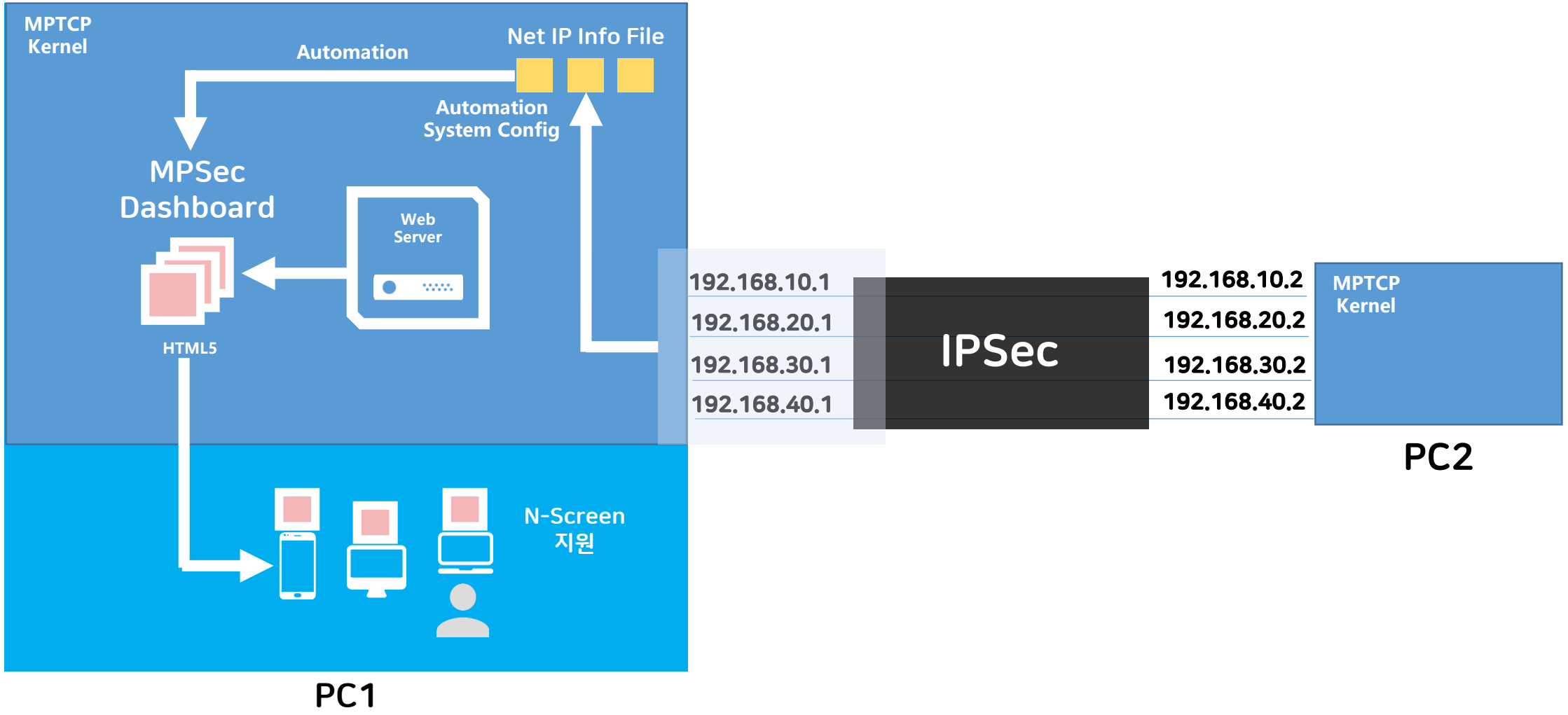
Enable MPTCP, Set MPTCP config,
Start web server, Start IPSec

Start MPSec



PC

Example Testbed Structure



Demo

Set Up

MPSec

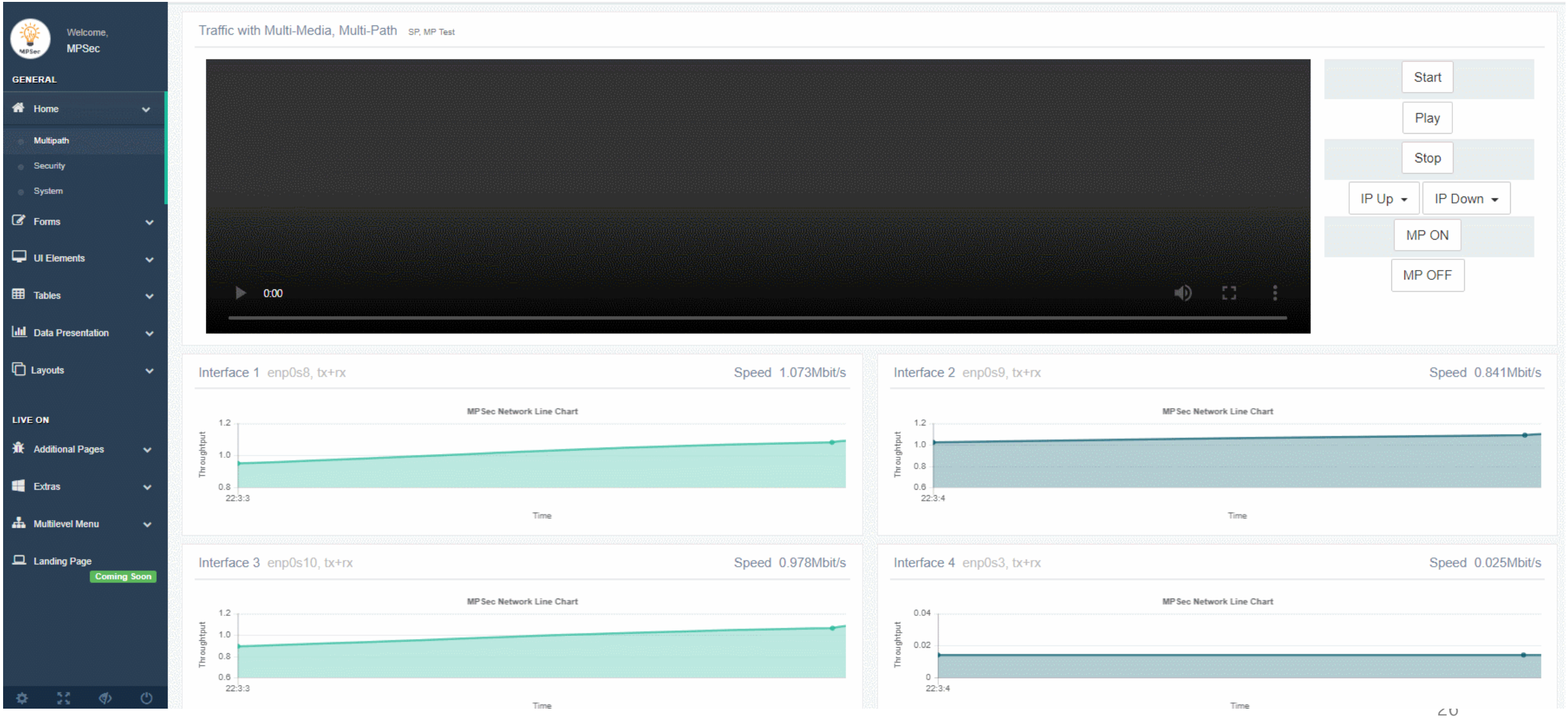
```
root@user-VirtualBox:/home/user/Dashboard/installer# ./set-up.sh
```

Start MPSec


HONEYCAM
root@m3p-gw:/home/user/Dashboard/installer# ./start-mptcp.sh

Multi Path

MPSec



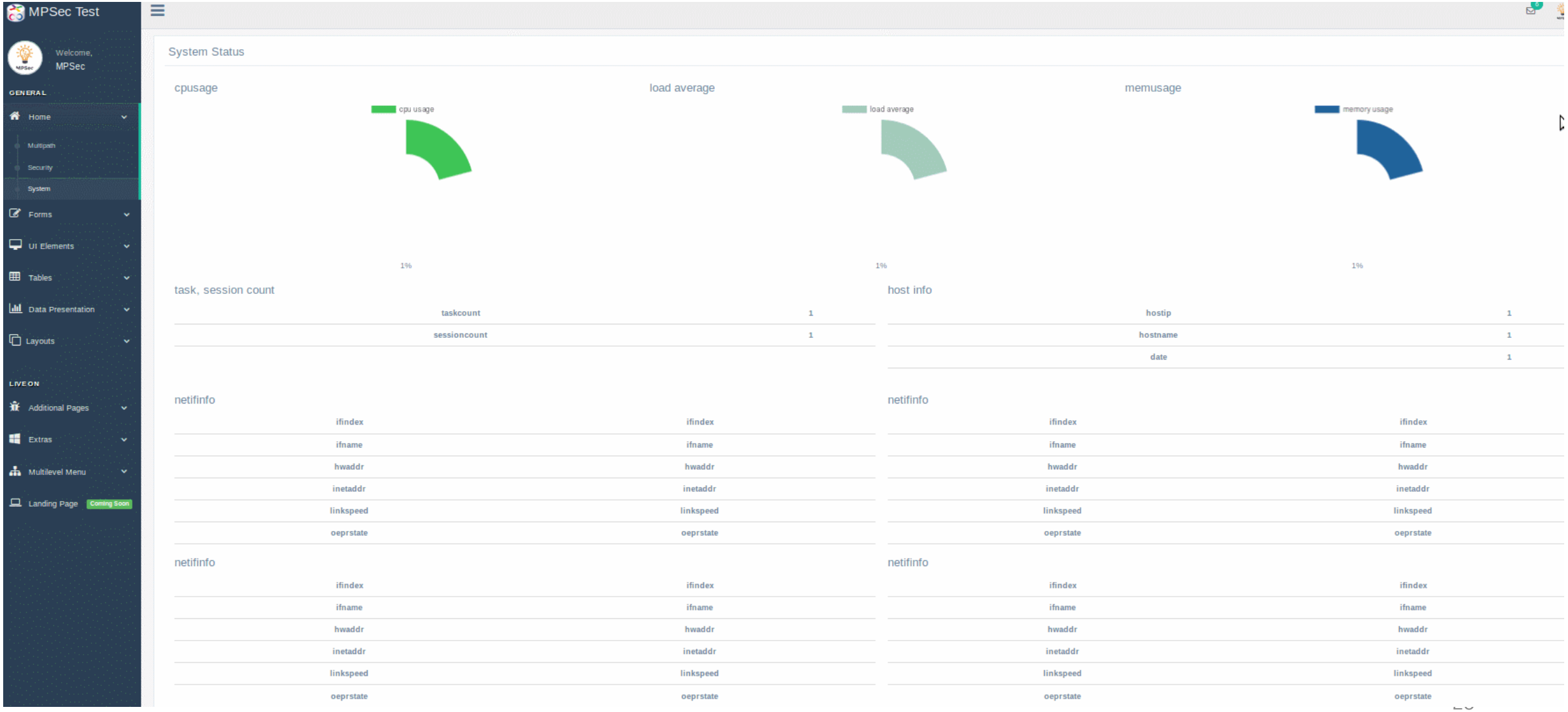
IPSec

MPSec


MPSec Dashboard |
localhost:8080/dashboard/WebContent/index2.html
70%
MPSec Test
Open menu
Welcome,
MPSec
GENERAL
Home
Multipath
Security
System
Forms
UI Elements
Tables
Data Presentation
Layouts
LIVE ON
Additional Pages
Extras
Multilevel Menu
Landing Page
Coming Soon
FTP Protocol
IPSec OFF
Hader
TCP
Binary Data
Test Binary Data
UTF-8 Encoding Data
Test UTF Data
Start
Capture
Stop
ESP Protocol
IPSec OFF
Hader
TCP
Binary Data
Test Binary Data
UTF-8 Encoding Data
Test UTF Data
Start
Capture
Stop
copyright wnsgml972

System Config

MPSec



MPSec의 미래

유명한 타 네트워크 오픈소스처럼 성장
더 많은 것을 자동화
MPTCP의 Congestion Control 알고리즘 개선
오픈소스로서 커뮤니티 활성화

One Stop MPTCP Service