

ANALYZE NETWORK PERFORMANCE :

Analyzing network performance involves interpreting data collected from network monitoring tools to evaluate the efficiency and effectiveness of the network.

In Python, you can use libraries such as Matplotlib, Pandas, and Numpy to analyze and visualize network performance data.

The given below is a simplified example of how you might analyze network performance data using Python.

In the below example, we'll assume that we have a CSV file containing network latency data that we've collected, and we want to analyze this data to identify any trends or issues.

The CSV file (named `latency_data.csv`) has the following format:

time	latency
1620321000	25.6
1620321000	27.1
1620321000	21.2

Load the Data

We can use the pandas library to load this data into a DataFrame, which is a type of data structure provided by pandas that makes it easy to analyze structured data.

```
import pandas as pd

# Load the CSV data into a pandas DataFrame
df = pd.read_csv('latency_data.csv')

# Convert the 'time' column to datetime format
df['time'] = pd.to_datetime(df['time'], unit='s')

# Set the 'time' column as the index
df.set_index('time', inplace=True)

print(df.head())
```

Analyze the Data

Once the data is loaded into a DataFrame, we can use the various functions provided by pandas to analyze the data.

For example, we can calculate the average latency, the maximum latency, and the minimum latency.

```
# Calculate the average latency
```

```
avg_latency = df['latency'].mean()  
print(f'Average latency: {avg_latency} ms')
```

```
# Calculate the maximum latency
```

```
max_latency = df['latency'].max()  
print(f'Maximum latency: {max_latency} ms')
```

```
# Calculate the minimum latency
```

```
min_latency = df['latency'].min()  
print(f'Minimum latency: {min_latency} ms')
```

Visualize the Data

We can use the Matplotlib library to create a plot of the latency data, which can help us identify any trends or patterns.

```
import matplotlib.pyplot as plt

# Create a plot of the latency data
plt.figure(figsize=(10, 6))
plt.plot(df.index, df['latency'], label='Latency')
plt.xlabel('Time')
plt.ylabel('Latency (ms)')
plt.title('Network Latency Over Time')
plt.legend()
plt.grid(True)
plt.show()
```

This script will create a line plot of the network latency over time, which can help you visualize how the latency is changing and identify any trends or issues.