

# Independent and Scalable Performance Monitoring of Complex Cloud-Based Services

## Motivation

Understanding the behavior of critical cloud-based services.

Be aware of poorly performing services and optimize the network infrastructure accordingly.

Lack of general techniques that can extract meaningful knowledge of the behavior of complex networked services, solely from the network communication exchanged between them and their users.

## Challenges

Complex cloud services

Analyze the behavior of complex cloud services consisting of several sub-services hosted in different clouds.

Independence from the service provider

Extract all necessary information from the network traffic between the services and the users.

High-speed networks.

High throughput of modern networks does not allow capturing and analyzing the complete traffic. We will process highly aggregated input data (Netflow).

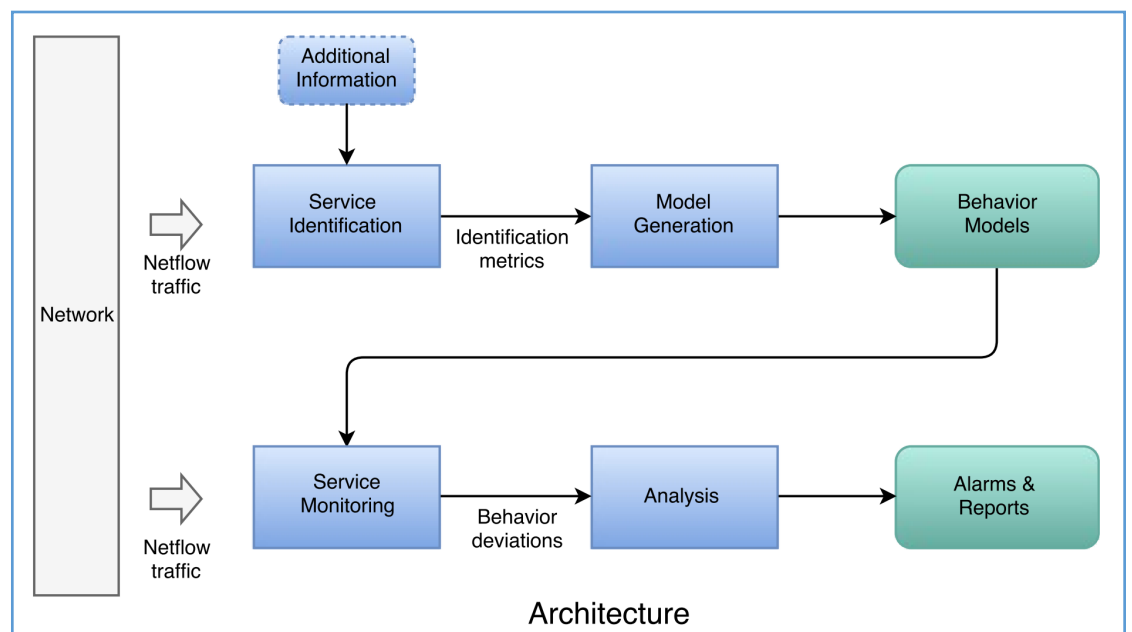
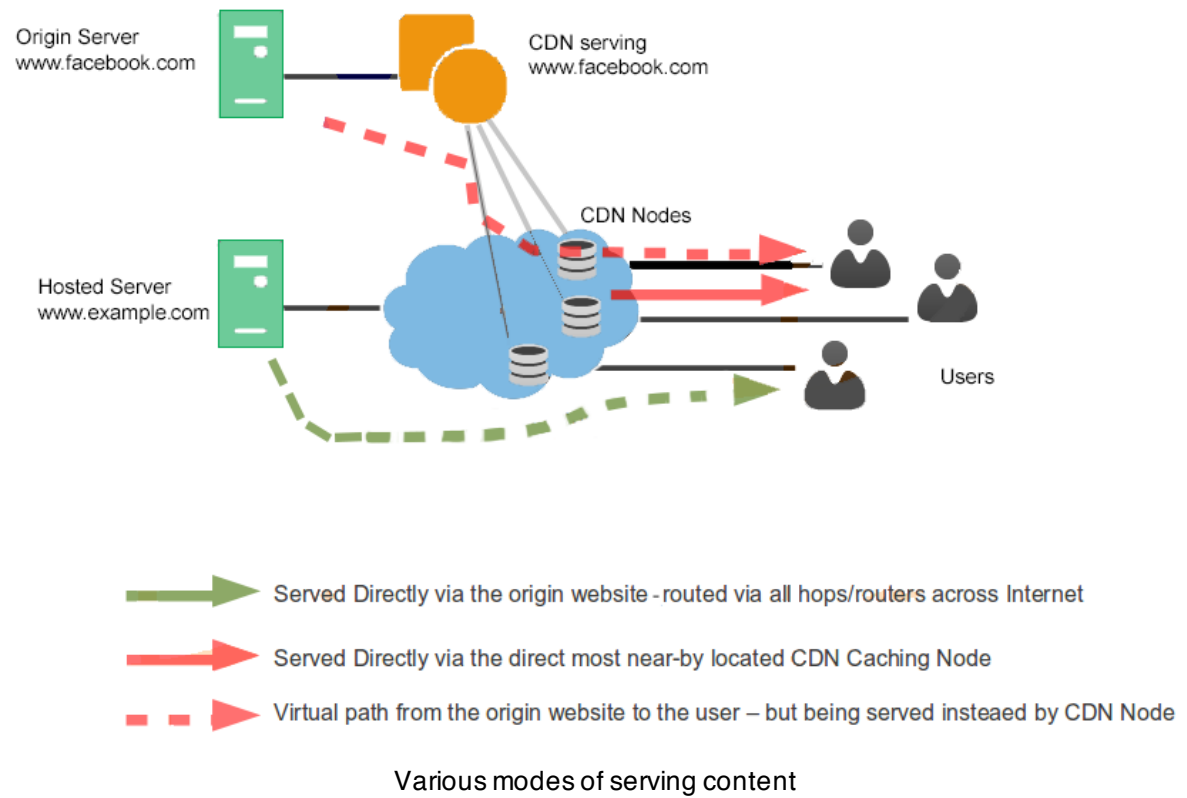
## Proposed System

Service Identification

Behavior Model Generation

Service Monitoring

Performance Analysis

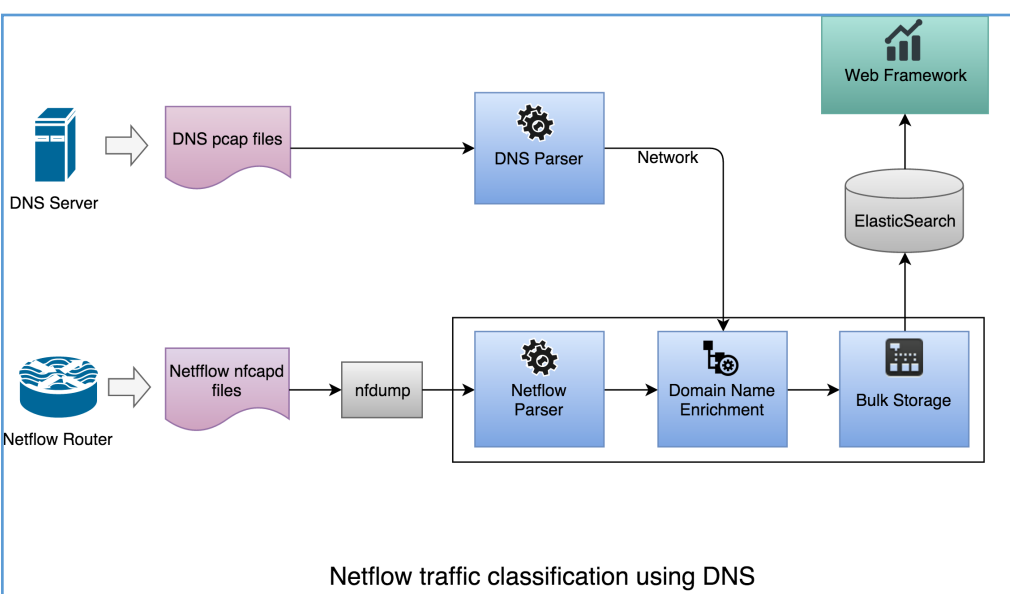


## Service Identification Methodology

### DNS Enrichment

Match server IP address in Netflow records with DNS records

Enrich netflow records with domain name



### Dependency Matrix

Partition the trace into time windows

Note all flows that appear in each time window

Find pairs that occur most frequently over many windows

