pharos
AVANTGARD

Chronos

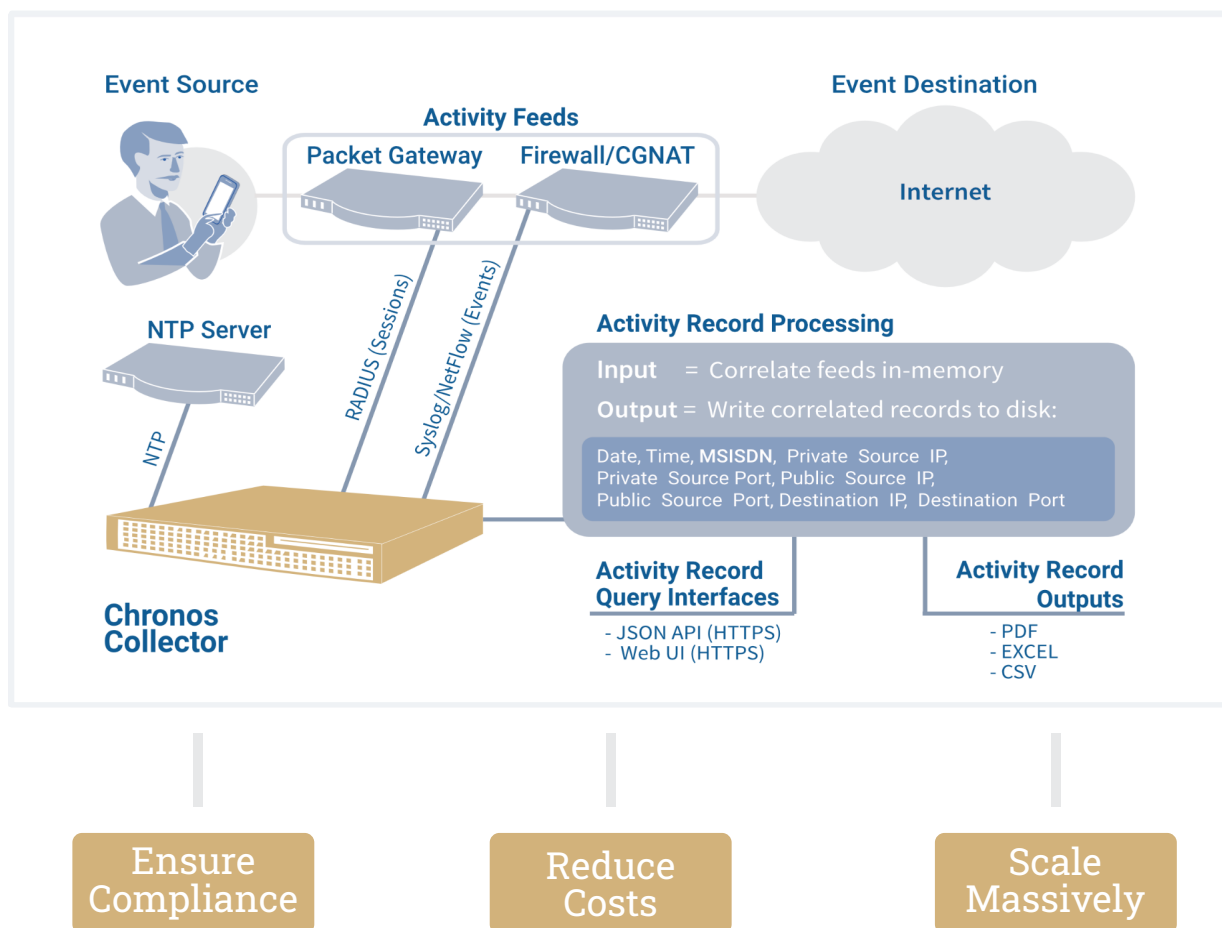## IP Log Management System

Chronos keeps records of subscriber internet activity and stores them securely for future queries. It enables you, as a network operator, to fully comply with regulations that require the logging of subscriber internet activity, while keeping compliance costs at the bare minimum. Plus, it's designed to grow with your network, meeting your future logging needs.

Functionality

✓ **Activity Logging**: Chronos logs mobile subscriber internet activity in near real time as accurate, space-saving, secure, tamper-proof records.

✓ **Activity Querying**: Chronos enables authorised personnel to easily search through massive volumes of subscriber activity records at high speed using its secure JSON API or Web UI.

✓ **Activity Reporting**: Chronos provides Law Enforcement Agencies with reports—in PDF, Excel, CSV format—that include evidence of subscriber internet activity, along with the MSISDNs of the subscribers who performed the activity.

Key Benefits

✓ Get accurate tamper-proof evidence

✓ Minimise storage costs

✓ Safeguard against loss of data

✓ Accelerate investigations with fast searches

Event Source

Activity Feeds

Packet Gateway   Firewall/CGNAT

Event Destination

Internet

NTP Server

RADIUS (Sessions)

Syslog/NetFlow (Events)

NTP

Activity Record Processing

Input = Correlate feeds in-memory

Output = Write correlated records to disk:

Date, Time, **MSISDN**, Private Source IP, Private Source Port, Public Source IP, Public Source Port, Destination IP, Destination Port

Chronos Collector

Activity Record Query Interfaces
- JSON API (HTTPS)
- Web UI (HTTPS)

Activity Record Outputs
- PDF
- EXCEL
- CSV

Ensure Compliance

Reduce Costs

Scale Massively

Why Chronos?

Current Mobile Device Use

In 2024, mobile devices are the main source of global internet traffic, making up 55.7% of all online activity. This trend is particularly striking in Africa, where mobile devices account for an impressive 73.6% of internet traffic. South Africa leads the way with an even higher figure of 77.97%. In comparison, North America has a lower share at 45%, while Europe is around 52%. This shows that Africa significantly exceeds the global average.

Future Mobile Device Use

Looking ahead, mobile internet usage is expected to grow rapidly each year as more and more people engage in online activities using their smart devices.

Achieving Regulatory Compliance

To comply with internet activity record-keeping legislation and cope effectively with logging the surge of data growth, Pharos has created a specialised IP log management system designed for network operators: Chronos provides regulatory compliance, carrier-grade availability, minimal setup and running costs, and high scalability for your future logging needs.

Sources of Statistics:

– Sunil Gill, "Internet Traffic From Mobile Devices Stats 2024," Priori Data, August 23, 2024, https://prioridata.com/data/mobile-internet-traffic/

– Daniel Ruby, "69 Mobile Internet Traffic Statistics for 2024 (Worldwide Usage)," DemandSage, January 22, 2024, https://www.demandsage.com/mobile-internet-traffic/

Ensure Compliance

Regulatory Compliance

Chronos makes your network compliant with regulations that require you to log, store, and provide (on request) activity records containing the internet destinations that subscribers have accessed using your network.

Extreme Performance

Chronos is designed to be a powerful IP log management system. It handles the massive task of consistent collecting, processing, and storing billions of internet usage records—in near real-time for millions of concurrent network users.

Trustworthy Evidence

Accurate Records: Chronos uses live subscriber activity network feeds to record internet activity and timestamps records precisely using servers that are synchronised using NTP.

Tamper-Proof Records: Chronos guards activity records with blockchain-inspired security and stores them in its protected time-series database before archiving them to long-term storage.

Reduce Costs

Chronos stores each subscriber activity record it processes in the smallest possible space. It does so by encoding information in a space-efficient manner before storing events in its database.

This slashes the cost of mass storage space you need to archive the massive volume of network usage records generated each day.

Scale Massively

Chronos is designed to scale to accommodate your future demands for data traffic growth. Its modular design enables you to horizontally scale the system by adding additional servers.

Chronos performs parallel processing by distributing its workload across all servers in the Chronos cluster, which provides you with predictable scaling and high performance.

The Chronos UI

View Query

Query Name
CYQuery8

Start Date	Start Time	End Date	End Time
2019-01-21	14:00	2019-01-21	14:30

Public Source Address
41.113.154.155 7284

Destination Address
Port

MSISDN

Summary

CYQuery8 ⓘ

≡ 1	🪪 1	➤ 1
Number of Entries	Unique MSISDNs	Unique Destinations
View Details ⊕	View Details ⊕	View Details ⊕

Reports

🔄 Reload   🔍 Search

Showing 1 to 19 of 19 entries

DATE	ID	NAME	START	END	STATUS	ENTRIES	PROGRESS	ACTIONS
2019-01-21 14:50	125		2019-01-21 14:00	2019-01-21 14:30	Stopped	20000		👁 🔍 📄 📄 🗑
2019-01-21 14:51	126		2019-01-21 14:00	2019-01-21 14:30	Finished	124		👁 🔍 📄 📄 🗑
2019-01-21 14:49	124		2019-01-21 14:00	2019-01-21 14:30	Finished	1		👁 🔍 📄 📄 🗑

Report

ⓘ

🔄 Reload   📥 Export to XLS   📄 Export to CSV   ▶▶ Resume   🔍 Search

Show orphaned records

Showing 1 to 50 of 20,000 entries

DATE TIME	MSISDN	PRIVATE SOURCE ADDRESS	PUBLIC SOURCE ADDRESS	DESTINATION ADDRESS
2019-01-22 21:00:00		10.32.121.139:51789	41.113.133.42:8991	118.67.200.10:123
2019-01-22 21:00:00		10.44.90.211:34414	41.113.135.232:29115	192.48.236.11:443
2019-01-22 21:00:00		10.34.54.43:48452	41.113.172.68:46433	64.233.161.94:443
2019-01-22 21:00:00		10.47.204.102:43614	41.113.235.86:23189	216.58.223.74:443
2019-01-22 21:00:00		10.32.121.139:43949	41.113.133.42:15729	119.28.206.193:123
2019-01-22 21:00:00		10.32.121.139:49422	41.113.133.42:9929	129.250.35.251:123

Why Pharos?

Our formula for your success:

- We craft fully functional solutions to address technical challenges using people with deep knowledge of multiple technologies.
- We use our vast telecom expertise to distill complex requirements and technologies into effective solutions.

Telco Expertise

Since 1997, we have been actively engaged in the telecom industry, acquiring extensive expertise and knowledge in telco networks and technologies.

History Of Innovation

Our history reflects a strong record of delivering innovative solutions through our mature technology framework, custom-tailored to meet the specific needs of our customers.

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In-House Technology

We believe technology should support business needs. With a broad technology portfolio and industry experience, we craft solutions tailored to your requirements.