PertSol®
Simple Solutions for Complex World

**Pert Telecom Solutions Private Ltd., India**

*'Building Innovative future-ready solutions for*
***IT & Telecommunications Industries'***

# 'PertSol iSecureHL'

## IP Log Management System

# INTRODUCING PERTSOL

**Leading Indian Telecom & IT Solution Provider**

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## Driven by Passion & Led by Innovation

Pert Telecom Solutions Private Limited (ISO certified) are pioneer leaders with wide portfolio of innovative future ready solutions for Telecommunications, IT solutions, Smart Cities, Government and Law Enforcement Agencies globally. Our innovative end-to-end solution portfolio are tailored per requirement. Our leading security solutions are 5G compliant providing with the resolution of ever-changing technology and methodology. We sincerely believe in mitigating the security threats and enabling our security organisations to combat with distinctive technologies.

| 8+ | 100+ | 25+ | 60+ | 27+ | 23+ |
|---|---|---|---|---|---|
| **Years of Operations** | **R&D Experts** | **Future Ready Solutions** | **Projects Delivered** | **Happy Clients** | **Locations Worldwide** |

# OUR SUCCESS STORY

## 2014

Incorporated with HQ in Mumbai

## 2015

Established Sales & marketing office in Delhi NCR

Deployed "Welcome Messaging System" in Tier-1 TS

## 2016

Deployed India's 1st LBS in state-wide Emergency services

Deployed LIS for IMS network of Tier-1 TSP

Deployed iLocator solution for Uttar Pradesh Ploice Dial 100

## 2017

Deployed LBS for India's largest metropolitan city's emergency services

Provided maintenance and support services for Tier-1 TSP's "Customer care and Billing System"

Deployed iNterceptor solution for BSNL NGN & ILD Network

## 2018

Pan India deployment of LIS for Tier-1 TSP mobile network

Deployed IPLM, RAS, SMLC for Tier-1 TSP

In 2018, enabled two state-wide emergency services with LBS

PertSol deploys iLocator solution for Madhya Pradesh Dial 100 & Chhattisgarh Police Dial 112

## 2019

PAN India deployment of LIS for Tier-1 TSP's NGN

Deployed LIS & Monitoring system for an ISP

Fraud Management & Revenue Assurance deployment for Tier-1 TSP

Deployed PAN India IPLM for Tier-1 TSP

PertSol deployed iNterceptor solution for APSFL LIS

## 2020

Successfully conducted LBAS POC with Tier-1 TSP for commercials and emergency utility

Deployed Covid-19 CQAS for Tier 1 TSP under DoT initiative

Enabled biggest State emergency services with LBS in India

Deployed WhatsApp based Chatbot solution for essential services

PertSol Deployed iLocator solution for Gujrat Dial 108

Deployed iLocator solution for Maharashtra Police Dial 100 (MERS)

## 2021

Tier-1 TSP's PAN India LBS project across 2G/3G/4G

Awarded contract for VoIP Services LI for an MNC

Successfully conducted packet Core PoC for Tier 1 TSP

PertSol collaborates with Honeywell for deploying iAlert & iLocator for Bengaluru Safe City

Pertsol deploys Quality of Experience solution for Uganada Communications Commission (UCC)

PertSol to deploy LI and IPDRSolution of In Flight & Maritime Connectivity for Planet Cast

Awarded Managed Service project for Tier 1 TSP's MLLN Network

## 2022

Expanded corporate footprint to USA, Dublin

PertSol deployed project for Mauritius Government

Awarded with Contracts for IPDR for Tier 1 - ISPs

Successfully conducted Lawful InterceptionPoC with Tier – 1 TSPs for 5G network element

Deployed cloud based IPDR solution for Tier 2 Tier 3 ISP operators

Successfully tested packet core solution "iMDEG" for 5G NSA

Successfully conducted LBS PoC for 5G readiness with Tier – 1 TSP

Successfully completed DoT demos for LI

# MISSION & VISION

**PertSol Believes In Delivering Quality & Value**

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## VISION

PertSol believes in collaborative approach in solving business challenges in the face of ever-changing market trends hence simplifying businesses with faster go-to-market speeds.

## MISSION

To be pioneers to create simple and technologically advanced solutions that address present and future IT and Telecom needs of the organizations.

# PertSol's Key Business Focus

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Telecom Core Network (TCN)

Telecom Compliance Management (TCM)

Mass Alert & Messaging system

IoT enabled Services

Location Enabled Emergency Services

SI Services

Big Data Analytics

Lawful Interception Services

# #PertSol: Business Portfolio Detailed

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**Service Commitment**

**Global Reach & Support**

**100+ Skilled Resources**

**OEM Partner Ecosystem**

## A WIDE RANGE OF TECHNOLOGY PRODUCTS & SERVICES

### Telecom Core Network

i. Mobile data exchange Gateway – PDN-GW, S-GW, MME, PCRF, GGSN
ii. Home Subscriber Server
iii. IP Multimedia Systems

### Telecom Compliance Management

i. Lawful Interception System
ii. IP Log Management
iii. Remote Access System
iv. Gateway Mobile Location Center
v. Server Mobile Location Center

### Location Enabled Emergency Services

i. Location Intelligence Platform

### Mass Alert & Messaging System

i. Location Based Alert System
ii. Mass Messaging System

### Healthcare Management

i. Healthcare Management System
ii. Covid19 Contact Tracing Solution

### Big Data Analytics

i. Fraud Management & Revenue Assurance
ii. Quality Assurance
iii. OSINT

### IoT Enabled Solutions

i. Smart Agriculture
ii. Air Quality & Water Monitoring
iii. Smart Flood Detection System
iv. Smart Street Lighting System
v. Smart Parking

### Managed SI Services

i. Data & Application migration
ii. Application Deployment
iii. Application Integration
iv. Infrastructure Management
v. Professional Services

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# iSecureHL

## IP Log Management System

# IP Log Management System: What is the need?

With paradigm shift in the IT & Telecom industry from voice to data, all TSPs/ISPs are moving towards an all-IP network that delivers voice, data, video and mobile applications.

Therefore,

- To **safeguard people from threats** like cyber crime, cyber bullying, cyber terrorism etc.
- To **help LEAs in investigations and fighting crimes** with IP information of users that includes IP address, TCP Port number, Date & Time of session, gathered by TSPs/ISPs on recommendation of regulatory authorities.

A surgent need for **IP Log Management solutions** to gather & manage IP information as per Govt. Regulations is required to enable LEAs with data that could be the building block of many investigations of online crimes.

## Relevant DoT Mandates

Letter No. 820-01/98-LR/Vol. (IX) Pt. I dated 01.10.2013

Letter No. 8520-01/98-LR/Vol. (IX) Pt.1 dated 16.11.2021

Gazette No. 20-271/2010 AS-I (Vol. III) dated 21.12.2021

# iSecureHL: Functional Architecture

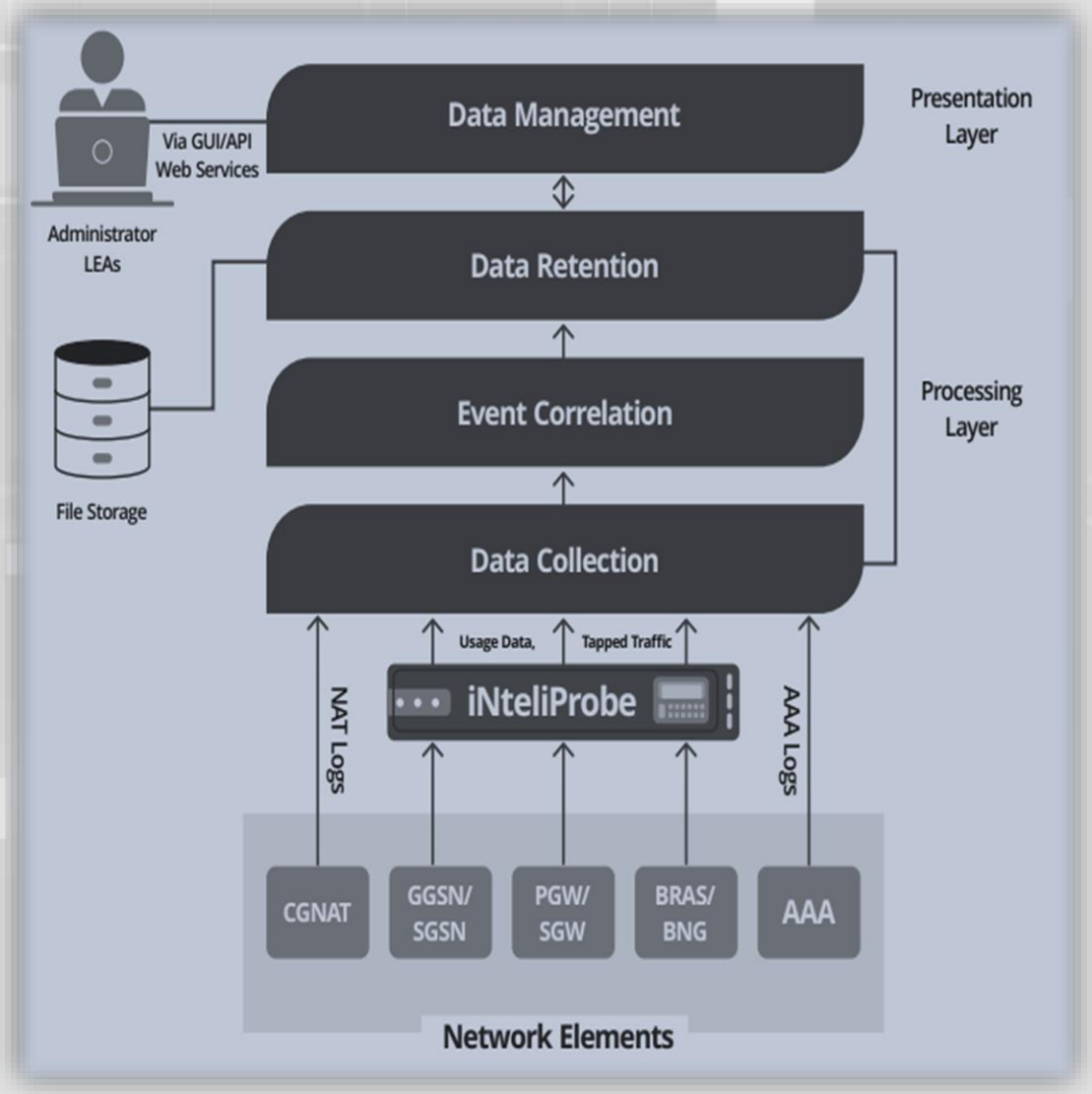
**PertSol iSecureHL** is an integrated automated tool for data collection, correlation and data management. Each of its functions are performed separately by the following modules:

1. **Data Management (DM)** – On presentation layer generated event and alarm are tracked and reports & dashboard is generated:
   - ✓ Tracking & Monitoring UI
   - ✓ Dashboard & Report
   - ✓ Disclosure Management
   - ✓ Interface & integration

2. **Data Retention (DR) –** Automate the storage of collected Data with retention policies to make it available online or offline as per need and event co-relation:
   - ✓ Data Identification
   - ✓ Data Retention Policy
   - ✓ Data Encryption and Detection

3. **Event Correlation (EC) –** EC module aggregates data from the DC module and correlates events & data from different sources to form IPDRs to generate alarm:
   - ✓ Event Correlation
   - ✓ Alarm Generation

4. **Data Collection (DC)** – Automate the data collection & normalization, tapped through either optical probe or log files of switch or applications across distributed architecture of hosts and systems:
   - ✓ Data Interface
   - ✓ Data Loading
   - ✓ Data Normalization & Transformation



# iSecureHL: Product Architecture Overview (Non-Nated and IPV6)

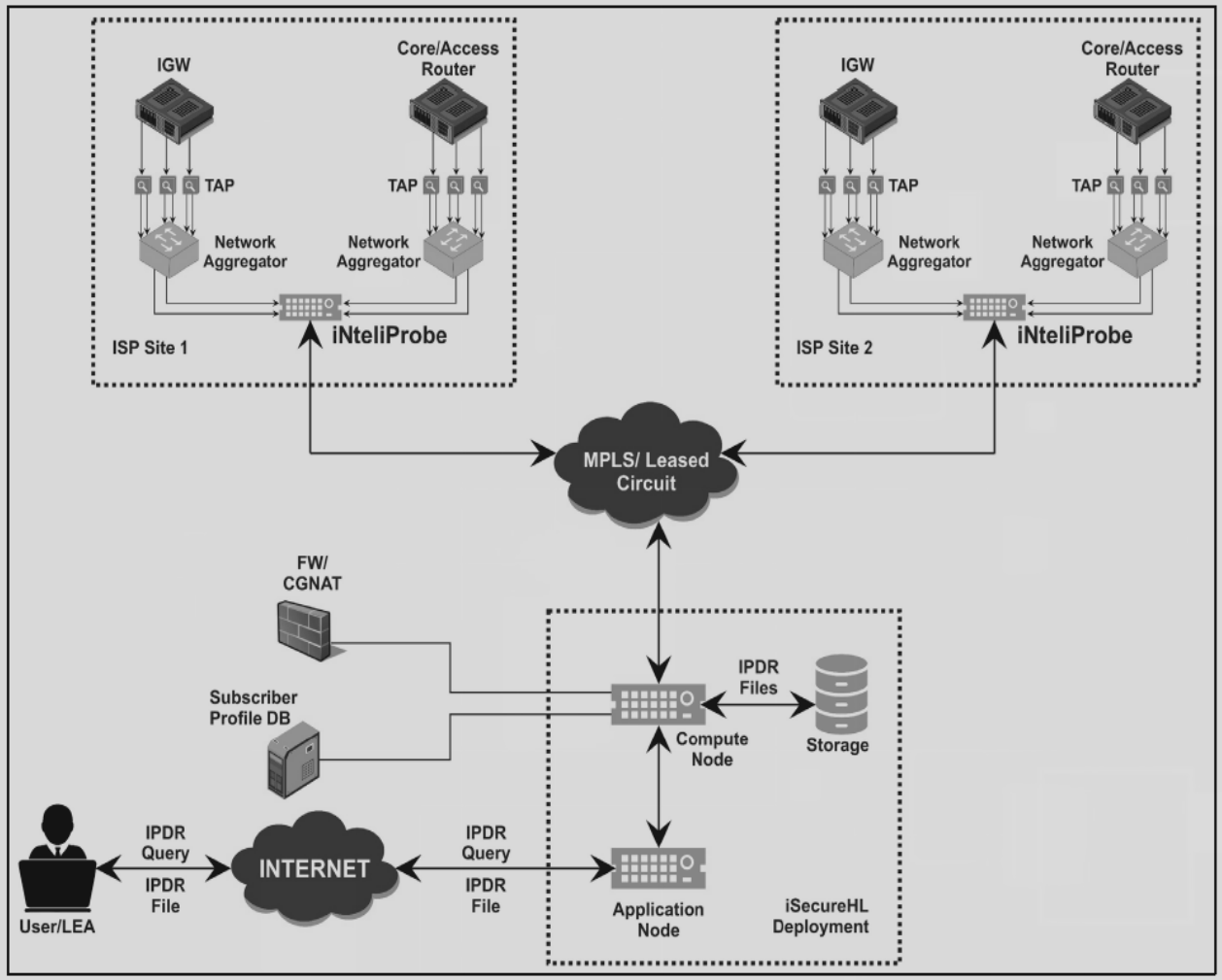
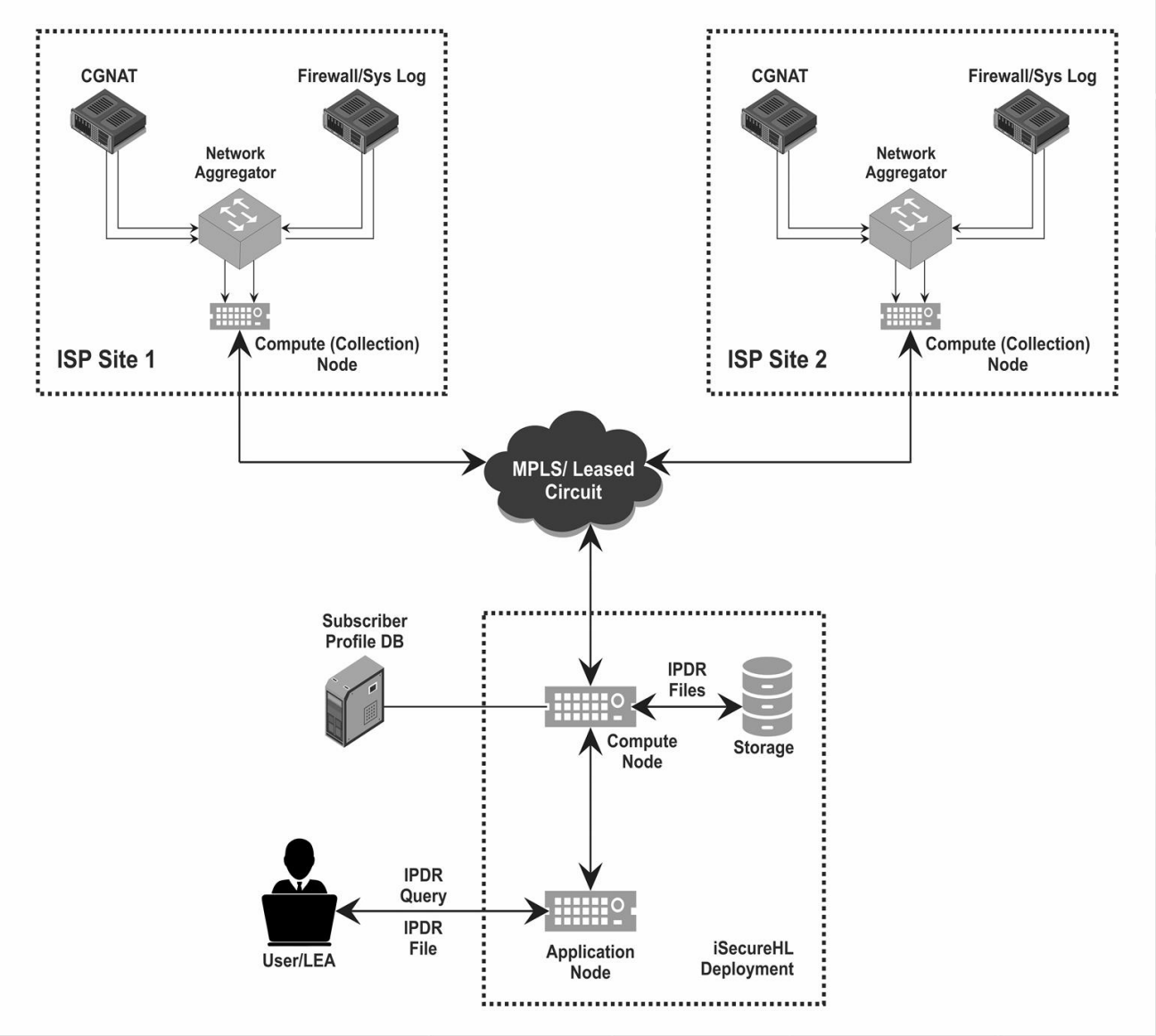



Fig: Tentative IPLM Architecture

- Collects data from multiple sources
- Extracts the data that has to be retained from the collected information and transforms the data where needed
- Loads the processed information into the database
- Stores the needed information in a manner specifically suitable for data retention needs
- Manages disclosure requests and hands-over the retrieved information according to local legislation
- Details of data processing and storage are configured. Changes due to evolving networks can be accommodated by tuning and adapting the workflow

# iSecureHL: Product Architecture Overview (Nated / SYSLogs)




Collects NAT logs and SYSlogs from multiple sources

Extracts the data that has to be retained from the collected information and transforms the data where needed

Loads the processed information into the database

Manages disclosure requests and hands-over the retrieved information according to LEA

Details of data processing and storage are configured. Changes due to evolving networks can be accommodated by tuning and adapting the workflow

# iSecureHL: IPDR Fields

**iSecureHL provides around 38 IPDR fields and does not depend upon any 3rd-party data sets to generate IPDRs**

- Access Point Name
- Application Type
- Source IP
- Global CELLID-1
- Global CELLID-2
- Connection Type
- Destination IP Address
- Destination Port
- PDP Duration
- Session Duration
- PDP Session Start and End Date
- PDP Session Start and End Time
- Home Circle
- ICR Operator
- IMEI
- IMSI
- Public IPV6
- MSISDN
- Translated IP (Public IP Address)
- Translated Port (Public Port)
- PGW Address
- Protocol Used
- RAI
- Roaming Circle
- Downlink and Uplink Volume
- End and Start Time for Session
- Total Volume
- URL
- Circle ID
- Packet Count Uplink/Downlink (per socket)

# iSecureHL: IPDR Fields

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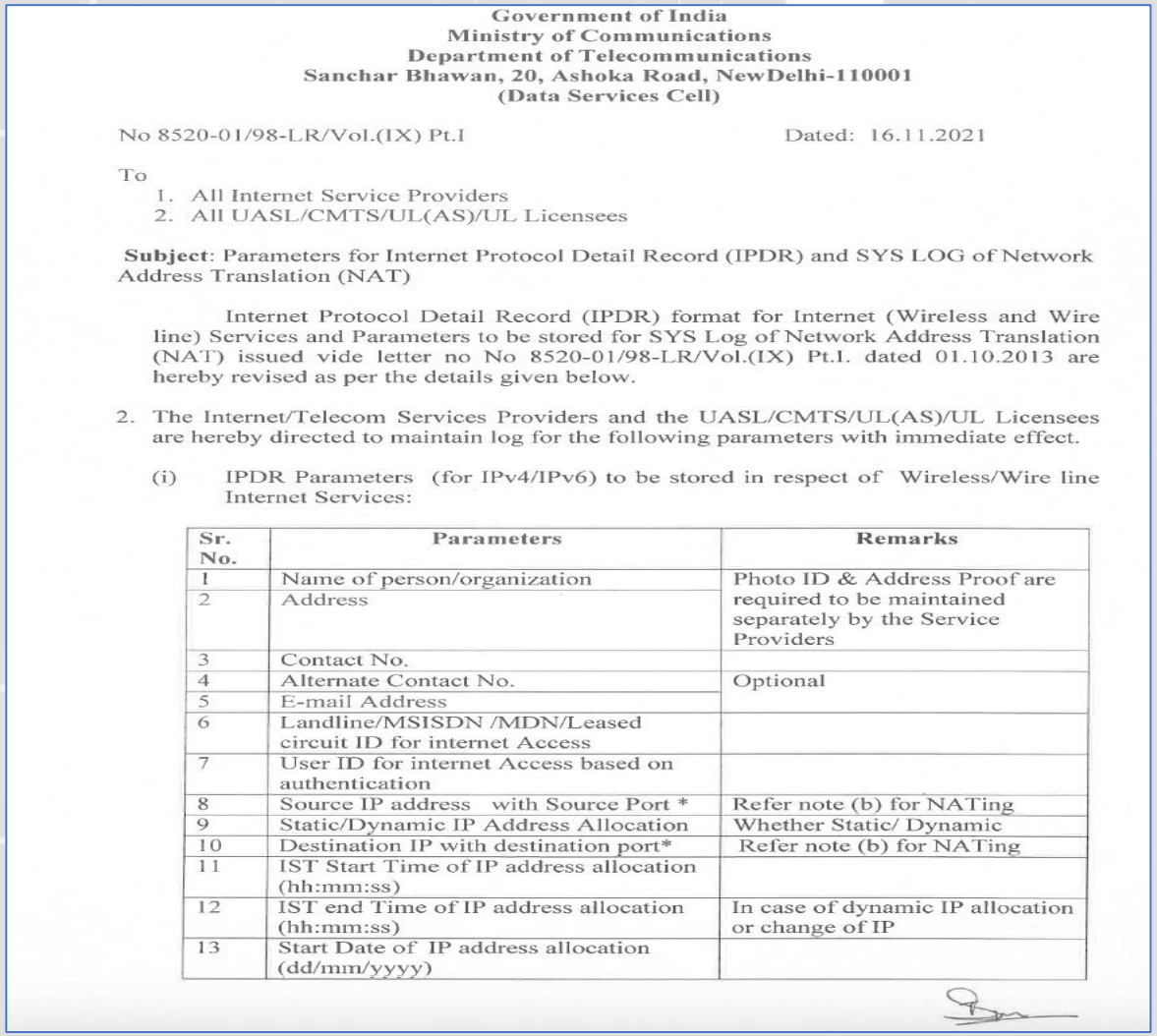
**iSecureHL provides all the required IPDR fields as mandated in DoT Letter No. 8520-01/98-LR/Vol. (IX) Pt.1 dated 16.11.2021**

- Name of person/organization
- Address (Physical Address)
- Contact Number
- Email Address
- Leased Circuit ID for Internet Access
- User ID for internet access (based on authentication)
- Source IP Address
- Source IP Port
- Static/Dynamic IP Address Allocation
- Destination IP Address
- Destination IP Port
- Translated IP Address*
- Translated IP Port*
- Start Time of IP Allocation (hh:mm:ss)
- End Time of IP Allocation (hh:mm:ss)
- Start Date of IP Allocation (dd/mm/yyyy)
- End Date of IP Allocation (dd/mm/yyyy)
- Source MAC address



**Government of India**
**Ministry of Communications**
**Department of Telecommunications**
**Sanchar Bhawan, 20, Ashoka Road, NewDelhi-110001**
**(Data Services Cell)**

No 8520-01/98-LR/Vol.(IX) Pt.I Dated: 16.11.2021

To
1. All Internet Service Providers
2. All UASL/CMTS/UL(AS)/UL Licensees

**Subject**: Parameters for Internet Protocol Detail Record (IPDR) and SYS LOG of Network Address Translation (NAT)

Internet Protocol Detail Record (IPDR) format for Internet (Wireless and Wire line) Services and Parameters to be stored for SYS Log of Network Address Translation (NAT) issued vide letter no No 8520-01/98-LR/Vol.(IX) Pt.I. dated 01.10.2013 are hereby revised as per the details given below.

2. The Internet/Telecom Services Providers and the UASL/CMTS/UL(AS)/UL Licensees are hereby directed to maintain log for the following parameters with immediate effect.

(i) IPDR Parameters (for IPv4/IPv6) to be stored in respect of Wireless/Wire line Internet Services:

| Sr. No. | Parameters | Remarks |
|---|---|---|
| 1 | Name of person/organization | Photo ID & Address Proof are required to be maintained separately by the Service Providers |
| 2 | Address | |
| 3 | Contact No. | |
| 4 | Alternate Contact No. | Optional |
| 5 | E-mail Address | |
| 6 | Landline/MSISDN /MDN/Leased circuit ID for internet Access | |
| 7 | User ID for internet Access based on authentication | |
| 8 | Source IP address with Source Port * | Refer note (b) for NATing |
| 9 | Static/Dynamic IP Address Allocation | Whether Static/ Dynamic |
| 10 | Destination IP with destination port* | Refer note (b) for NATing |
| 11 | IST Start Time of IP address allocation (hh:mm:ss) | |
| 12 | IST end Time of IP address allocation (hh:mm:ss) | In case of dynamic IP allocation or change of IP |
| 13 | Start Date of IP address allocation (dd/mm/yyyy) | |

# IP Log Management System: System Requirement

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| | |
|---|---|
| Search Criteria | • IPDRs shall be searched based on Circuit ID, IP Address (Source/Destination), Port, Start & End date, Mac ID or any combination of above |
| Storage Period | • IPDRs are to be stored for 24+1 months to comply to the latest DoT mandate of December 2021 |
| CMS Automation | • System shall be capable of integrating with CMS for automated IPDR search |
| DOT Audit Support | • System provider shall be able to support the user to comply with DoT audit |
| Fully Complied | • Fully compliant to DOT IPDR Nov 2021 mandate for IPv6, IPv4 for Nating and non-Nating<br>• System shall captures all the IPDR fields that have been mandated by DoT |

# iSecureHL: Why PertSol for IPDR Management?

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| | |
|---|---|
| **Proven Deployment and Success** | • PertSol IPLM is a proven and mature solution that continues to benefit from functional enhancement and feature evolution. It has been deployed in varied networks, enabling TSPs/Law Enforcement Agencies to benefit |
| **Vendor and Technology Agnostic** | • Supports multiple vendors and can provide smooth integration with them<br>• Supports all the telecom network technologies like 2G, 3G, 4G, Broadband<br>• Support for Both IPV4 and IPV6 |
| **Scalable and Cost Effective** | • A highly modular system which can be used to add any vendor's network elements or handle any kind of traffic<br>• Easy to upgrade provides investment protection<br>• Remove duplication from traffic and High compression rate for optimal utilization of storage |
| **Reliable and Secure** | • Minimum human intervention in the whole process reduces errors and mitigates data breach<br>• Providing integration ready with CMS |

# iSecureHL: Efficient Storage Management

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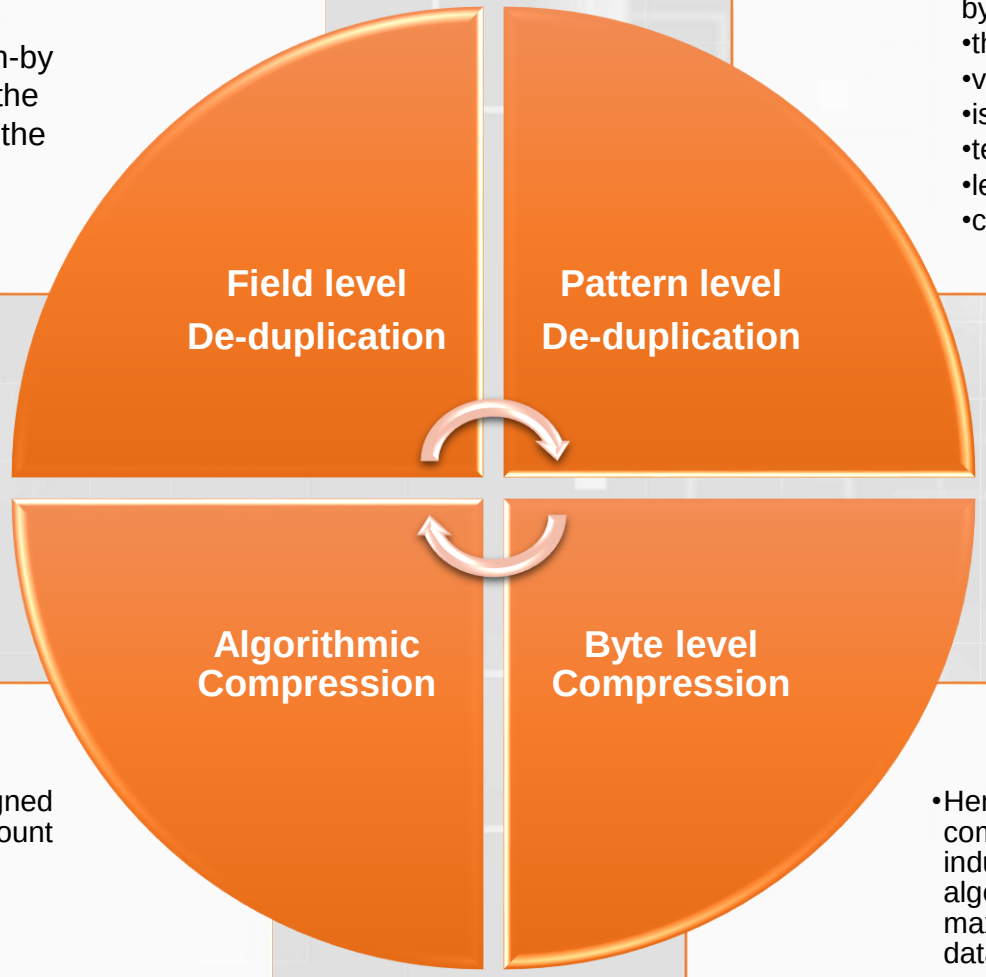
iSecureHL uses sophisticated data compression and de-duplication techniques to reduce the storage footprint by a factor of 20 or more.

- Involves processing the source data on a column-by column basis, reducing the dataset to only a tree of the unique values that each column holds




- Builds on field level de-duplication by further exploiting the ability to store only unique values of the tree branches. This is achieved using the same technique as used at the field level to work out the unique combinations.

- A series of techniques designed primarily to reduce the amount of disk required for storage.

- Here components are aggressively compressed independently using industry-standard byte compression algorithms tuned to obtain the maximum on-disk compression of the data.

# iSecureHL: 'Objective & Features'

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## Salient Features of iSecureHL

1. Generating and storing all IPDRs into a single platform and meet the Regulator's requirements.
2. Capturing details of destination IP address as per Regulator's requirement.
3. Building IPDRs through correlation of NetFlow data along with IP Data Records generated through packet data capture probe.
4. Correlating IPDRs with NAT records, to provide complete mapping of Source IP Addresses with translated IP Addresses.
5. Extracting IPDRs based on key parameters like MSISDN, IMSI, IMEI, Source IP Address and Destination IP Address.
6. Capable to handle trillion of records in efficient manner for faster retrieval
7. Probing and Decoding Layer 2 to Layer 7 Traffic.

# OUR PRESTIGIOUS CLIENTELE

## Some Of Our Key Clients

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AT&T

Telstra

ZOOM

BT

PLANETCAST

Ring Central

BSNL

UCC

MTNL

Republic of Mauritius

उत्तर प्रदेश पुलिस

BENGALURU CITY POLICE
CARE * COMPASSION * COURAGE

GUJARAT POLICE

महाराष्ट्र पोलीस
सदरक्षणाय खलनिग्रहणाय

APSFL
Andhra Pradesh State FiberNet Ltd

# OUR PARTNER NETWORK

## Key Partnerships With NEPs, OEMs & System Integrators

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DELL Technologies

भारत इलेक्ट्रॉनिक्स BHARAT ELECTRONICS

सी. आई. एल. CIL

Mahindra DEFENCE

KARVY KEEP GROWING

ZTE中兴

TATA CONSULTANCY SERVICES

Vindhya Telelinks Limited

GARLAND TECHNOLOGY See every bit, byte, and packet

Redington SEAMLESS PARTNERSHIPS

CISCO

JUNIPER NETWORKS

CUBRO NETWORK VISIBILITY

HITACHI Inspire the Next Hitachi Systems Micro Clinic

ixia

Silver Touch TECHNOLOGIES

Honeywell

NOKIA

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# Thank You


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