

IP Geolocation

The AIORI – Geo IP Research



Unveiling in-making
AIORI IP-Geo, Geofeed Search
and Analytics dashboard

The IP Geolocation

- IP geolocation is the process of associating an IP address or prefix with a geographic locality—such as a country, region, or city.
- It is important to remember that this is not the same as locating a person or device with certainty.
- It is best understood as evidence about where a network prefix is operated or observed, with a level of confidence and granularity that depends on the source.

One signal supports many decisions—with very different risk

Decision domain	Typical use	Cost of error
Performance	CDN selection, traffic engineering, language defaults	Low–medium
Security	Fraud scoring, anomaly detection, abuse triage	Medium–high
Policy	Content rights, tax, sanctions, jurisdiction	High
Public safety	Emergency routing and regional alerts	Very high



No single technique is sufficient; useful systems combine weak signals

Registry & routing

RIR registration, originated prefix, ASN and operator identity. Strong provenance; weak physical specificity.

Active measurement

Latency triangulation, traceroute, landmarks and topology. Observable; affected by path inflation and anycast.

Semantic & learned

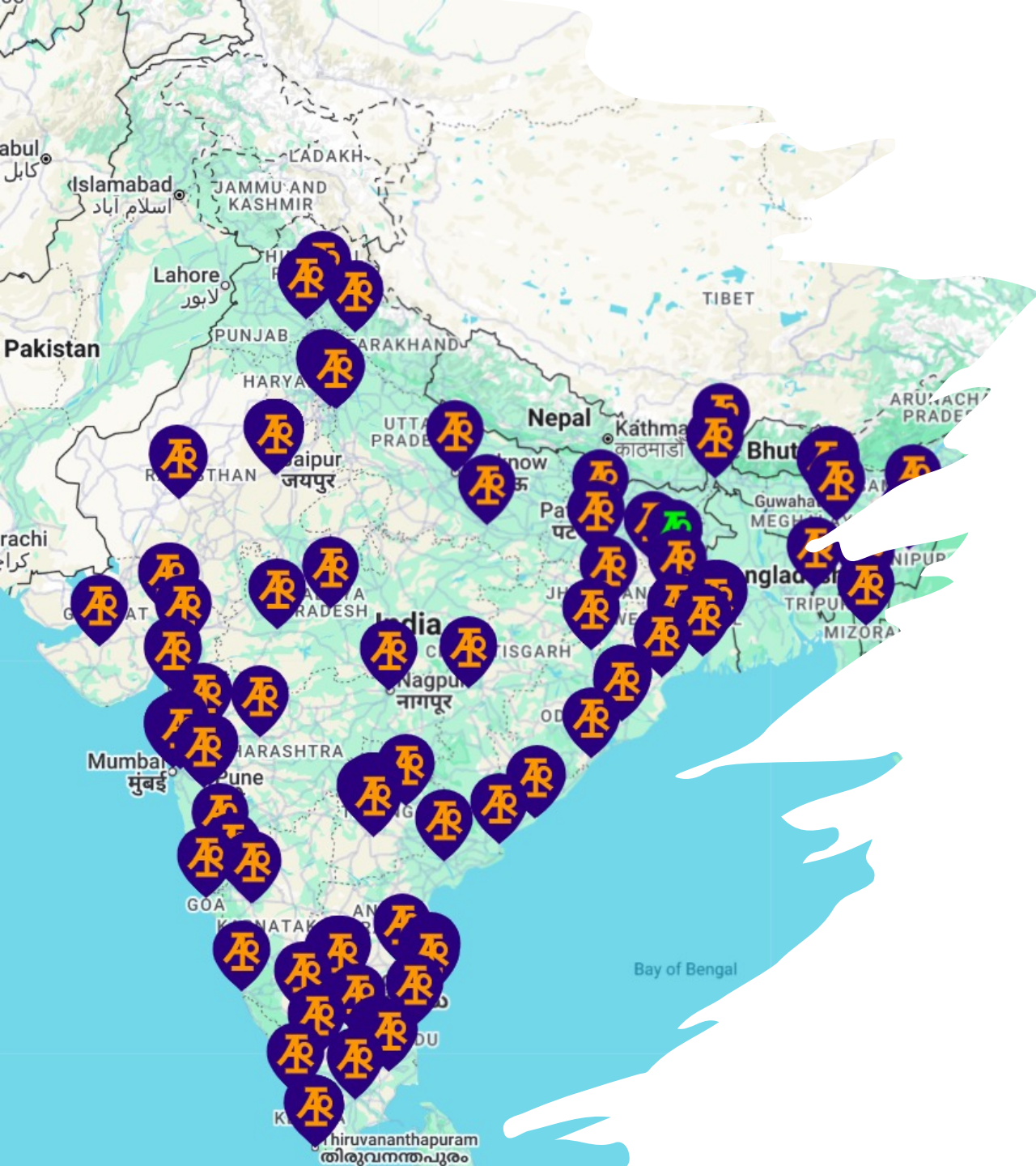
Reverse DNS, infrastructure labels, historical corrections and ML. Scalable; bias and drift can be opaque.

Operator publication

RFC 8805 geofeeds; discovery via RPSL (RFC 9632) or RDAP (RFC 9877). Direct intent; still requires verification.

Client/device signals

Consent-based GPS/Wi-Fi or an explicit network location hint. More direct; privacy and spoofing become central.



The AIORI Measurement Network

- 500 Anchors having Geolocations
- Anycast testbed in 10+ locations
- Capability of anchor-to-anchor measurement
- Browser Extension
- Mobile App

AVERAGE DEVIATION

MaxMind 432.2 km

IPinfo 329.5 km

Mean distance error

P90 DEVIATION

MaxMind 1011.5 km

IPinfo 1051.8 km

90% records below

P95 DEVIATION

MaxMind 1722.9 km

IPinfo 1662.0 km

95% records below

WITHIN 50 KM

MaxMind 69.1%

IPinfo 75.8%

Within 10 KM: M: 60.6% | I: 67.6%

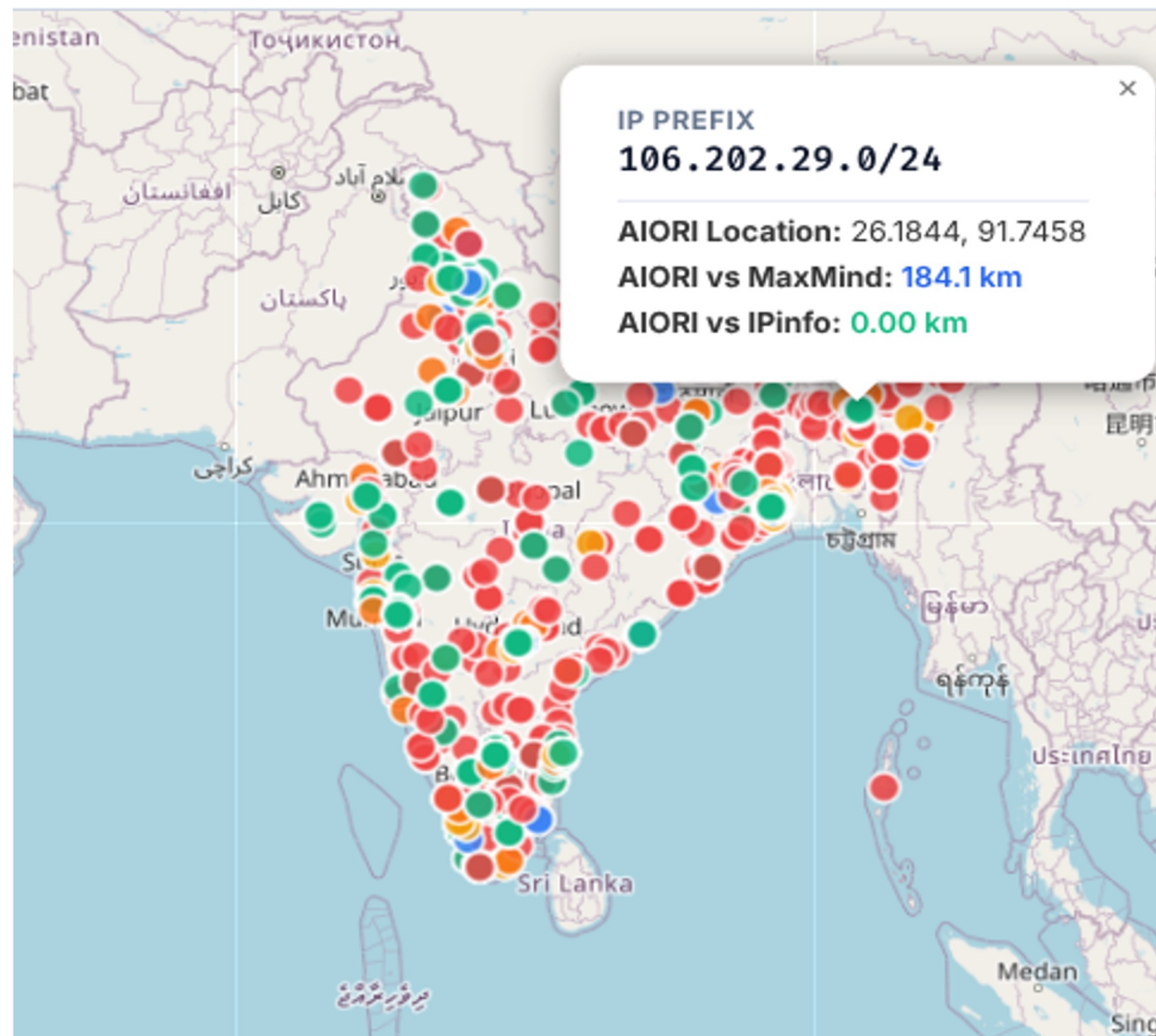
Deviation Analysis (IN)

Best Agreement Prefixes

Top 10 prefixes with lowest geographical deviation error.

Lowest Error

Prefix	MaxMind Dev	IPinfo Dev
2405:201:9002:30a0::/64	0.00 km	0.00 km
117.222.118.0/24	0.00 km	0.00 km
117.222.116.0/24	0.00 km	0.00 km
223.185.39.0/24	0.00 km	0.00 km
103.183.90.0/24	0.00 km	0.00 km
2409:40e4:2d:2c2e::/64	0.05 km	0.00 km
2409:408a:78d:cfc7::/64	0.05 km	0.00 km
152.59.142.0/24	0.05 km	0.00 km
106.220.60.0/24	0.05 km	0.00 km
103.78.181.0/24	0.08 km	0.00 km



Geofeed Prefix Coverage



- India:**
10,142 | 1.0% of total
- Asia Pacific:**
81,874 | 8.0% of total
- Non-Asia Pacific:**
934,528 | 91.0% of total

**Geofeed
Prefix
Coverage**

Geofeed Accuracy Analytics

 GEOLOCATION ACCURACY & QUALITY

Geolocation precision of prefixes associated with geofeed data.

Street Level City Level Country Level No Geolocation



Geolocation Quality Summary

India Street Level5.4% City Level82.5% Country Level12.2%	Asia Pacific Street Level12.9% City Level62.1% Country Level25.0%	Non-Asia Pacific Street Level20.5% City Level69.0% Country Level10.5%	No Geolocation 790 Prefixes without explicit location or postal code details.
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Key Observations/Questions

- **APNIC-region Geofeed adoption lags behind RIPE.**
What is holding back adoption, and how can it be accelerated?
- **Can we locate an IP—or justify a decision using that evidence?**
How should accuracy, confidence and impact be balanced?
- **IP geolocation must be verifiable, explainable and contestable.**
How can location claims be validated, understood and corrected?

Thank You

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