



GPRS mediation
solution revenue
assurance

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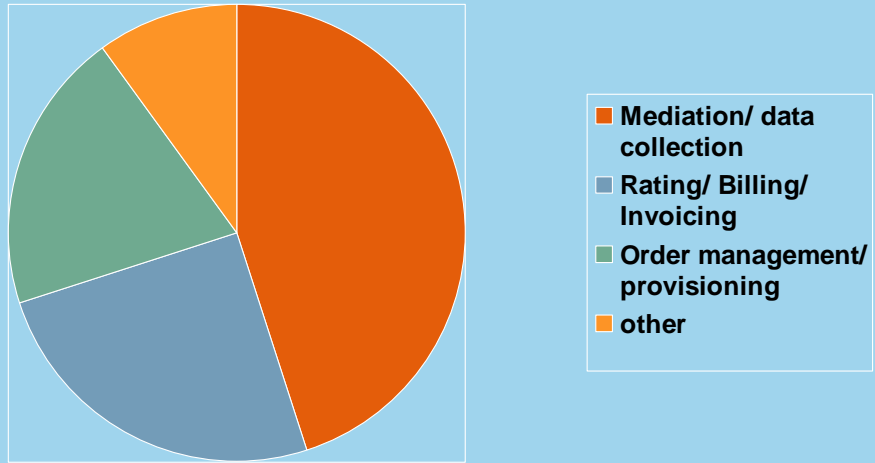
Focus of the talk



Source: Logan-Orvis

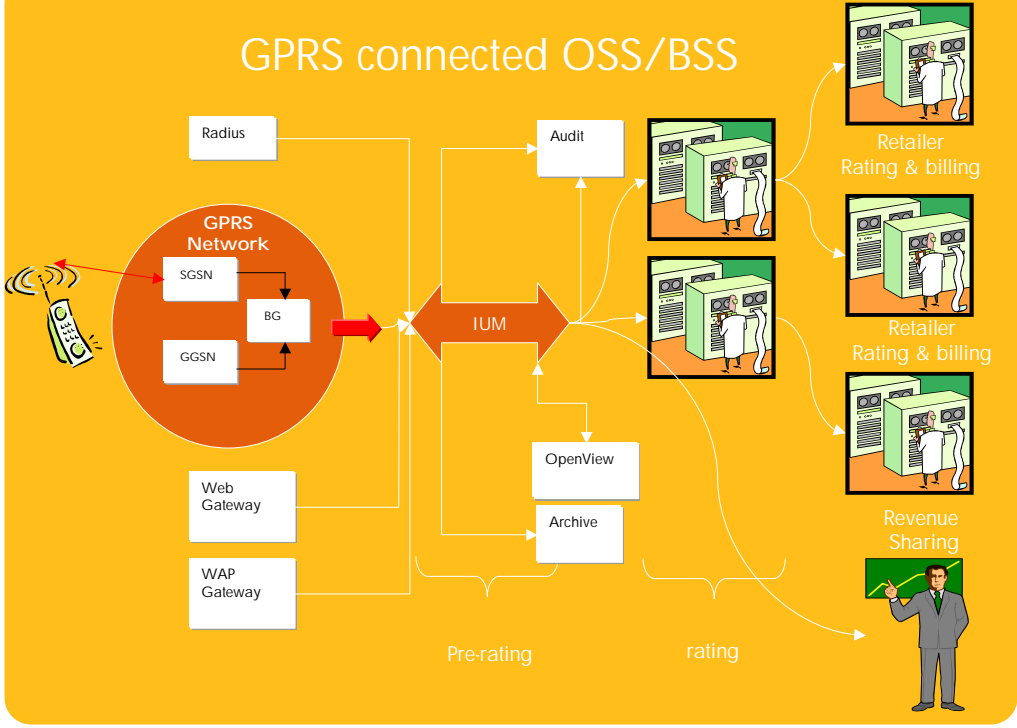
- Detect and Correct Revenue Leakage
- Fraud
- Churn
- Other Cost Minimization
- Interconnect Cost
- Revenue Maximization
- Regulate Pricing

Revenue leakage breakup by Operation



Source: IDC

GPRS connected OSS/BSS



Design center

Scale to Tier 1 3G data volumes

Handle out of order inputs

Process IP and service data

Ensure timely accurate delivery to:

Feed BSS appropriately

- Fraud of unusual activity ASAP
- Rating to feed retails etc
- Capacity planning

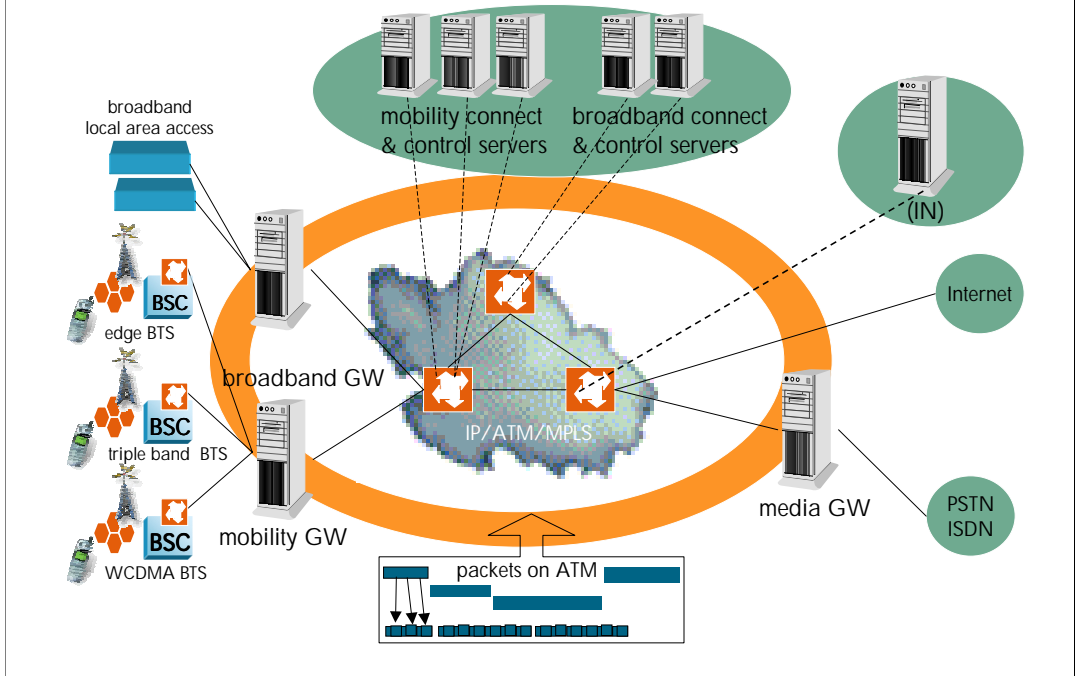


IUM revenue assurance goals



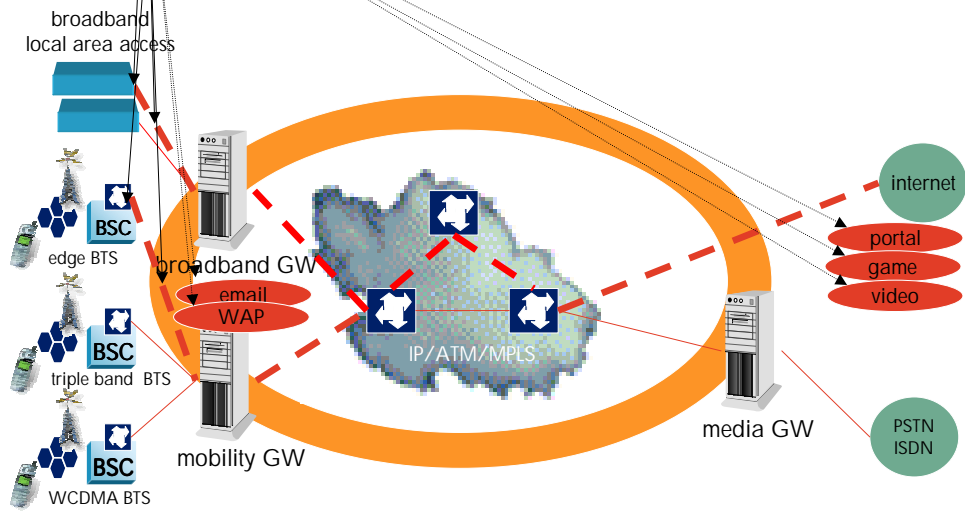
- provide error recovery & audit solution that fits with current operator processes
- Automate as much as possible to limit total costs
- Ensure operator's can leverage into 3G/IP investments

usage in the next generation network



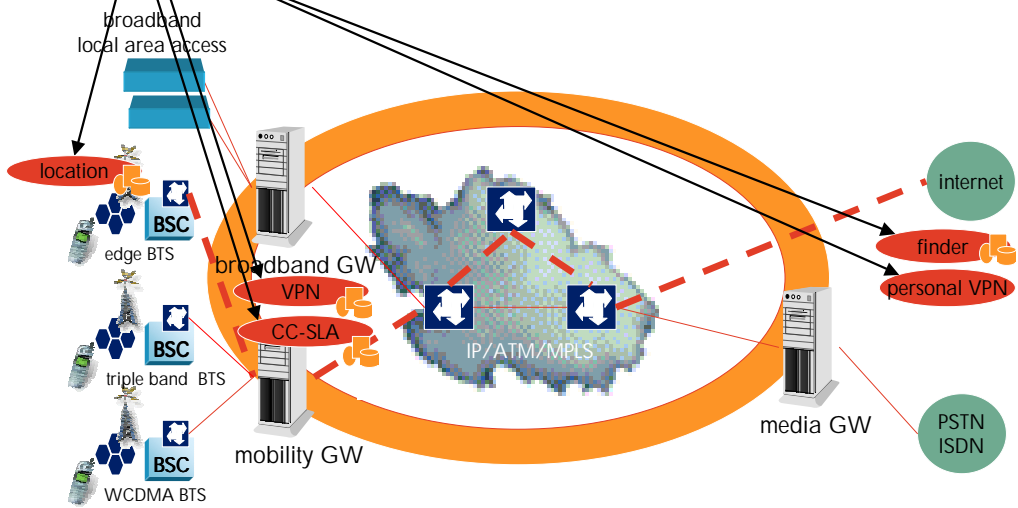
IP users have concurrent access to multiple services

- IP users have concurrent access to multiple services
- delivered via many packets
- of differing value, QOS and size

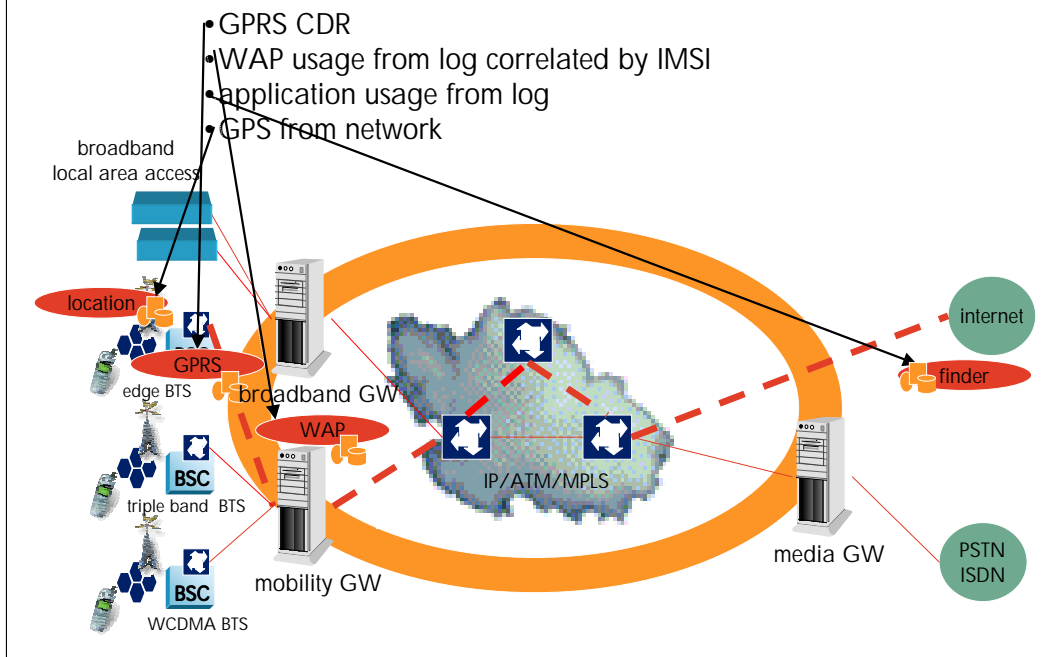


IP users will use many new applications as the network evolves

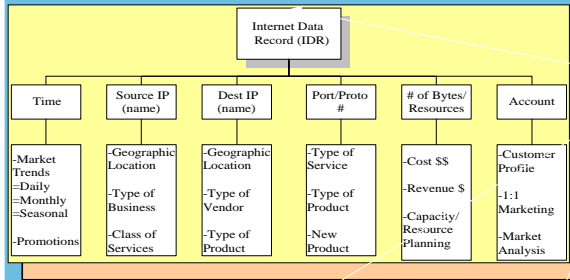
- delivered as network evolves
- linked to global applications
- SLA performance correlation



IP usage must be a composite of all asynchronous use events



IUM - Patented architecture for distributed mediation



IUM Plug and Play Mediation

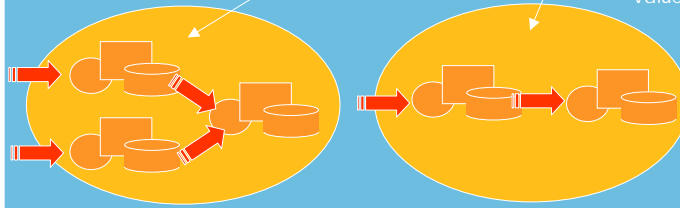
- Extensible, dynamic meta schema
- Parallelizable
- Pipelinable
- Normalized
- Distributable

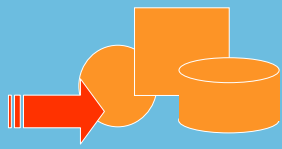


Flexible, Scalable system



Value & Profits





Encapsulator

- Java processor designed to read data streams
- Plug in parsers
 - create normalized record
- validation at record or file
 - integrators tailor with "parse-lets"

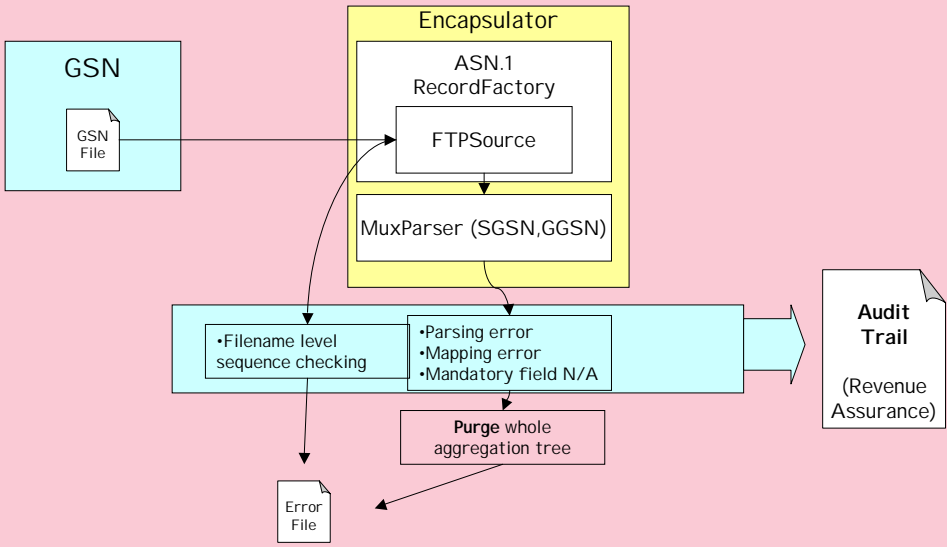
IUM – Aggregator (Rule engine)

- Java rules operate on normalized records
- Can validate semantics
- Decide on storage category

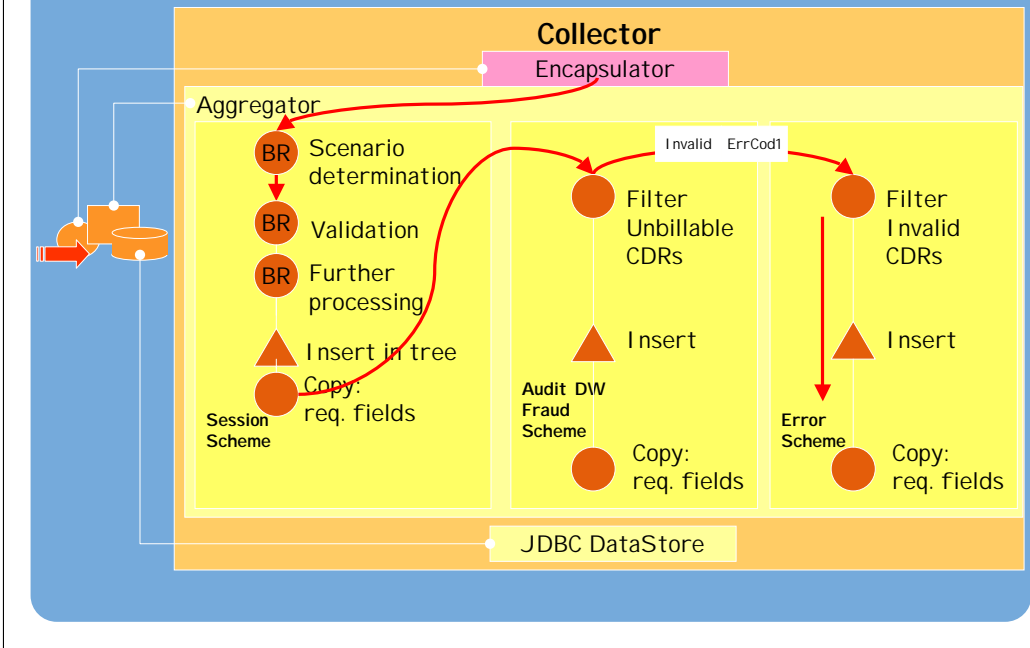
.Distributed data store

- Provides scalability & availability
- Provides output data in many formats

Encapsulator Error Management



Example Rule Engine Logic



New Fields required at NME level

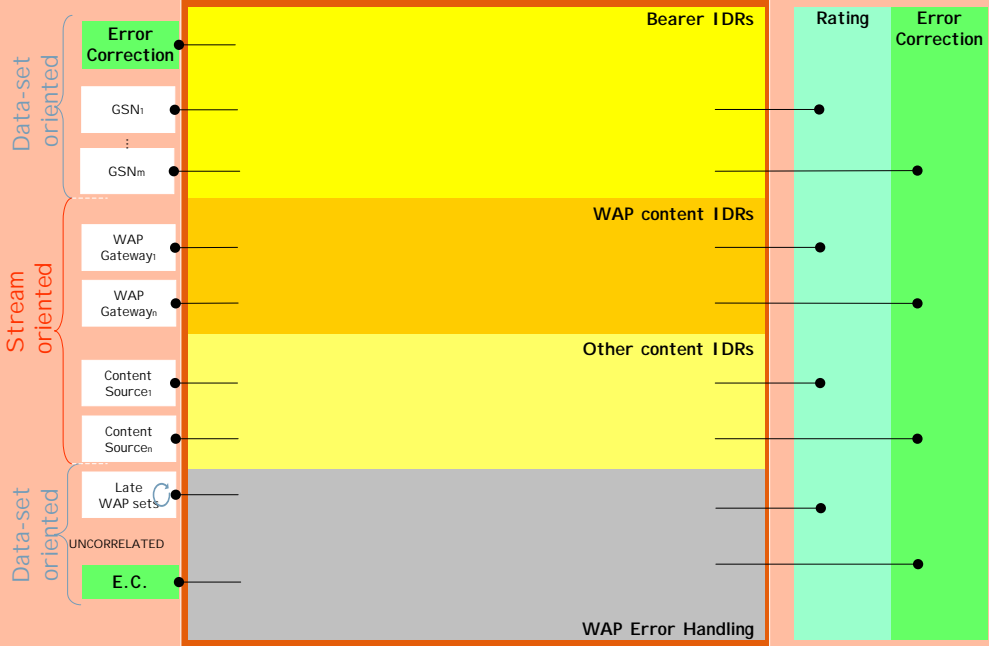
Business flow fields Existing fields



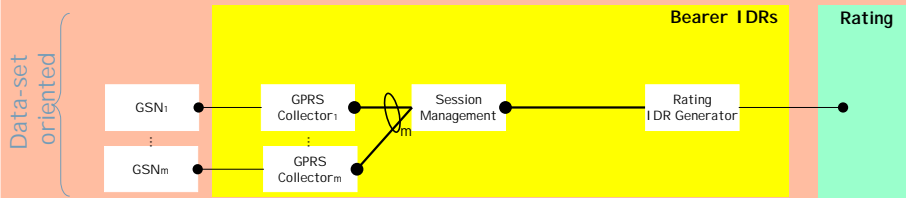
NME status	Error Code	Record Type	IMSI	Start Time	End Time	Uplink Volume	Downlink Volume	...	Other fields
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- | | |
|--|---|
| Possible values: <ul style="list-style-type: none">- billable- unbillable- invalid- etc.. | Possible values: <ul style="list-style-type: none">- failed date validation- failed SGSN id validation- failed GGSN id validation- etc.. |
|--|---|

overview IUM/G architecture

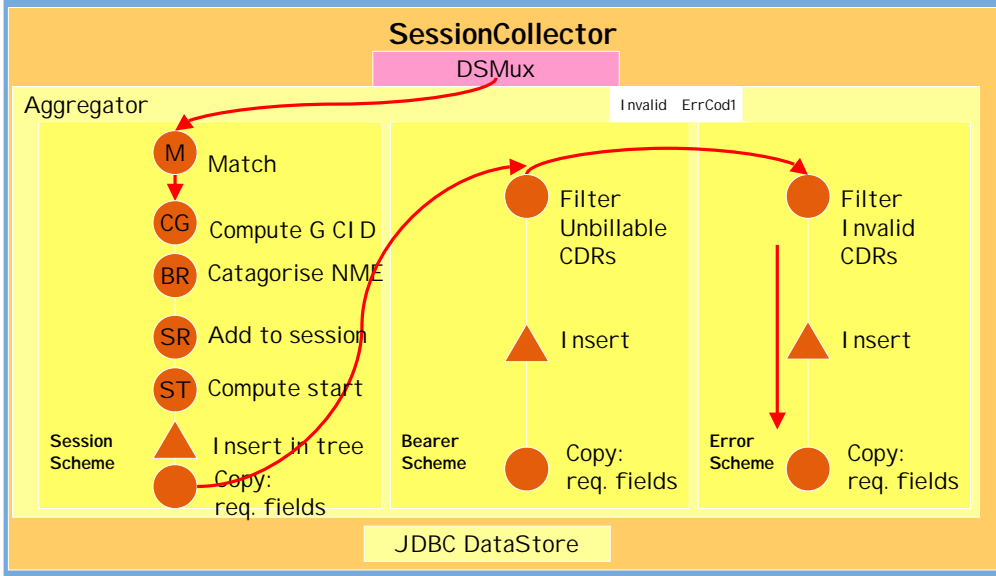


Bearer Flow

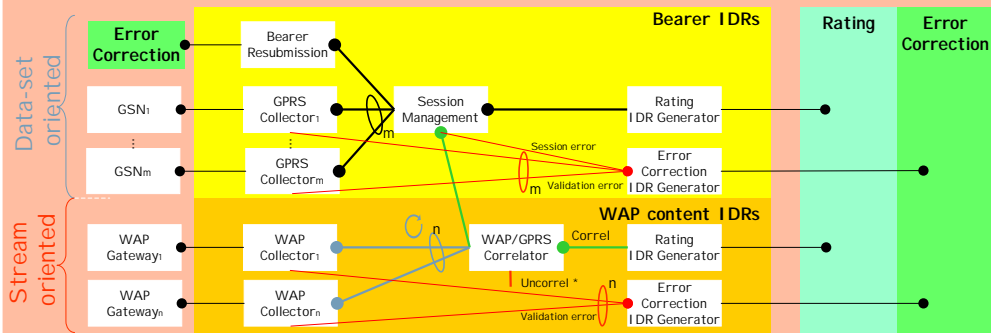


- Data-set based (GTP' or FTP)
- Shared session management (roaming etc)
- Underlying IUM 3.1 data-set based collector operation, prioritizes Bearer data processing

Example Session Manager Configuration

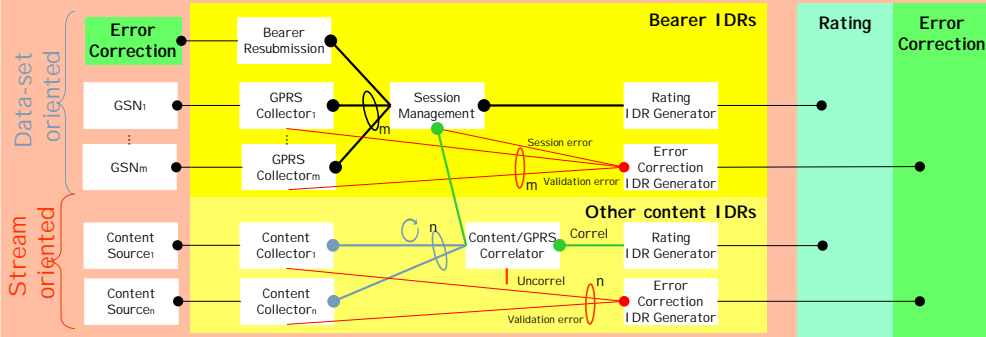


WAP Correlation



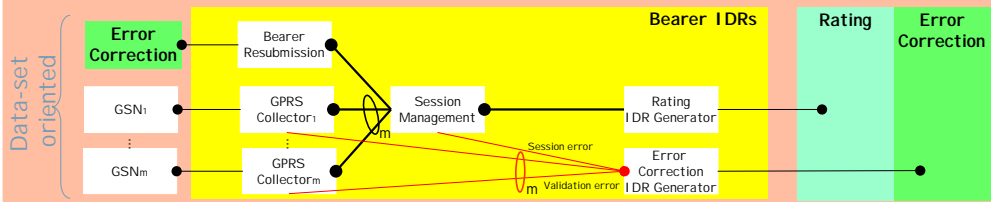
- WAP processing is performed using standard IUM stream-based flow
- High-performance correlation
- Introduces skip behavior for late WAP sets (see WAP Error Handling)

Correlation with other Content Sources

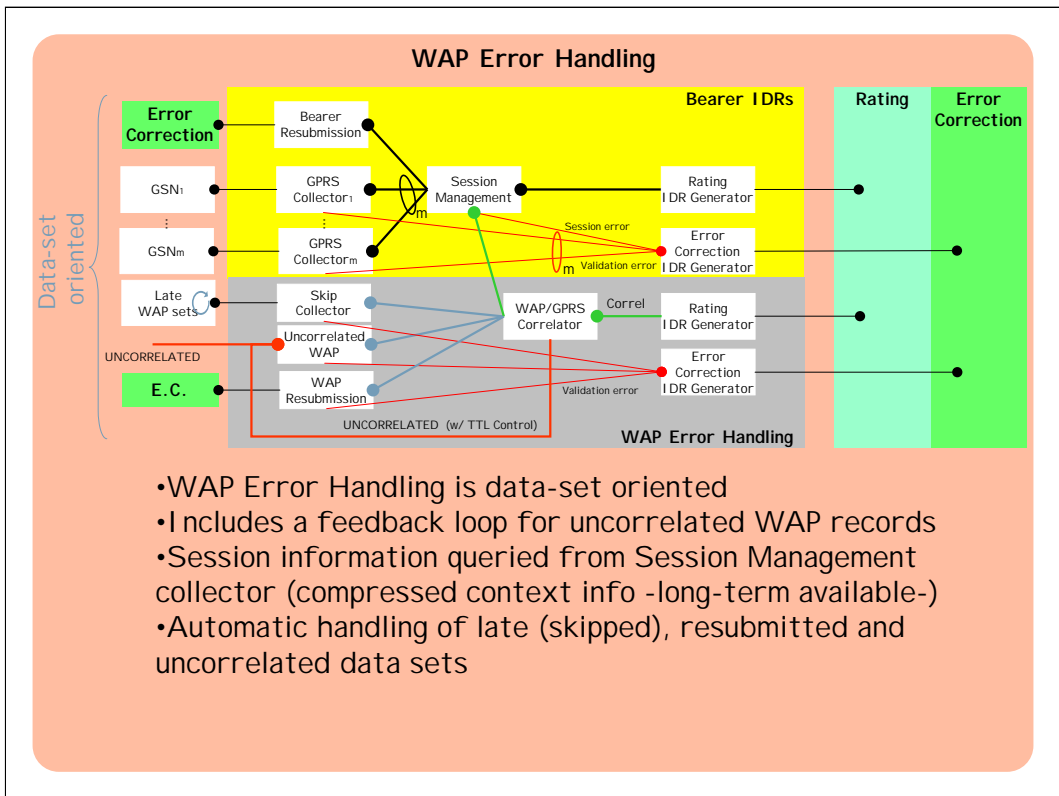


- Correlation with other Content Sources is based on standard IUM stream-oriented flow
 - High-performance correlation
 - Introduces skip behavior for late data sets
-
- Treatment of uncorrelated/late content NMEs depends on the volume of the Content Source (ie. probably discarded if Netflow)

Bearer Flow (including error handling)



- Data-set based
- Includes error handling in the same flow (late and resubmitted files)



audit components

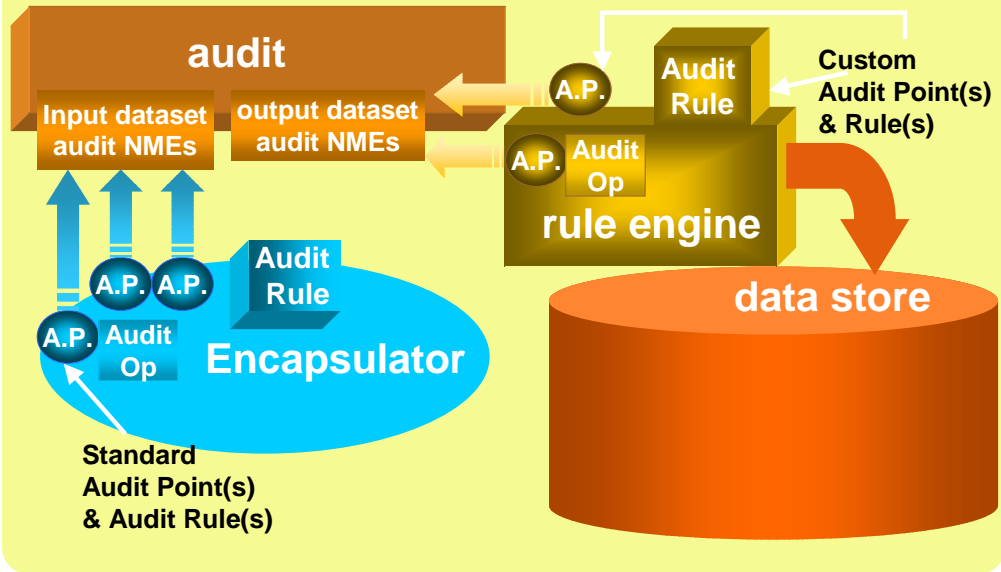
business audit

gathers the usage metrics required to follow the usage data flow from data sources through the IUM system and on to the consuming applications.

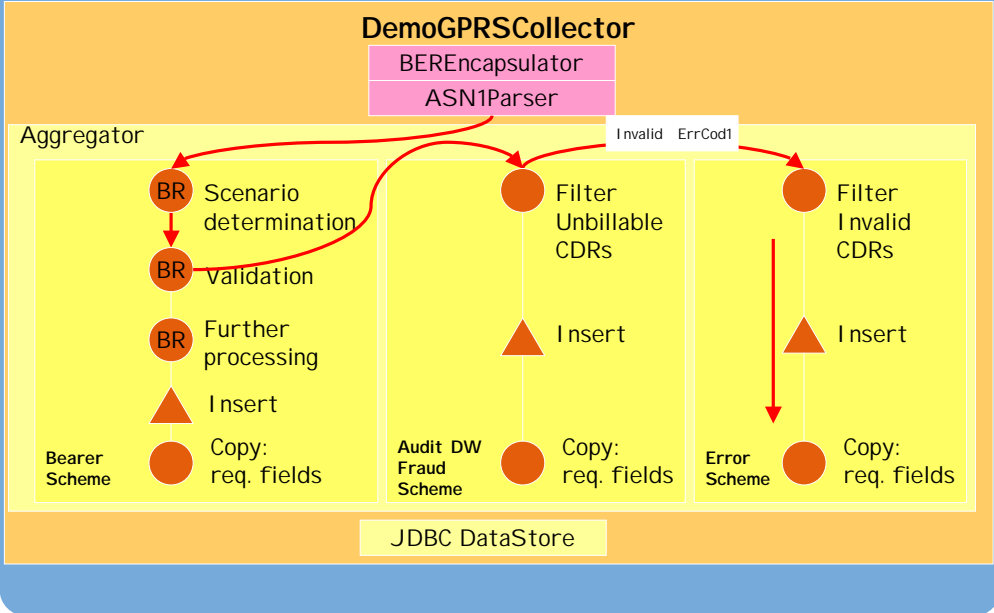
operational audit

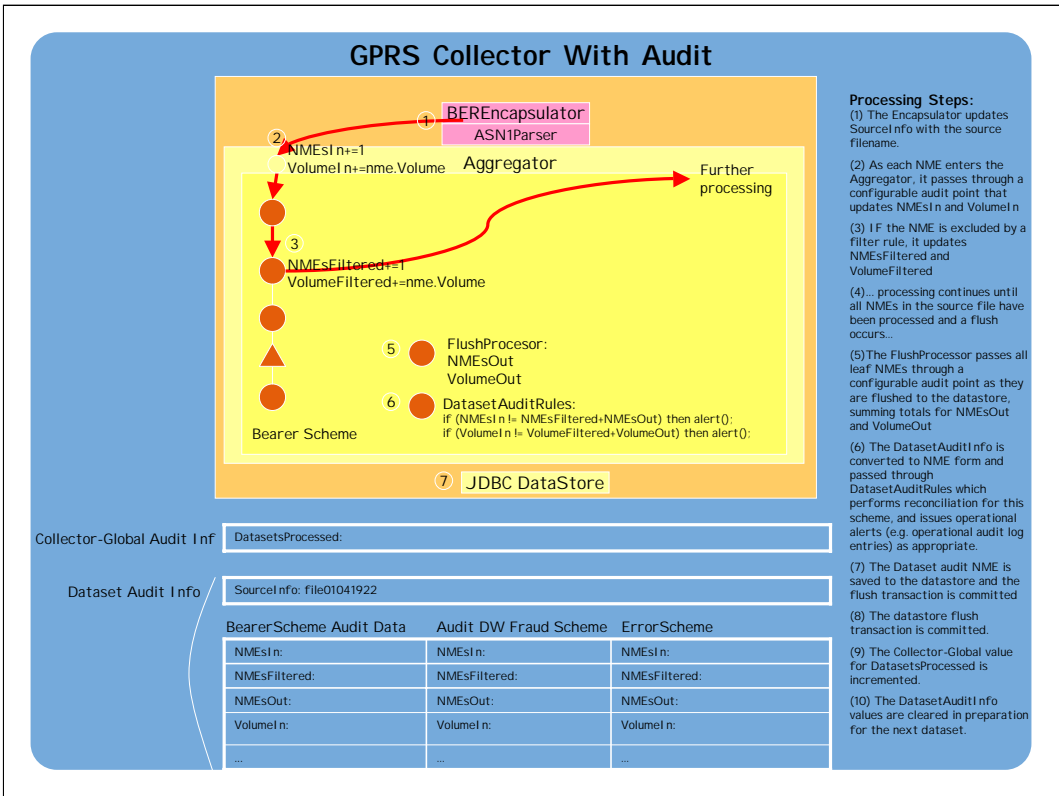
logs all operational events that help trace through the data paths and events that may have impacted the usage metrics.

business audit implementation



Example GPRS Collector Configuration (without audit)





(1) The Encapsulator updates SourceInfo with the source filename.

(2) As each NME enters the Aggregator, it passes through a configurable audit point that updates NMEsIn and VolumeIn

(3) IF the NME is excluded by a filter rule, it updates NMEsFiltered and VolumeFiltered

(4)... processing continues until all NMEs in the source file have been processed and a flush occurs...

(5) The FlushProcessor passes all leaf NMEs through a configurable audit point as they are flushed to the datastore, summing totals for NMEsOut and VolumeOut

(6) The DatasetAuditInfo is converted to NME form and passed through DatasetAuditRules which performs reconciliation for this scheme, and issues operational alerts (e.g. operational audit log entries) as appropriate.

(7) The Dataset audit NME is saved to the datastore and the flush transaction is committed

(8) The datastore flush transaction is committed.

(9) The Collector-Global value for DatasetsProcessed is incremented.

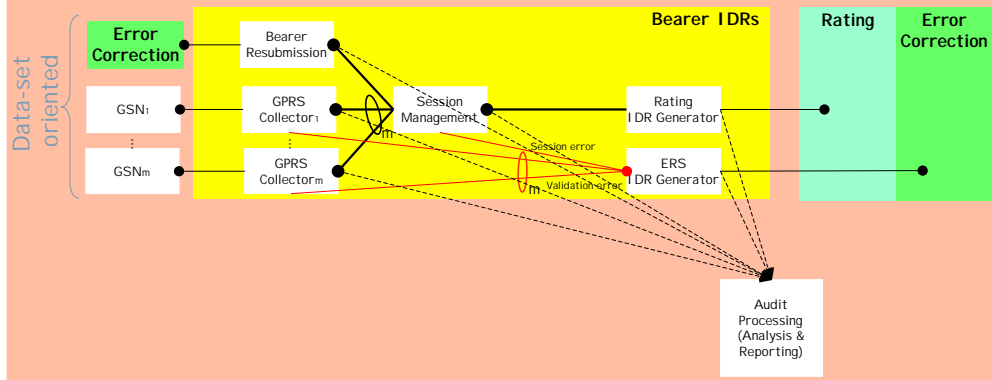
(10) The DatasetAuditInfo values are cleared in preparation for the next dataset.

Dataset Audit Data Storage and Access

DatasetID	SourceInfo	StartTime	EndTime	Scheme	RecordsIn	RecordsFiltered	RecordsOut	VolumeIn	VolumeFiltered	VolumeOut
Dataset1	file01041922	2200	2300	BearerScheme	500	20	480	1500	650	850
				AuditDWScheme	500	470	30	1500	1420	80
				ErrorScheme	500	490	10	1500	1430	70
Dataset2	file01041923	2300	2400	BearerScheme	350	15	285	900	475	425
				AuditDWScheme	350	340	10	900	895	5
				ErrorScheme	350	345	5	900	885	15
...										

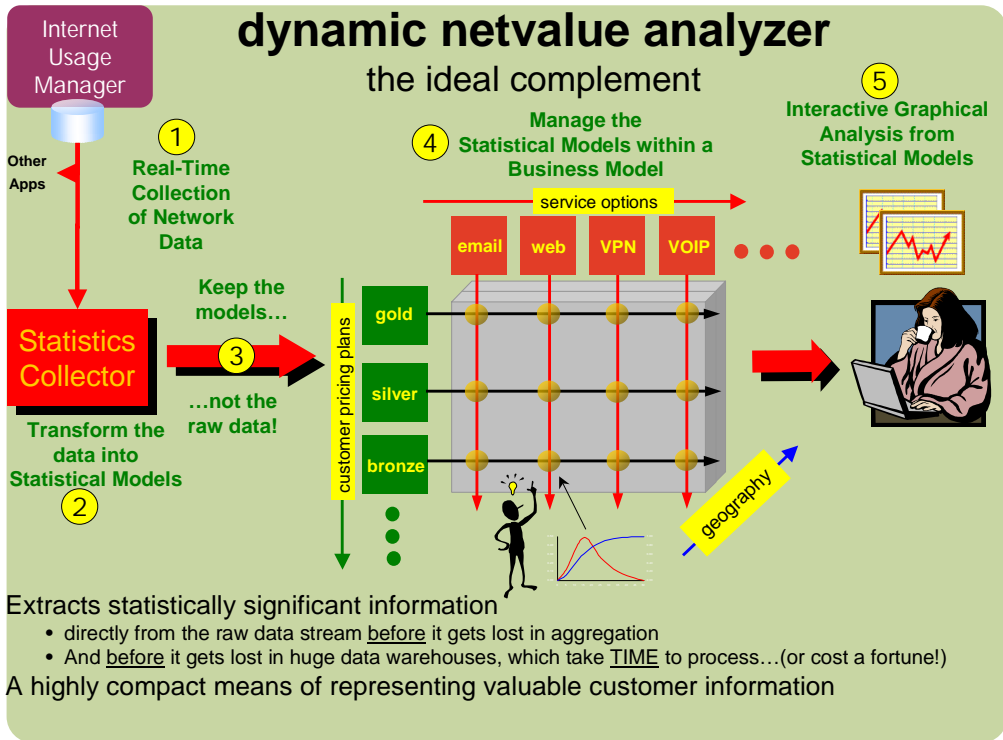
IUM Business/Usage Audit Data is stored in a database and is queryable through the standard IUM APIs for usage data.

IUM Deployment Audit Data Processing



Audit can look across IUM collectors to assess leakage

Audit processing (analysis, reporting, etc.) for the full IUM deployment can be performed by a client that queries audit data from the collectors. The audit information is sufficient to enable dataset tracing, IUM end-to-end reconciliation, etc.

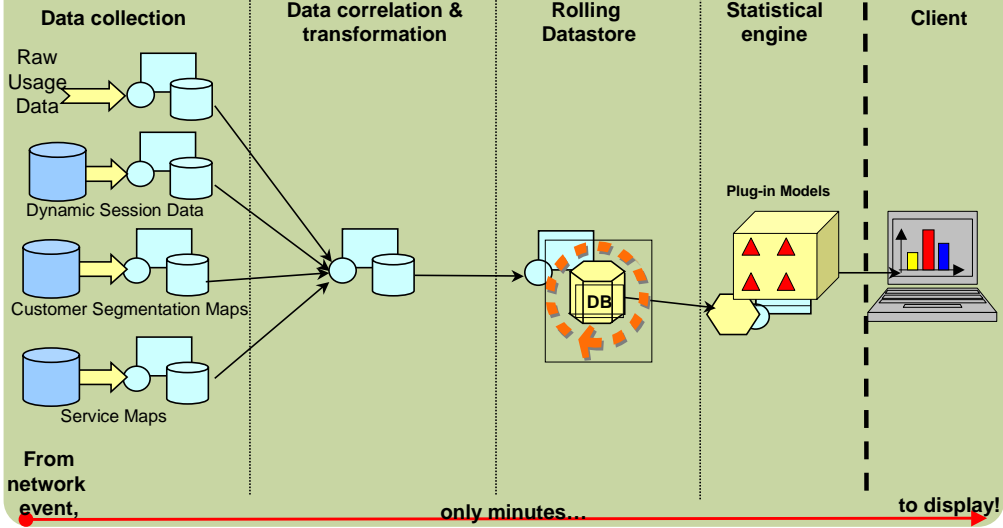


DNA End-To-End Topology

Config Server

CORBA

DNA Product



IDC / dedicated web-hosting

background:

- SP targets mid to large businesses
- SP offers various fixed monthly pricing plans
- would like to implement usage based pricing such that customers using bandwidth > a 50 GB allowance will be also be charged a variable fee/GB
- the DNA pilot monitored only ~2000 customers of their Dedicated Server customer base.

issues:

- currently, no visibility as to usage by customer
- unable to determine which customers are above or below a specified allowance, and by how much

question:

- what is the financial impact of implementing usage-based pricing?

dynamic netvalue analyzer business results

- using HP DNA, this SP discovered that **14%** of their customers on Dedicated Server plans were exceeding 50 GB/month.
- this excess usage ranged up to a **dozen Terabytes!**
- the opportunity is to capture additional revenue with usage-based pricing.
 - without visibility as to actual bandwidth usage/customer, all customers can only be assessed a fixed monthly charge.
- DNA easily identified an immediate incremental revenue of over **\$470 K / month** while monitoring only a portion of the subscriber base.

DNA Analysis – Understanding Customer Behavior: What % of my subscriber base is affected?



broadband access

background:

- DNA pilot collected statistics representing 7.3 TB of internet data and 44K user accounts
- SP offers various fixed monthly pricing plans with variable components
 - Traffic was segmented and analyzed by DNA in real-time into 9 pricing plans with multiple service types.

issues:

- understand distribution of customer usage
- revenue growth through increased customer base
- upsell high-end users to premium plans

question:

- can I lower prices to attract new customers without risking my revenue stream?

DNA Analysis – Understanding Customer Behavior: WHO is doing WHAT?



dynamic netvalue analyzer business conclusions

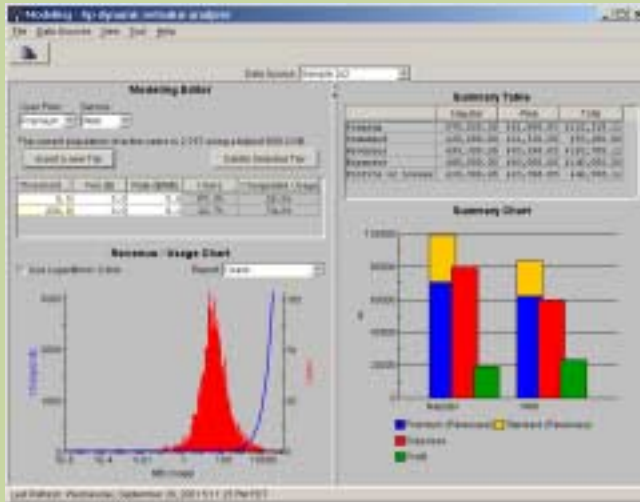
- The interactive financial modeling capabilities within DNA enables the SP's business analyst to explore many different financial scenarios based on his actual customers' usage profiles.

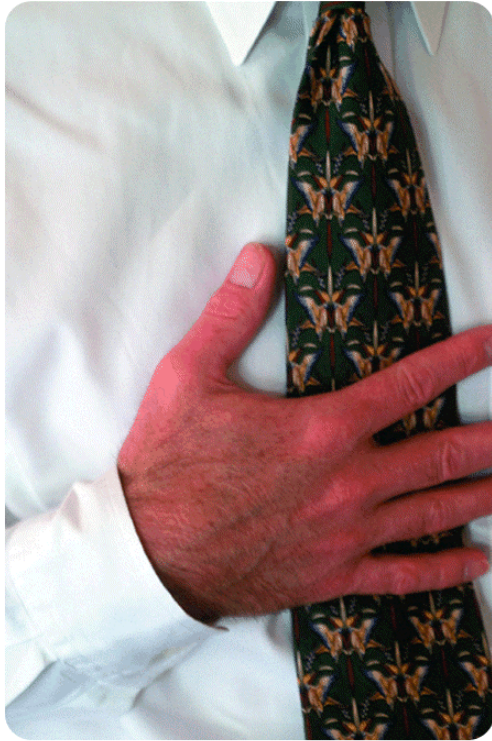
For example:

- lowering fixed fees by 50%
- and setting a new usage threshold and usage rate
- results in the same revenues!

This will attract many new customers and create financial incentives for high-end users to migrate to a premium plan.

DNA Financial Modeling – Impact of Various Usage-based Pricing Plans





Questions?

Thankyou

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