



The challenge of service diversity

Bogdan – Andrei Iancu

Voice System

bogdan.iancu@voice-system.ro



Services and solutions

- solution \neq service
- but there is a relevant service for each solution
- solution = \sum (services)
- tight interdependency among services (no standalone service)
- the **efficiency of a solution** is given by
 - the number of included services (focus on the primary services)
 - the complexity of service integration



“Fog of War” (I)

- each service may recursively force the usage of a new set of services
- **Key question:** when to stop?!

Show case I – Trunking solution

- trunking
 - peering
 - security, group definition
 - load-balancing
 - failure detection, failover



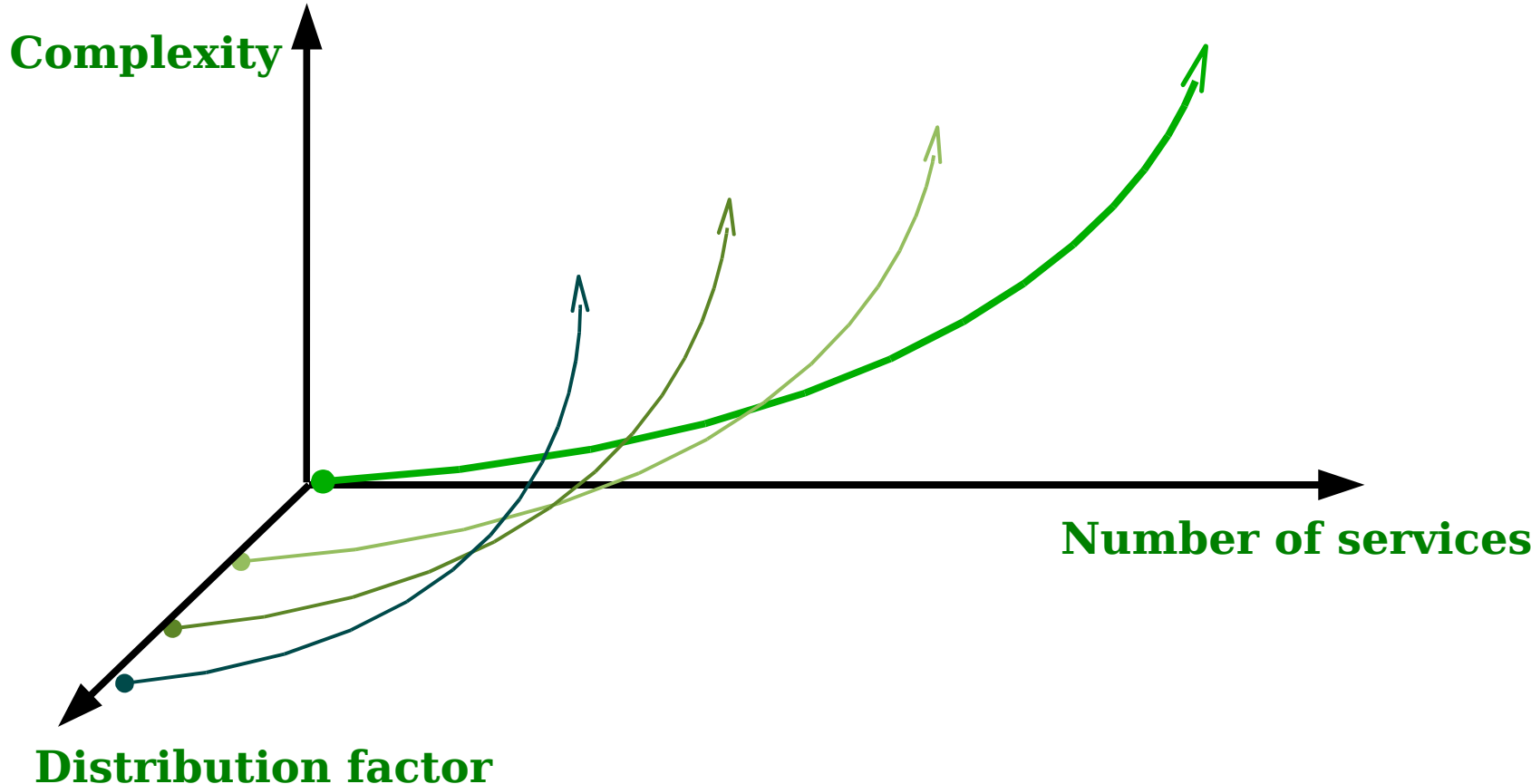
“Fog of War” (II)

Show case II – Residential solution

- SIP peering
 - ENUM, interdomain trust, spam detection
- PSTN termination
 - DID allocation, LCR, inbound and outbound
- Web interfaces
 - load balancing, triggers, DB integration
- High-availability
 - replication, synchronization, failover



Solution complexity



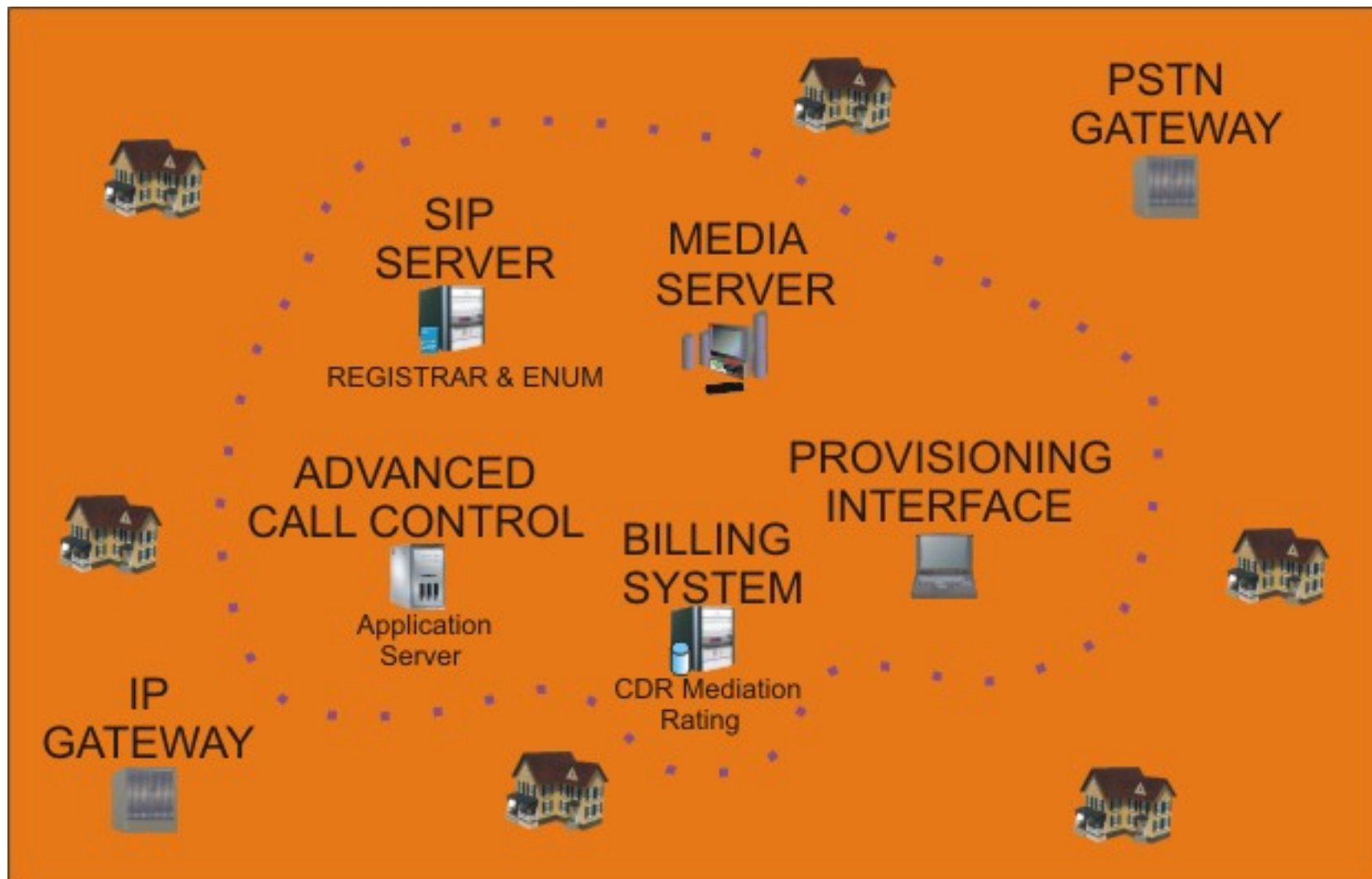


Distributed services

- service distribution increases the complexity of the solution exponentially with the number of services.
- it cannot be avoided because of:
 - geographic distribution of subscribers and resources
 - increasing load on the system
 - high-availability reasons

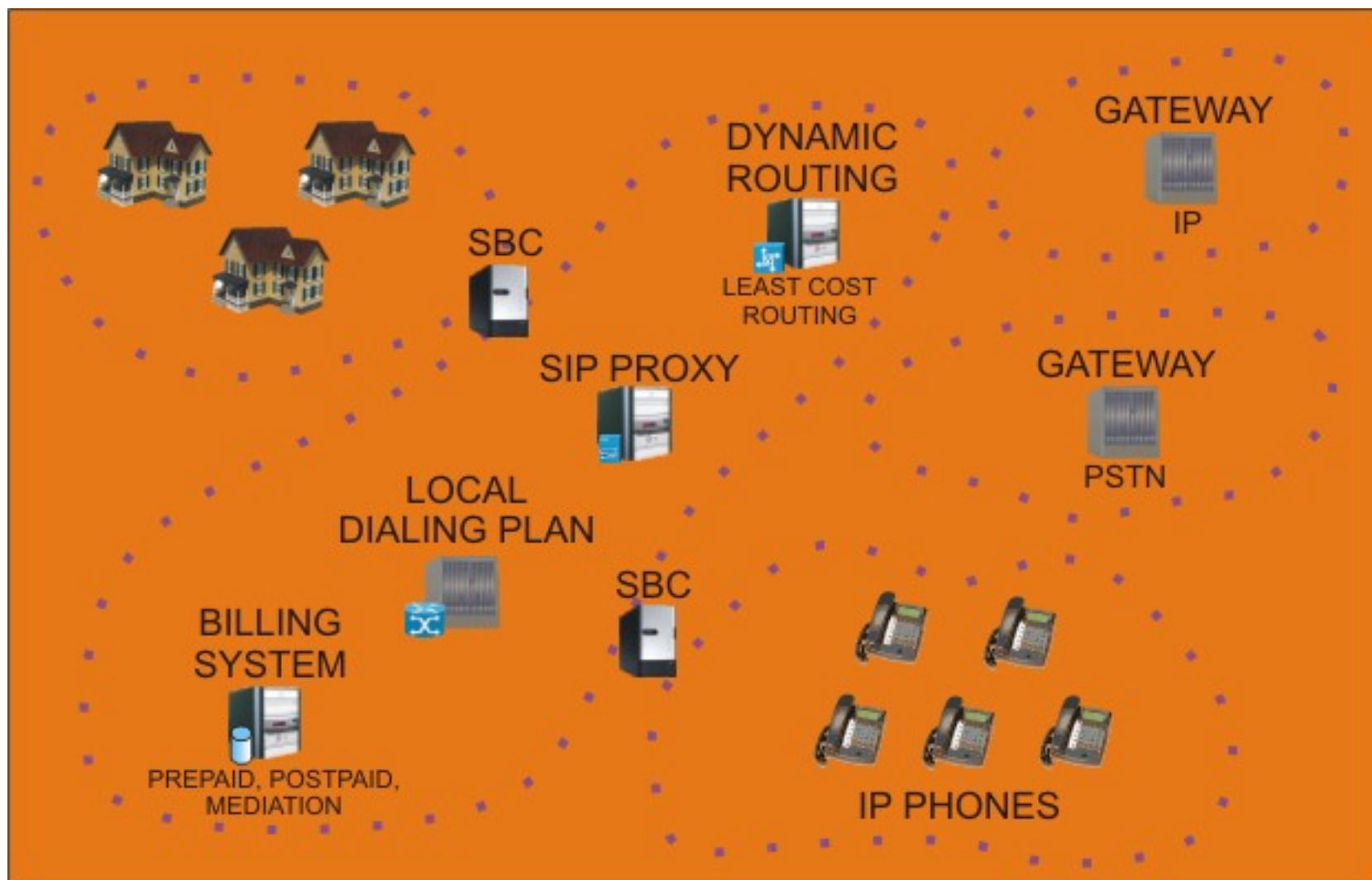


Distributed - showcase





Distributed – show case





Distributed services (II)

- distribution can be made on several level
-> you need to make a compromise between the distribution factor and overall complexity.
- it differently apply to routing logics and resources
- distribution implies bidirectional data flow:
 - spread configuration and routing info
 - gather CDRs, reports, statistics



Classes of solutions



Carrier grade

- trunking means high traffic and multiple peers:
 - dynamic and complex routing
 - load-balancing and traffic shaping
 - interconnection policies
- carrier grade implies:
 - service and physical distribution
 - optimize performances
 - data re-design
 - sever security



Carrier grade (II)

- high availability is a major requirement:
 - PSTN termination – auto-detection and traffic redirection
 - SIP peering – re-routing based on agreement policies
 - service availability – a combination of hardware/server redundancy with physical distribution
- scalability cannot be ignored



Hosted solutions

- **White-label solutions** – the key question is how much “white” the solution can offer?
 - flexible enough to incorporate customer's own resources?
 - CDR aggregation and reformatting
 - reselling levels for billing
 - dialing plan and security policies
 - routing logics



Residential solutions

- end-user presence makes it more challenging as model and technology:
 - advanced user interfaces
 - NAT traversal and QoS
 - devices to be used (RFC compliant)
 - non-SIP service integration: SMS/MMS, PSTN&GSM, Yahoo, GTalk, Web&Email
 - per-user complex routing and filtering services



Residential solutions (II)

- it is a highly open system (to the internet) ⇒ needs more protection form the outside intrusion
- complex services ⇒ more protection due vulnerabilities
- more end-user and provider specific services leads to an increased overall complexity
- in most of the case, a distributed alternative is required; the answer is not simple because of the overall complexity.



Billing solutions

CDR generation/mediation in the context of advanced services (like CF).

Rating plan flexibility and complexity.

- **PostPaid:**

- easier and affordable
- off-line processing versus no real-time call control

- **PrePaid:**

- complex and more expensive
- real-time call control versus intensive real-time processing.



Conclusions

Avoid complexity penalties because of service handling!

- identify **only** the important and relevant services needed for your solution.
- it is critical to have the knowledge to properly integrate the services into your solution.
- do distribution only if really needed and only for services you have to.
- experimental solutions may work, but they do not guarantee security and performance!



Solutions

Voice System's answers to these conclusions:

- “know-how” via consultancy:
 - design, implementation and deployment of customized OpenSER solutions
 - distributed solution
- “out-of-the box” solutions:
 - Enterprise SIP Platform for service providers
 - PrePaid Carrier class engine
 - Far-end NAT traversal solution
 - Carrier grade balancer and router