

Griffin - Least Cost Routing for Carriers

Dave Pinckney & Chris Tooley
Excel Telecommunications

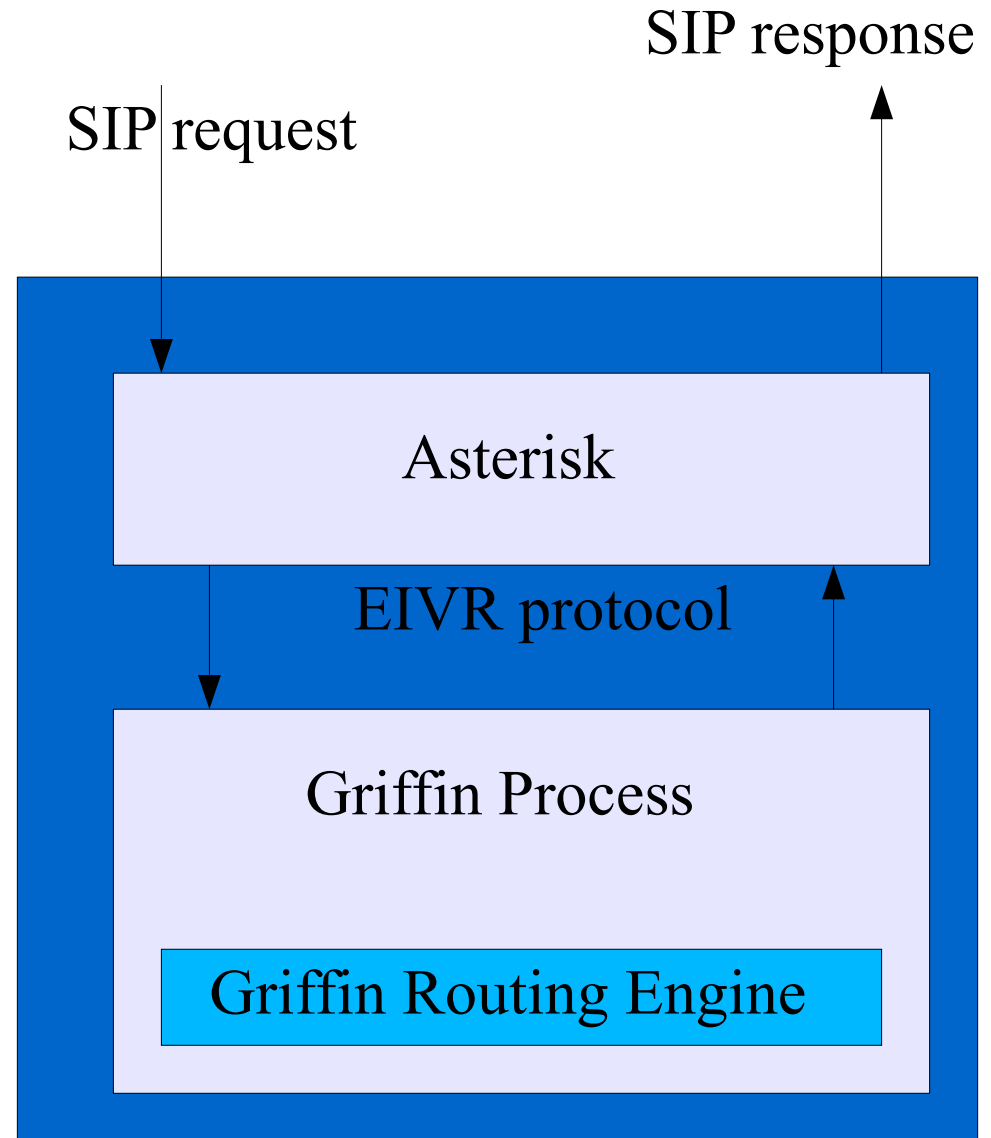
Introduction

What is Griffin?

- Least Cost Routing for a Long Distance Carrier
- Route lists for directing calls on LD backbone
- Carrier-class performance
- NANP and IDDD routing
- Load-balancing, and tactical response to issues
- Vendor management, by dialcode

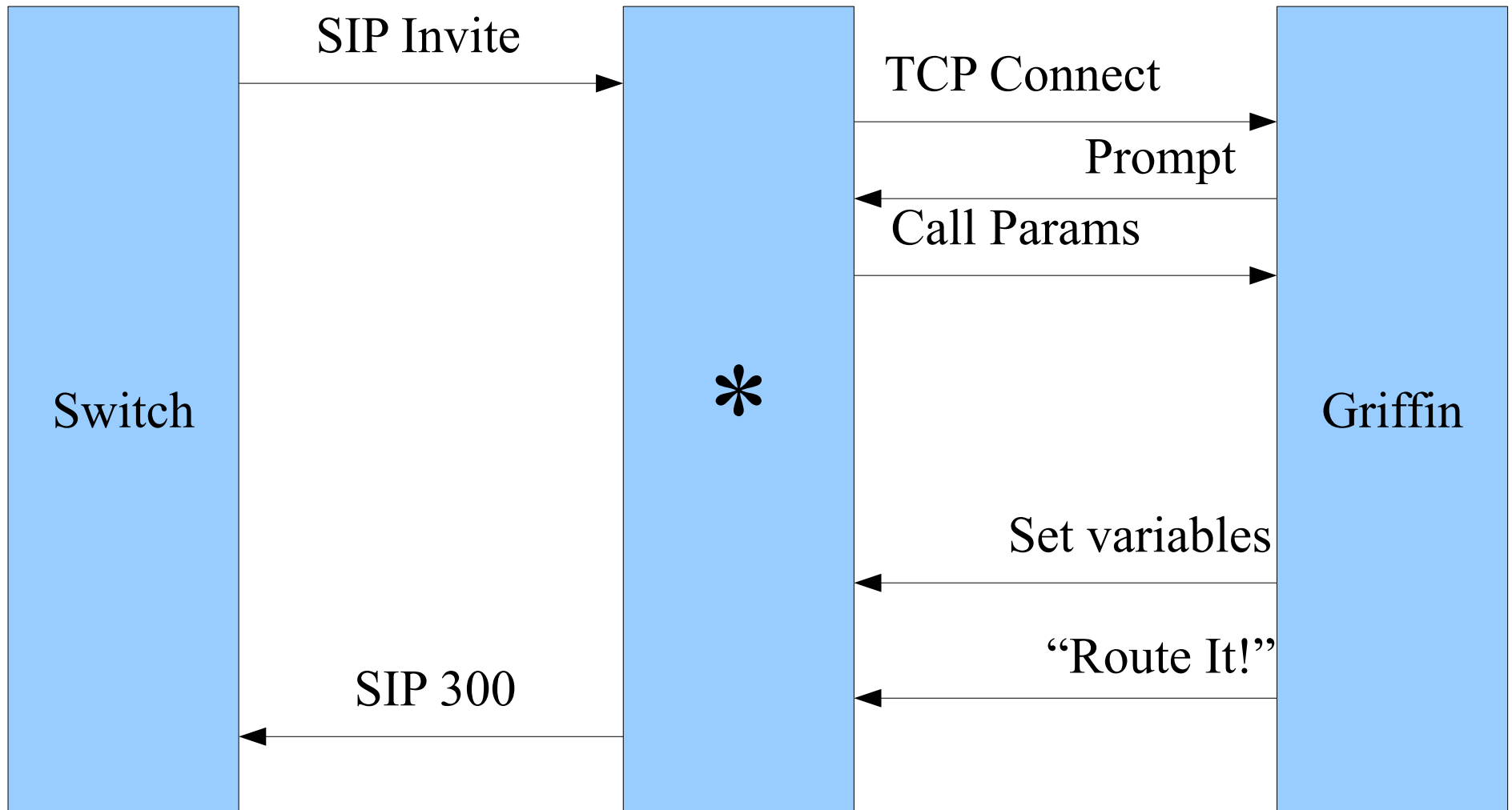
Where Does it Fit?

- SIP request/response
- Uses * SIP stack
- EIVR between * and Griffin process
- Modular architecture is SIPllet-ready



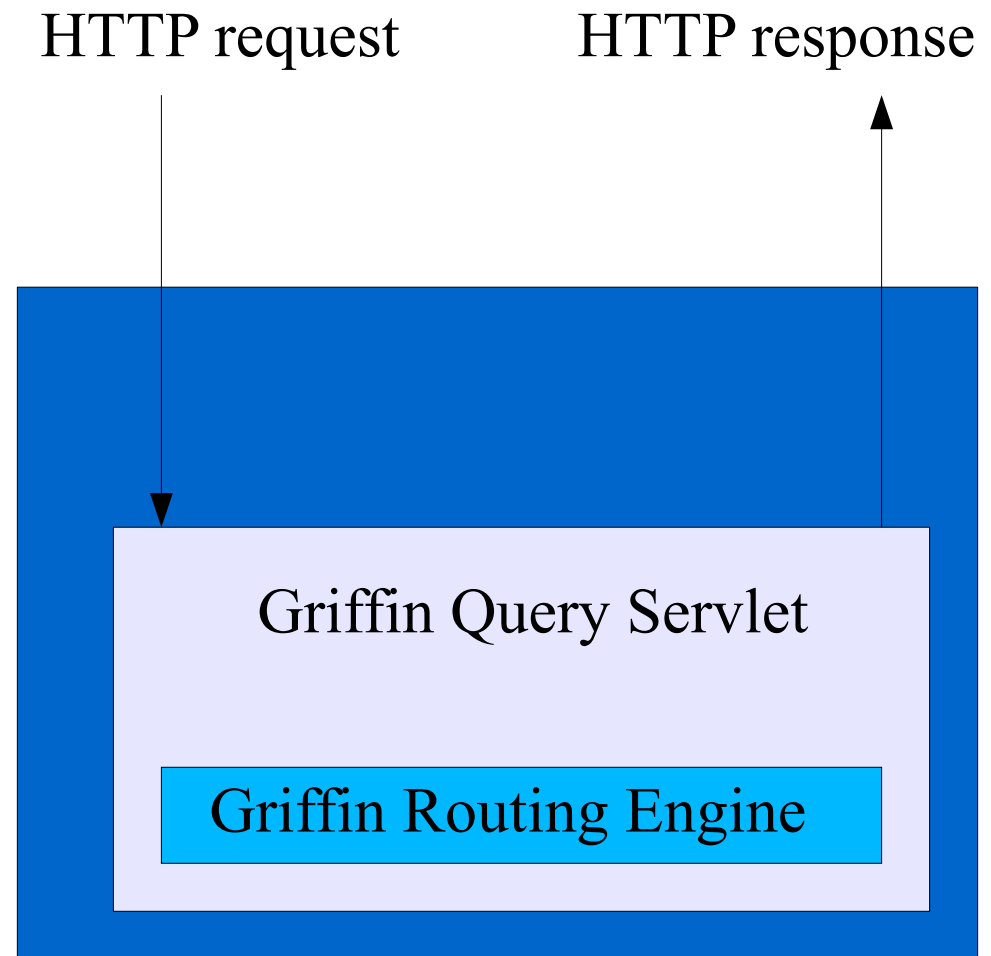
How Griffin Works

Message Flow



Standard Interfaces

- Switch sees standard SIP request/response
- Modular architecture
 - LCR engine plugged into HTTP servlet for preview queries
 - May be plugged into a SIPlet later



LCR Calculation

- Inspect call parameters to select service offering
- Intersect capable TGs with destination TGs
- Attach appropriate rate sheets to trunks, sort
 - Nearest matching dialcode
 - Feature Group D added
 - Incoming carrier removed
- Apply tactical routing

How Asterisk Fits In

Asterisk Uses for Griffin

- Uses in Asterisk directly
 - As a way to determine which routes to use for dialing out a call
- For providing routing information to external sources
 - SIP is the first implementation
 - Other IP protocols can be easily supported

Asterisk SIP Messaging

- INVITE Message
- 300 Multiple Choices response
- Handling Errors
 - No routes available: 503
 - Address Incomplete: 484
 - Unallocated Number (ie: Invalid npa-nxx): 404

Asterisk EIVR Messaging

- Route Request
 - Information passed in via Parameters to EIVR
- Routing Data
 - Information set as channel variables in dialplan
- Route Response
 - Uses the channel driver's route_response mechanism to respond in a channel specific manner

Routing Adjustments

Types of Route Tuning

- Load balancing – Randomize order of equal-cost trunks every request
- Dialcode blocking by customer/service offering
- Tactical routing
 - Targeted by dialcode
 - Carrier or trunk placement

Tactical Routing

- Targeted by dialcode – Country code or Area code, plus 0 or more digits
- Individual trunks or entire carrier
- Promote, demote, or remove from route list
- Variable application

Additional Modules

- Route Query Servlet – WWW service to preview routing decision-making process
- JMX interface for process management, reporting
- Data Migration Engine – Transform your internal data stores into Griffin's schema
 - Provide your own LERG
- Index Generator

Griffin Futures

- UI for internal data
 - Most data is extracted from your internal sources and transformed for Griffin's use by Data Migrator
 - A few tables (eg. Tactical Routing) are unlikely to be derived from data you already manage
- Release the source code

Griffin Technology

What's Under the Hood

- MySQL database
- Hibernate persistence layers
- Lucene indexing
- Java Management Extensions
 - Run-time performance tuning
 - Alerts and peg counts

Questions?