Evolution of Global Traffic Management

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https://www.usenix.org/conference/srecon16
• Disclaimer 1... Not representing a specific technology.

• Disclaimer 2... Short talk, big topic. I will gloss over a few things.
Current:
• Responsible for Availability and Server Latency for Bing.com

Before that:
• 5 years designing, implement and running global traffic management for Bing.com
• Several years as an Incident Manager
• Created the Incident Management system for Bing
• Couple years writing software as a defense contractor
• Owned a very nice restaurant for about a year (hurricane destroyed it)
• 12 years in the US Army, mostly as a Special Forces Medic and Comms NCO

Caveat: As with all things, I had a lot of help and worked with great people to achieve what’s listed above. No one succeeds alone.

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Survey

Quick awkward low arm raise that you’re half committed to acknowledging that you are or have been significantly responsible for the design or operation of traffic routing for your company’s global traffic?
Global Traffic Management

Availability

Correctness of Response
Reality, for many users, is defined by the information they get from the services run by people in this room.
Let’s look at one ‘reality’.

- A tragic event that happened a few years ago, but that is still in the news today.
But Aaron, what's that got to do with traffic management?

Let's talk about our Users and Correctness of Response.
News, with poor availability.
## Traffic Routing Maturity Matrix

<table>
<thead>
<tr>
<th>Maturity Level</th>
<th>Fundamental Idea</th>
<th>Defining Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Isolation &amp; Protection</td>
<td>Multiple service providers. Advanced internet awareness</td>
</tr>
<tr>
<td>4</td>
<td>Privacy &amp; Legal</td>
<td>Geopolitical routing zones</td>
</tr>
<tr>
<td>3</td>
<td>Availability</td>
<td>GTM + Load Feedback</td>
</tr>
<tr>
<td>2</td>
<td>Load Management</td>
<td>Basic GTM</td>
</tr>
<tr>
<td>1</td>
<td>Redundancy</td>
<td>Round robin DNS, Multiple Origins</td>
</tr>
<tr>
<td>0</td>
<td>Initial</td>
<td>Basic DNS, Single A Record, Single Origin</td>
</tr>
</tbody>
</table>
Then things actually get complicated…

“My service has users in, like, 42 countries! OMG!”

and

“My service operates legally in every country.”

“I just use Azure, it’s global and has availability zones and can’t go down, jeesh!”

and

“We leverage multiple clouds, and some on premises, to ensure we can get the best pricing, meeting local legal requirements, and don’t create a single vendor lock-in that could hamper future growth.”
So you want to handle private data of German citizens?

DNS Lookup for www.example.com

If (RevIP.Country == ‘Germany’)
    {use Germany GTM config}
else
    {use Global GTM config}
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Level 5: Isolation, protection, network aware, etc...
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So what’s next?

Put myself out of a job.

Anycast, when you don’t want to deal with DNS based traffic management any longer.

- For more information on our Anycast:
Reminder… I’m reasonably deaf. Please speak up.

Thanks for listening!