Domain Analytics
Jay Daley, ICANN58 Copenhagen, 2017
Domain Analytics Explained

• Using data science to provide insight into domain name usage
  Value for registrars – understanding customers
  Value for registrants – understanding competition

• Two key techniques
  Algorithmic popularity ranking from DNS traffic
  Industry coding of domains by machine learning

• Two key outputs
  New functionality on registrar portal
  New product for registrars to sell

• Had these ideas in October 2012
  Only now are we close to launch!
Popularity Ranking

- We capture all DNS traffic to our servers
  But we need an algorithm that sees past caching resolvers
- Development of an algorithm
  Current - Tf-idf (term frequency–inverse document frequency) – ranks importance of words in a corpus of documents
  Developing - Adjusting for resolver behaviour and scaling by resolver size
  Requires determining resolver centricity accurately
  Further - Compensate for varying TTL?
Top 20 – March 2015

Relative domain ranking (Popular)

1. www.expedia.co.nz
2. www.expedia.co.nz
3. www.nzherald.co.nz
4. www.trivago.co.nz
5. www.vistaprint.co.nz
6. www.seek.co.nz
7. www.yelp.co.nz
8. www.google.co.nz
9. www.teara.govt.nz
10. www.otd.co.nz
11. www.intel.co.nz
12. www.asics.co.nz
13. www.tui.co.nz
15. www.whisper.co.nz
16. www.anzcricketworld.co.nz
17. www.business.govt.nz
18. www.radionz.co.nz
19. www.bite.co.nz
20. www.neighbourly.co.nz
21. www.azdirect.co.nz
Top Banks – March 2015

Relative domain ranking (Banks)

1. www.anz.co.nz
2. www.bnz.co.nz
3. www.westpac.co.nz
4. www.hsbc.co.nz
5. www.asb.co.nz
6. www.kiwibank.co.nz
7. www.rabobank.co.nz
8. www.tsbbank.co.nz
9. www.co-operativebank.co.nz
10. www.bankdirect.co.nz
11. www.citi.co.nz
Industry Coding

- **19 broad divisions:**
  - A – Agriculture, forestry, fishing and hunting
  - B – Mining
  - C – Manufacturing
  - D – Electricity, gas and water supply
  - E – Construction
  - F – Wholesale trade
  - G – Retail trade
  - H – Accommodation, Food Services
  - I – Transport and storage
  - J – Information Media and Telecommunications
  - K – Finance and insurance
  - L – Rental, Hiring and Real Estate Services
  - M – Professional, Scientific and Technical Services
  - N – Administrative and Support Services
  - O – Public Administration and Safety
  - P – Education and Training
  - Q – Health Care and Social Assistance
  - R – Arts and Recreation Services
  - S – Other Services
- **96 sub-divisions, 200+ group, 500+ classes**
  - L Rental, Hiring and Real Estate Services
  - 66 Rental and Hiring Services (except Real Estate)
  - 661 Motor Vehicle and Transport Equipment Rental and Hiring
  - 6611 Passenger Car Rental and Hiring
  - 6619 Other Motor Vehicle and Transport Equipment Rental
ANZSIC for the Register

• Bought two hand-curated marketing databases.
  Bought two fields - Domain Name, ANZSIC
  106k in one, 15k in the other
• Used as training set for machine learning
• Now at stable point
  After testing 16 different ML algorithms (ask
  Sebastian Castro if you want details)
• Still looking at improvements
  Will probably do much more hand coding (top
  100 per main industry)
Value for Registrars

• Penetration by vertical
  Specialise in specific verticals (accidentally)?
  Repeat business in same vertical?

• Potential of verticals
  How does overall registry penetration compare to industry size?
  Has a vertical been fully mined?
  What are the most untapped verticals?

• Value of verticals
  Do some verticals bring more repeat business?
  Buy more add-on products?
Value for Registrars

Registrar

Registry

ANZSIC | Personal | Parked | Unknown

ANZSIC | Personal | Parked | Unknown
Value for Registrars

Agriculture, forestry, fishing and hunting
Mining
Manufacturing
Electricity, gas and water supply
Construction
Wholesale trade
Retail trade
Accommodation, Food Services
Transport and storage
Information Media and Telecommunications
Finance and insurance
Rental, Hiring and Real Estate Services
Professional, Scientific and Technical Services
Administrative and Support Services
Public Administration and Safety
Education and Training
Health Care and Social Assistance
Arts and Recreation Services
Other Services
Value for Registrants

• The online advertising dilemma
  Imagine you’re an online flower shop
  You advertise in the lead up to Mothers’ Day
  You get 50% rise in online traffic, 10% rise in sales

• BUT ....
  How do you know how your competitors did?
  What if they got 50% rise without advertising?
  How much of this was just Mothers’ Day uplift?

• Not even Google Analytics can tell you!
• We can.
Popularity product

This domain is classified as follows

<table>
<thead>
<tr>
<th>Type</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td></td>
</tr>
<tr>
<td>Level 1</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>Level 2</td>
<td>Beverage and Tobacco Product Manufacturing</td>
</tr>
<tr>
<td>Level 3</td>
<td>Beverage Manufacturing</td>
</tr>
<tr>
<td>Level 4</td>
<td>-</td>
</tr>
</tbody>
</table>
### Popularity product

If this is not correct then please select from the options below:

<table>
<thead>
<tr>
<th>Business</th>
<th>Not-for-profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Level 1</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>Social services</td>
</tr>
<tr>
<td>Level 2</td>
<td>Level 2</td>
</tr>
<tr>
<td>Hospitals</td>
<td>Emergency and relief</td>
</tr>
<tr>
<td>Level 3</td>
<td>Level 3</td>
</tr>
<tr>
<td>Hospitals</td>
<td></td>
</tr>
<tr>
<td>Level 4</td>
<td>Level 4</td>
</tr>
<tr>
<td>Hospitals (except Psychiatric Hospitals)</td>
<td></td>
</tr>
</tbody>
</table>

Use this classification

Use this classification

None of these are suitable

Specify classification
## Popularity product

### Listed services

<table>
<thead>
<tr>
<th>App</th>
<th>Mail</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>api</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>primary mail</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>blog</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Label</th>
<th>Record</th>
<th>Label</th>
<th>Record</th>
<th>Label</th>
<th>Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>amet2222</td>
<td>AAAA</td>
<td>lorem6</td>
<td>MX</td>
<td>amet51</td>
<td>AAAA</td>
</tr>
<tr>
<td>lorem1</td>
<td>MX</td>
<td>amet2345</td>
<td>ABBA</td>
<td>Show more</td>
<td>Show more</td>
</tr>
</tbody>
</table>

List by: Type | Name

Edit | Delete | Edit | Delete | Edit | Delete
Popularity product

Domain traffic score

Using the billions of queries recorded by the authoritative .nz servers and a sophisticated algorithm, we extract the underlying domain traffic score for a domain. This is then calculated for each of the services you define and shown in the chart below. Depending on the type of service selected, this traffic score should correlate with other measures such as visits to your website or emails received.
Popularity

This traffic score can now be compared against all other services of the same type within the same usage classification to provide a rank for that service. The higher the rank, the more popular it is. In the box below you can choose what to compare against and see the rank for this service, how many other services it is ranked against and how that rank has changed over time.

**Compare**

Web - blog
Against all others in:

**Rank**

123 out of 3,000
Popularity product

Service rank history

<table>
<thead>
<tr>
<th>Rank</th>
<th>06 Jan</th>
<th>07 Jan</th>
<th>08 Jan</th>
<th>09 Jan</th>
<th>10 Jan</th>
<th>11 Jan</th>
<th>12 Jan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 2016</td>
<td>60</td>
<td>65</td>
<td>68</td>
<td>69</td>
<td>93</td>
<td>72</td>
<td>75</td>
</tr>
<tr>
<td>Dec 2016</td>
<td>90</td>
<td>100</td>
<td>105</td>
<td>110</td>
<td>115</td>
<td>120</td>
<td>125</td>
</tr>
<tr>
<td>Jan 2017</td>
<td>130</td>
<td>140</td>
<td>145</td>
<td>150</td>
<td>155</td>
<td>160</td>
<td>165</td>
</tr>
<tr>
<td>Feb 2017</td>
<td>170</td>
<td>180</td>
<td>185</td>
<td>190</td>
<td>195</td>
<td>200</td>
<td>205</td>
</tr>
</tbody>
</table>
Comparison set in more detail

Knowing where your service ranks is a good start but if you want to improve your service ranking then it helps to understand where the other services score and how much your service score will need to improve to move up the rankings. The chart below shows the score for all the services being compared in rank order.
Health check

- We scan the DNS of all our domains (675k) every month
- Already provide that data to our registrars in our portal
- But registrar may not be DNS operator
- So providing it for free in the product
Health check in our portal

Issues & Domains

<table>
<thead>
<tr>
<th></th>
<th>Issues</th>
<th>Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registrar Total</td>
<td>1,943</td>
<td>7,865</td>
</tr>
<tr>
<td>Registry Total</td>
<td>9,067</td>
<td>20,258</td>
</tr>
<tr>
<td>Critical</td>
<td>409</td>
<td>94</td>
</tr>
<tr>
<td>Error</td>
<td>929</td>
<td>80</td>
</tr>
<tr>
<td>Warning</td>
<td>354</td>
<td>55</td>
</tr>
<tr>
<td>Notice</td>
<td>59</td>
<td>34</td>
</tr>
<tr>
<td>Info</td>
<td>192</td>
<td>54</td>
</tr>
</tbody>
</table>

Zone Scan Results History

Zone Scan Results

<table>
<thead>
<tr>
<th>Domain</th>
<th>Error</th>
<th>Warning</th>
<th>Notice</th>
<th>Info</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>bartoletti.nz</td>
<td>☹</td>
<td></td>
<td></td>
<td></td>
<td>01 March 2017</td>
</tr>
<tr>
<td>batzsimons.net.nz</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td>01 February 2017</td>
</tr>
<tr>
<td>beac.makoil.nz</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td>01 March 2017</td>
</tr>
<tr>
<td>bostond.lewl.nz</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td>01 February 2017</td>
</tr>
</tbody>
</table>
Health check product

Report summary

The DNS configuration for this domain is broken

This means:
- no further health check tests are possible.
- The Popularity information is probably meaningless

Recommended actions

Talk to whoever manages your DNS and tell them your domain has failed its DNS Health Check for the reasons listed below.
# Health check product

## Report details

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 serious operational errors</td>
<td></td>
<td>❌</td>
</tr>
<tr>
<td>0 configuration warnings</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>1 informational notices</td>
<td></td>
<td>❌</td>
</tr>
</tbody>
</table>

*Share this report*
Health check product

Health Check history

- **Errors**
- **Warnings**
- **Notices**

<table>
<thead>
<tr>
<th>Date</th>
<th>Errors</th>
<th>Warnings</th>
<th>Notices</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Feb 2016</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>01 Mar 2016</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>01 Apr 2016</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>01 May 2016</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>01 Jun 2016</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>01 Jul 2016</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
# Health check product

## Shared reports

<table>
<thead>
<tr>
<th>Date</th>
<th>Broken</th>
<th>Errors</th>
<th>Warnings</th>
<th>Notices</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 Jul 2016</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>link</td>
</tr>
<tr>
<td>28 Jul 2016</td>
<td>No</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>link</td>
</tr>
</tbody>
</table>
Future – Similarity?
How do we integrate with Registrars?

Option 1
Registrar manages user
Embeds site
We charge wholesale fee

Option 2
We manage user
Public site
We charge retail fee
We pay registrars a commission per customer

Registrars are split
Not sure the two options are compatible
Thanks

Contact:  Jay Daley, jay@nzrs.net.nz
www.nzrs.net.nz