1   Competition

1.1   Potential Impact of "Parked" Domains on Measures of Competition.

Overall, in our discussion of the impact of new gTLDs on competition, we treat all domains as equal. However, it is worth noting that the majority of domains in both legacy and new gTLDs are not the primary identifiers of typical websites. Instead, these domains are forwarded to other domains (including sub-domains), used only for email, monetized via advertising or simply do not resolve, perhaps held in reserve by speculators or as premium domains by registries. For a high-level impact assessment, these domains, for lack of a better term, were considered "parked" by the Review Team. The Review Team simply attempted to consider if rates of these activities differed between legacy and new gTLDs and, if so, whether the difference suggests the need for further research. Our conclusion is that while further research is ideal, the context of the new gTLD program might not be the right fit. Using an expansive definition of parking, according to data compiled by nTLDstats, about 68% of registrations in new gTLDs are currently parked.[1] By way of comparison, 56% of registrations in legacy gTLDs are currently parked. Halvorsen et al ascribe parking to: (1) speculation in order to sell the domain later at a profit; (2) plans to develop the domain at a later date; or (3) unsuccessful development.[2]

Examples of behaviors that could be considered parking include:

1. The domain name does not resolve.
2. The domain name resolves but attempts to connect via HTTP return an error message.
3. HTTP connections are successful but the result is a page that displays advertisements, offers the domain for sale, or both. These pages may also be used as a vector to distribute malware.
4. The page that is returned is empty or otherwise indicates that the registrant is not providing any content.
5. The page that is returned is a template provided by the registry with no customization offered by the registrant.
6. The domain was registered by an affiliate of the registry operator and uses a standard template with no unique content.
7. The domain redirects to another domain in a different TLD.

Of course, this represents a broad view of "parking" as the implications for competition of each of these scenarios are likely different. Future research will require analyzing each of these categories individually to determine the impact on competition.

However, because the percentage of "parked" registrations in new gTLDs is so large, the Review Team sought to understand whether this phenomenon would affect its conclusions regarding the impact of the introduction of new gTLDs on the marketplace and thereby justify further research. Hypotheses could

---

[1]   "Parking in new gTLDs Overview" (viewed 21 March 2017), https://ntldstats.com/parking/tld
[2]   T. Halvorson, M.F. Der, I. Foster, S. Savage, L.K. Saul, and G.M. Voelker, "From .academy to .zone: An Analysis of the New TLD Land Rush," Proceedings of the 2015 ACM Conference on Internet Measurement.

be advanced which suggest counting certain types of parked domains differently when computing market share and concentration. For example, one possible reason for taking parking rates into account is that registration renewal rates may be negatively correlated with rates of certain types of parking so that the current market shares of TLDs with relatively high parking rates may overstate their long run competitive significance. For example, some early registrations in a new gTLD are the result of "land rush" behavior by speculators. Furthermore, there was an initial spike in registrations from China in both legacy and new gTLDs, some of which is the result of speculation and some the result of regulations that may change over time. Finally, a large number of parked domains in a particular gTLD may be a related to heavily discounted promotions in that TLD. Significant differences in pricing between initial registration and renewal could have a significant impact on renewals.[3] In such an instance, these new domains should be discounted at a rate commensurate to the correlation. In other words, if speculative registrations are isolated and determined to be half as likely to be renewed, their numbers should be discounted 50% in any calculation of market share and market concentration. Of course, one must leave room for the possibility that speculative behavior is fundamentally different between new and legacy gTLDs with established market expectations. Another hypothesis posits that domains used as pointers imply a transition away from an existing domain. In other words, a pointer could be an indication of provisional acceptance of a new gTLD by the market and the old domain is being maintained in the near term purely to smooth a transition. In this case, the domains to which others are pointed should be discounted at some rate. Of course, there are instances when redirects simply represent "over registration" either to capture typos and guesses, or protect brand identity. Future analysis of redirects would require determining which domain is being used to promote the site. Finally, it's possible that speculation has a pro-competitive effect, not captured directly by market share and concentration calculations, by bridging new entrants to maturity, which generally takes 3-5 years. **[need a transition to segue from the list of hypotheses re: parking to measuring parking rates of new and legacy gTLDs]** Given the mandate to examine the impact of new gTLDs on competition, the first question is whether the rate of parking is substantially different in the new gTLDs than in the legacy gTLD space.

As discussed later in this report, the higher incidence of parking in new gTLDs may also be a reflection that many registrations in new gTLDs are defensive in nature. Respondents to the INTA Impact Study indicated that in most cases, trademark holders register domains in order to protect their brands and prevent cybersquatting. These domains are generally parked. However, we do not believe defensive registrations by trademark holders constitutes a large enough fraction of overall registrations in new gTLDs to significantly alter our approach to measuring effects on competition.

In order to better understand this topic, the Review Team used existing parking data for new gTLDs that nTLDstats routinely calculates. We also requested that ICANN contract with nTLDstats to develop parking data for legacy gTLDs especially for this project.[4] We used registration data for December 2016, the same month for which other statistics in this report are based, and the most comprehensive parking measure provided by nTLDstats, the aggregate of the 7 separate sources of parking that it identifies.[5]

---

[3] For example, initial pricing on XYZ was free in many instances but renewal was full price.

[4] nTLDstats applied its parking analysis to each legacy gTLD based on the number of names in its zone file. For TLDs with 10,000 names or fewer, nTLDstats analyzed all registered names, for TLDs with 10,001-100,000 names, nTLDstats analyzed 10% of registered names, and for TLDs with more than 100,000 names, nTLDstats analyzed 1% of registered names. nTLDstats also conducted a manual review of 10% of the total sample to check for false positives.

[5] Specifically, we adjusted the number of registrations for each gTLD to reflect the number of registrations that were not parked, i.e., we calculated (1 minus the parking rate) times the number of registrations for each gTLD.

Using this data, we made an initial comparison of overall parking rates between legacy and new gTLDs. nTLDstats estimated that the weighted average parking rate for legacy gTLDs in that month was approximately 56 percent and that the weighted average parking rate for new gTLDs in the same month was approximately 68 percent, a rate that is almost 20 percent higher than the parking rate for legacy gTLDs.[6] Again, we are not certain of the impact of parked domains on market rivalry but if parked domains are somehow less significant as markers of competition, this is a substantial difference that could affect the computation of our competition-related indicators.[7]

Taking a cursory stab at understanding the potential significance of parking rates on future market shares, we attempted to determine whether there was a relationship between parking and renewal rates. In order to perform this analysis, we compared parking rates in each TLD as of December 2016 with a renewal rate computed based on registries' monthly transaction reports[8] for the period of July – December 2016[9]. Using a Pearson correlation analysis, we were unable to find a statistically significant correlation between renewal rates and parking rates in either new or legacy gTLDs. While the identification of a relationship would have been interesting, the results of this test are, by no means, dispositive of a potential correlation. We recommend more robust studies of this topic to better understand whether such a relationship exists. Such studies could include, among other things, a closer examination of the following factors: 1) what parking measures best measure market rivalry; 2) what renewal rates should be used; 3) what factors other than parking are likely to affect renewal rates; 4) what is the functional form (e.g., linear, logarithmic, etc.) of the relationship between parking and renewals; 5) what is the "lag" between parking and non-renewals (i.e., how much time is there between the time that a domain name is parked and the time at which it is not renewed)?

1.2   Geographic Differences in Parking Behavior

The Review Team also sought to determine whether the quantity of parked domains varied based on region. For example, Latin American and Caribbean DNS Marketplace Study (LAC Study) reports that "across the entire region, 78% of the gTLD domain names are active, and 22% are not in use (either timing out, or no active services).[10] By comparison, according to nTLDstats, across all new gTLDs approximately 33% of domains had no valid DNS or returned invalid HTTP responses.

Although the Review Team did not have the ability to directly correlate registrant addresses with parked domains, we did identify six of the top 50 largest new gTLDs including TLDs operated by registries based in China showing markedly higher parking rates than the average across all new

---

[6]   20 percent of 55.6=11.2 and 55.6 + 11.12= 66.72 (nearly 68%).

[7]   At one extreme, if we were to exclude parked registrations from our market share analysis entirely, we find a "non-parked" market share of new gTLD registrations as a portion of all gTLDs of 10.9 percent, approximately 23 percent lower than the 14.2 percent share when parked domains are included. (Making a similar adjustment in our market concentration calculations did not make a meaningful difference between including or excluding parked domains.)

[8]   Registries do not submit a renewal rate calculation to ICANN. Nevertheless, given that second level domains auto-renew, we computed a renewal rate for each TLD by dividing the number of renewal transactions by the sum of the deletion transactions (outside of the add grace period) plus renewal transactions.

[9]   Monthly renewal rates can be quite volatile and represent only the portion of domains eligible for renewal that month, whereas parking rates are calculated across all domains in a TLD. Therefore, we used a six-month period to calculate renewal rates in order to minimize sample errors in our analysis.

[10]   Oxford Information Labs, LACTLD, EURid and InterConnect Communications, Latin America and Caribbean DNS Marketplace Study (September 2016), accessed 23 October 2017, https://www.icann.org/en/system/files/files/lac-dns-marketplace-study-22sep16-en.pdf

gTLDs, with parking rates ranging from 85% for .wang to 98% for .xin. Table A[11] below indicates the parking rate for each of the six:

	Parking Rate (%)
All New gTLDs	68 %
.XIN	97.77%
.WANG	85.08%
.TOP	85.08 %
网址 (xn--ses554g)	83.22%
.REN	82.82%

According to data from nTLDstats, there were over 9 million registrations made in new gTLD strings that have their origin in China.[12] One possible reason for the higher levels of parking rates seen in new gTLDs that cater to Chinese registrants may be speculative domain registrations out of China, particularly with regard to short domain names (i.e., names containing five or less letters or numbers). In 2015, Chinese investors purchased a large number of short domain names as these were seen as especially interesting to Chinese investors.[13] Furthermore, it seems that Chinese buyers are also purchasing names with actual end-uses in mind that they think will go up in value. As a result, the increase in awareness of domain investment in China may have contributed to higher parking rates of Chinese based new gTLDs. This trend may also be indicative of a speculative bubble in the Chinese market as well as expected value of these domains.

These initial analyses of geographically-based parking rates are quite cursory and based on limited data, but they do seem to indicate that regional variations in parking rates exist and can be quite significant. Again, these figures represent a gross measurement of parking and future analysis will require a more granular exploration of behavior across geographic regions.

1.3   Relationship Between Parking and DNS Abuse

While the Review Team was not able to identify a direct relationship between parking rates and either competition or consumer choice, we also considered the possibility that parked domains may be linked to Consumer Trust, and in particular to the possibility that parking is associated with DNS Abuse. Previously, Vissers et al[14] studied over eight million parked domains and found that "users who land on parked websites are exposed to

---

[11]   NTLDStats.com (accessed on 3 March 2017): Parking Analysis of Legacy gTLDs, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials?preview=/56135378/64074447/ICANN%20Parking%20Check.xlsx

[12]   NTLDStats.com (accessed on 31 October 2017): Parking Analysis of Legacy gTLDs, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials?preview=/56135378/64074447/ICANN%20Parking%20Check.xlsx

[13]   Echo Huang, "China's newest investment craze is short domain names," Quartz, 10 January 2016, accessed 30 October 2017, https://qz.com/581248/chinas-latest-investment-craze-is-short-domain-names/

[14]   Vissers, Joosen, and Nikiforakis, " Parking Sensors: Analyzing and Detecting Parked Domains," (paper presented at NDSS, San Diego, USA, 8-11 February 2015). http://dx.doi.org/10.14722/ndss.2015.23053

malware, inappropriate content, and elaborate scams."[15]

In conjunction with this Review, the "Statistical Analysis of DNS Abuse in gTLDs" study conducted for this report found that, in general, in new gTLDs the total number of registrations associated with malware is lower than in legacy gTLDs.[16] Whereas, the rate of malware associated domain names per volume in new gTLDs is occasionally higher than that of legacy gTLDs. However, if you look amongst the new gTLDs and look at parking rates, you'll see that of the malware that's occurring, it's marginally more likely to occur in zones with higher parking rates. There may be some correlation between parking and malware, but that is not as strong and indicative as the overall trend of lower malware distribution rates than those of legacy gTLDs. Nonetheless, the malware distribution rate gap between legacy and new gTLDs appears to be shrinking. Therefore, it would be prudent for the community to further explore the correlation between parking and malware distribution.

1.4   Recommendations

While we observe that new gTLDs have higher parking (using the broadest possible definition) rates than legacy gTLDs and that there are regional variations in parking rates, it is so far unclear to us if parking has a meaningful effect on either competition or consumer choice. As a result, we recommend that ICANN consider undertaking further research into the potential competitive impact of domain parking and to use the results of that research to improve its analysis of developments in the DNS marketplace. In addition, we recommend that ICANN consider using data on upcoming registration deletes for the same purpose.

Recommendation 5: Collect domain usage data to better understand the implications of parked domains.

Rationale/related findings: The high incidence of parked domains suggests an impact on the competitive landscape, but insufficient data frustrates efforts to analyze this impact.

To: ICANN organization

Prerequisite or Priority Level: High

Consensus within team: Yes

Details: We use the term "domain usage" rather than "parking" in the recommendation because the term "parking" is associated with a wide variety of behaviors, and different members of the community

---

[15]   It is not entirely clear to the Review Team whether malware propagation is intentional by the parked sites or parking services, or the result of compromised ad networks. Vissers et al raise this possibility in their paper: "Possibly, these complex chains are the consequence of a process similar to ad arbitration, a widely adopted practice performed by most ad syndicators [33]. During this process, the syndicator bids on available ad slots of other publishers or syndicators, allowing them to resell these slots to the next bidder. Often, ad slots are subjected to multiple iterations of this reselling process. As a consequence, ad slots are no longer under control of the syndicator that the original publisher partnered with. All these interactions and intermediate parties have the potential to blur the direct involvement of the parking service in serving malware. In some cases, however, we also see malware being delivered more directly, for example, by the parent company of Parking Service 8."

[16]   SIDN Labs and the Delft University of Technology (August 2017), Statistical Analysis of DNS Abuse in gTLDs Final Report, accessed 23 October 2017, https://www.icann.org/en/system/files/files/sadag-final-09aug17-en.pdf

may define "parking" differently. It is also likely that different type of "parking" behaviors reflect different intentions by registrants and will have different implications on the competitive dynamics in the marketplace. ICANN should regularly track the proportion of domains in gTLDs that are parked with sufficient granularity to identify trends on a regional and global basis. Ideally, data would allow analysis to occur on a per-domain basis rather than being aggregated on a TLD level. Future reviews should conduct further analyses of whether there is a correlation between parked domains and renewal rates or other factors that may affect competition. Further analysis should be performed on the relationship between parking and DNS abuse. The community may also wish to take this issue up for further study outside of the periodic CCT Review process, as the phenomenon is also prevalent within legacy gTLDs and there does not seem to be significant study of the topic with ICANN.

Success Measures: The availability of relevant data for use by the ICANN organization, contractors and the ICANN community for its work in evaluating competition in the DNS space.