

Sent: Friday, 5 November 2010 6:17 PM

To: Chair, RSSAC - Jun Murai

Cc: Chair, ICANN Board - Peter Dengate Thrush  
Vice-chair, RSSAC - Matt Larson  
RSSAC Liaison to the ICANN Board - Suzanne Woolf  
CEO, ICANN - Rod Beckstrom  
Senior Vice President (SVP) Stakeholder Relations, ICANN - Kurt Pritz

From: Chair, ICANN Board Risk Committee - Bruce Tonkin

Subject: Root Server Capacity for new gTLDs

Dear Jun,

As part of the risk analysis of ICANN's plan to introduce new gTLDs, ICANN Board's Risk Committee is seeking advice from RSSAC on the capability of the root server system to support the planned introduction of new gTLDs in 2011/2012. ICANN has recently stated that based on the limits inherent in the evaluation process, annual delegation rates are expected to be in the 200-300 range per year at projected applications rates.

More importantly ICANN has stated that the annual delegation rate will not exceed 1,000 per year in any case, no matter how many applications are received. In addition the IDN-ccTLD fast track process has estimated up to 50 applications in the first two years, and so far has received a total of 33 requests in 22 different languages. To ensure a margin of safety in capacity planning, please consider double the maximum annual delegation rate - ie an upper limit of 2,000 TLDs per year.

ICANN has also requested ICANN staff adopt as a working plan a launch date of April-June 2011 to receive new gTLD applications, which will likely result in new gTLDs being ready for delegation in early 2012 (please see attached work plan in PDF format).

Recent steps on this topic include:

- in September 2010, the ICANN Chair wrote to root operators

individually asking about their readiness to scale up to expected new TLD levels in preparation for the Board's meeting in Trondheim on 24-25 September 2010. The ICANN chair also wrote to RSSAC requesting any comments on the proposed delegation rates.

- at the ICANN Board's meeting on 24-25 September in Trondheim, the Board noted that the upper limit is expected to be in the range of 1,000 new delegations per year, and directed staff to publish a model and rationale for this upper limit

(see: <http://www.icann.org/en/minutes/resolutions-25sep10-en.htm#2.3>)

- on the 6 October 2010, the ICANN staff posted information on their delegation scenarios (see:

<http://www.icann.org/en/announcements/announcement-2-06oct10-en.htm> and

also attached as a PDF document)

- on the 28 October 2010, the ICANN Board directed staff to adopt as a working plan the Launch Scenario with launch date of Q2 2011

(see: <http://www.icann.org/en/minutes/resolutions-28oct10-en.htm> )

- on 3 November 2010, the ICANN Board's risk committee met, and sought confirmation that the root server system will support the planned introduction of new gTLDs at the delegation rates as posted on 6 October 2010

The ICANN Board's Risk Committee would appreciate advice from RSSAC on the capability of the root server system to support the planned introduction of new gTLDs in 2011/2012, for the public record, prior to the next ICANN public meeting in Cartagena on 5-10 December 2010 (see <http://cartagena39.icann.org>).

Regards,

Bruce Tonkin

Chair, ICANN Board Risk Committee

(<http://www.icann.org/en/committees/risk> )

Diane Schroeder

Director of Board Support

ICANN



The Internet Corporation for Assigned Names and Numbers

# **Delegation Rate Scenarios For New gTLDs**

Date of Publication: October 2010

## Executive Summary

Modeling delegation rates is still difficult because so many factors remain unknown prior to the first round of applications for new gTLDs and IDN ccTLDs. However, it is certain that the number of root zone records will increase as a result of these initiatives. ICANN staff has compiled a model that examines anticipated delegation rates based on currently available information and a set of verifiable assumptions.

The model incorporates ICANN's plan for processing applications for new gTLDs. The assumptions behind that processing model are presented on pages 2 and 3. An important part of that operating plan for processing applications is that it incorporates a natural limit to the number of applications that can be processed through the system at any specific time.

This demand model that informs the delegation rates includes three key sources of input:

- Those already a part of the new gTLD process;
- Brand and famous mark holders;
- And regional, national and other geographic regions that are not currently participating (i.e. IDNs)

This paper shows that, using some assumptions about the rates of applications, their complexity, and the volume of those applications, one can make some predictions about the number of new gTLDs once the gTLD and IDN initiatives fully take root. As stated above, processing constraints will limit delegation rates to a steady state in the event of inconceivably large numbers of applications.

This modeling will continue during, and after, the first round so that root-scaling discussions can continue and the delegation rates can be managed as it goes forward.

## Overview of the Process

It is anticipated that applications in this process will be accepted in rounds. A round, for the purposes of expansion of the root, is a set period of time when a window is open for applications. The current window for applications is set to 90 days. Once that period of time ends, a significant period of time for examination of the applications is set aside.

### *Application Processing*

For purposes of this paper there are two key phases of evaluation for the applications: an initial evaluation and the extended evaluation process. The initial evaluation is a screening process that identifies financial & technical capacity, string problems and does basic due diligence on the applicant. Applications that succeed through the initial evaluations will have the best chance of being delegated in a relatively short period of time.

Extended evaluation takes place when there is a problem with, objection to, or contention between applications. The impact of extended evaluation is either non-delegation or delegation at later time.

Here are the fundamental assumptions about the process surrounding Initial Evaluation and how it affects the rate at which delegations are made to the root:

- DNS Stability and String Similarity reviews will be conducted for the entire population of strings prior to the start of other panel reviews. The implication of this for projections is that all stability and similarity work has been completed at the start of Initial Evaluation.
- Processing of the applications takes place in batches. As a group of applications completes Initial Evaluation and a percentage of those applications will move to the extended evaluation processes (Extended Evaluation, Dispute Resolution and/or String Contention).
- For the first batch of a round, the capacity of the process is 500 applications. Because some of the same resources are devoted to both Initial Evaluation and Extended Evaluation processes, only 80% of the processing resource is available for subsequent batches. 20% of the processing resources will remain devoted to extended evaluation processes.
- Initial Evaluation is expected to take 5 months to complete. For purposes of this analysis, we have taken a conservative approach and have assumed 4 months to complete Initial Evaluation.
- For each batch, 80% of the applications will be considered “clean” and not require extended evaluation. 20% of each batch will require one or more extended evaluation processes (Extended Evaluation, Dispute Resolution or String Contention).
- Of the “clean” applications only 77% will be successfully delegated.

Here are the fundamental assumptions about the process surrounding extended evaluations:

- According the Applicant Guidebook, applicants have the option to select a new set of Evaluation Panelists for Extended Evaluation services. For the purposes of modeling, it is assumed that no applicant makes this request (if an applicant chooses this option, it has the potential to double the length of time needed for processing and eventual delegation).
- 20% of the processing resources will remain devoted to the Extended Evaluation, Dispute Resolution, and String Contention processes.
- For each batch, 20% of the applications go through one or more Extended Evaluation, Dispute Resolution or String Contention processes. Of these, only 77% will be successfully delegated.

Assumptions about delegation that affects the model:

- Successful applicants have up to one year to delegate. To be conservative, we assume an aggressive approach to proceeding to delegation. “Clean” applicants from Initial Evaluation will begin pre-delegation checks and contract execution immediately after Initial Evaluation.
- Based on anticipated pre-delegation and contract execution processing time, the model assumed a one-month lag between end of Initial Evaluation and delegation of first batch of TLDs. Note, pre-delegation and contract execution will have dedicated staff, and therefore there is no impact to the available gTLD processing resources.
- According to the Applicant Guidebook, extended evaluation processes can take up to 6 months to complete. For purposes of this analysis it is assumed that extended evaluation only takes 4 months. This will minimize gTLD application processing resource overlap between Initial Evaluation and extended evaluation batches and maximize the rate of Initial Evaluation and extended evaluation processing.
- Extended evaluation delegation occurs beginning 2 months after the start of Extended Evaluation and ending 2 months after end of Extended Evaluation (1 month to complete Extended Evaluation processes plus 1 month to complete pre-delegation and contracting processes).
- Delegation is limited based on the maximum number of contracts executed and pre-delegation checks completed per month. However, no limitations are considered for the purposes of this model. Accordingly, delegation of eligible applications from Initial Evaluation and extended evaluation processes occurs ratably over separate 6-month periods.
- The current calculation assumes 250 work days per year. Legal and pre-delegation teams must complete an average of 3.67 contracts/pre-delegation checks per workday per year.
- The model also assumes no limitations on IANA’s, Versign’s or NTIA’s ability to execute delegation activities.

## Modeling Delegation Rates

### *Predicting Delegation Rates*

ICANN’s model for delegation rates covers three areas:

- the time to process applications (given that some will be straightforward and some will require extended processing),
- the need to batch process applications if there is a certain volume received, and
- the percentage of applications that are straightforward, those that will require extended evaluation processing, and so on.

The volume estimate, the time to process applications of different degrees of scrutiny, batching, and the percentage of each type of application form a basis for a model of delegation rates.

For illustration purposes, we have predicted delegation rates based on different application volumes and the following dates as examples:

- between now and Q2 2014;
- with IDN ccTLD delegation starting in Q2 2010; and
- new gTLD delegations starting in Q1 2011 (note that this is just an example for the purposes of modelling, the actual date is unknown and may be at least two or three quarters to the right)<sup>1</sup>.

### *Understanding Batching and its Implications*

The capacity for the initial evaluation process is 500 applications. If the number of applications is greater than 500 in a round, the first 500 will be processed as a batch as outlined above. The remainder, up to the next 80% will be processed as a second batch. Any remaining applications will continue to be processed at a rate of 80% of the initial batch size. Once the first group of 500 applications had passed through the initial evaluation panels, they would be ready to start the second batch. The process for segmenting a set of applications that form the total number in a round is referred to as “batching.”

ICANN’s intent is to delegate eligible applicants as quickly as possible. Thus, we batch a set of applications through Initial Evaluation every four months to delegate “clean” applications as soon as possible.

For successful applications in the initial evaluation there remains a set of key tasks that must be completed prior to delegation.

---

<sup>1</sup> This corrected version was published on 5 March 2010. On page four “Using this model we can predict delegation rates;” was corrected to read, “For illustration purposes, we have predicted delegation rates based on different application volumes and the following dates as examples. . .” We have also removed the original second bullet which read, “based on different application volumes (low, expected, high, very high).” We have also, added the parenthetical explanation to the third bullet in this section.

## *gTLD Projected Delegation Rate Q1 2011 – Q2 2014*

### Rate of gTLD Delegations in Q1 2011 to Q2 2014

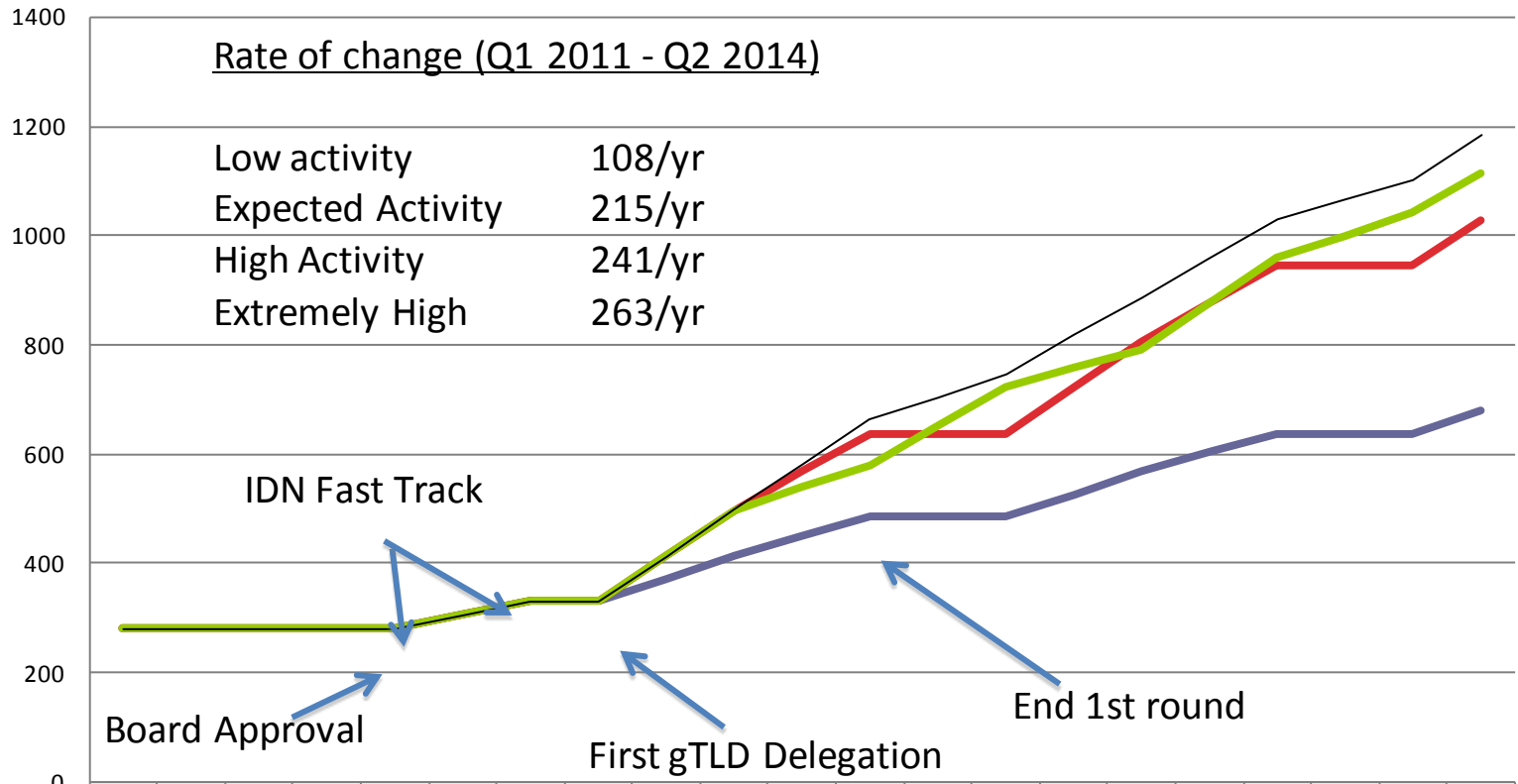
Application Rate	Average Delegation Rate per year
200 (low activity)	108
400 (expected activity)	215
600 (high activity)	241
1000 (extremely high activity)	263
1000's of applications (maximum throughput)	965 / 1 <sup>st</sup> year (924 / year thereafter)

### *Some Basic Projections*

It is crucial to understand the impact of batching when the applications exceed basic volumes. In the initial, “ramp-up” period, growth is slow. However, over time a fairly consistent number of delegations emerge from the “batching” process. Fundamentally, this is because there is a limit on the number of applications that can be processed at any point in time. The maximum size of a batch of applications acts as a rate limit for new, annual delegations.



Number of TLDs



	Q2 09	Q3 09	Q4 09	Q1 10	Q2 10	Q3 10	Q4 10	Q1 11	Q2 11	Q3 11	Q4 11	Q1 12	Q2 12	Q3 12	Q4 12	Q1 13	Q2 13	Q3 13	Q4 13	Q1 14	Q2 14
200 Apps per round	280	280	280	280	280	305	330	330	372	413	449	484	484	484	526	567	603	638	638	638	680
400 Apps per round	280	280	280	280	280	305	330	330	413	496	567	638	638	638	721	804	875	946	946	946	1029
600 Apps per round (batch)	280	280	280	280	280	305	330	330	413	496	538	579	650	721	757	792	875	958	1000	1041	1112
1,000 Apps per round (batch)	280	280	280	280	280	305	330	330	413	496	579	663	704	746	817	887	958	1029	1065	1100	1183

### *The Model in Extreme Circumstances*

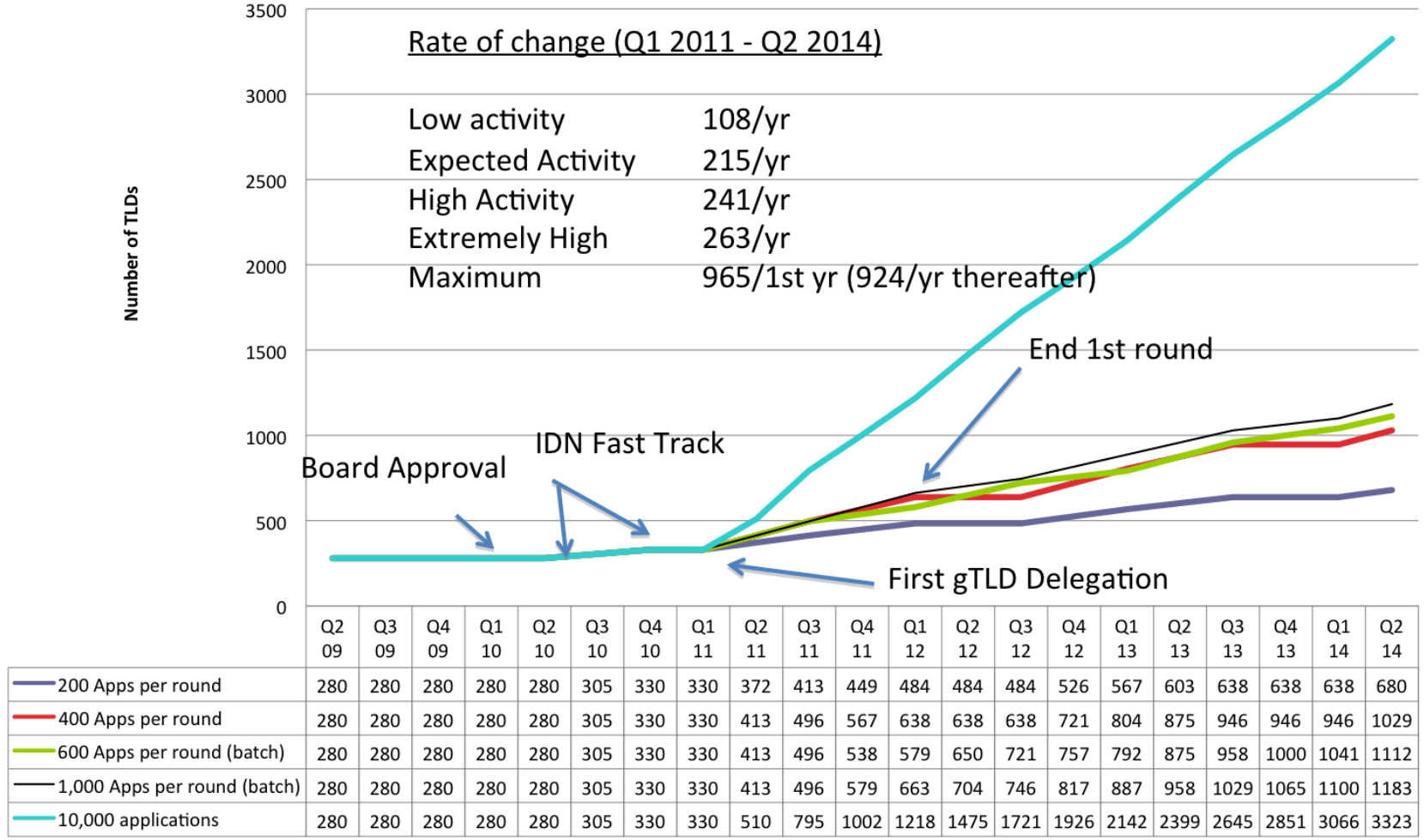
It is natural to wonder what the delegation rate would be in the event of very, very large number of applications. In other words, how would delegations grow if there were a huge number of applications? Given that the batch size of the model is 500<sup>2</sup>, and that some delegations take place after Initial Evaluation and others require Extended Evaluation, a question arises: does the process wait while the extended evaluation takes place; or, can a new batch of applications begin the Initial Evaluation process while part of the previous batch proceeds with Extended Evaluation?

In the chart on the next page we see a chart from the model that includes the previous low, expected, high, and very high application volumes. This chart also includes a line that depicts the situation where there unlimited numbers of applications to process (in the model we have used 10,000 applications as the placeholder for an unending supply of new gTLD applications).

The new line provides a view of the maximum throughput for delegations of new gTLDs. In the presence of an unlimited number of applications in the system, the model predicts that 965 new gTLD strings could be added to the root in the first year, based on an initial batch of 500 applications and subsequent batches of 400 applications, and 924 annually thereafter, based on batches of 400 applications.

---

<sup>2</sup> The batch size was determined by taking into account the availability of competent evaluators, effective spans of control and the requirement of consistency in evaluations. Processing more than 500 applications “simultaneously” would exceed the capability of the most capable firms – requiring hiring additional evaluation firms. This in turn would lead to a situation where effective spans of control would be exceeded and ensuring consistency of scoring would be a quantum level more difficult. Therefore, the 500 level is regarded as a firm ceiling for the first batch with a maximum of 400 applications per batch thereafter.



## **APPENDIX: Supporting Background and Analysis**

The analysis consists of three sections: new gTLD demand, application processing timeframes, and the estimated probability for each path an application could take as it goes through the evaluation process. The rate of delegations is the combination of those three things:

- How many applications will there be?
- How long will it take to process the applications (knowing that different applications will go through different “evaluation paths,” taking different amounts of time)?
- What is the probability of each evaluation path occurring – the delegation rate is a function of the demand, the time to process applications on each path, and the likelihood of each path.

A very brief overview of each area follows.

### ***How Many: A Study on New gTLD Demand***

An informal, unpublished study of new gTLD demand provided partial results. This, combined with community discussion, leads to the conclusion that demand in the initial round will be in the 400-500 range.

CRAI was commissioned to undertake a demand study. The statement of work asked them to consider three areas of demand: that from the market segment knowledgeable about ICANN and the new gTLD process; brand owners; and those not currently aware of the market, e.g., IDNs. Their initial report addressed only the first segment and indicated that pursuit of the second two areas would be too speculative or expensive to be of value.

CRAI conducted many interviews with current ICANN participants knowledgeable of the potential new gTLD launch. Based upon those interviews – demand from that sector was estimated at 300-400. CRAI did not estimate and declined to pursue an estimate from brand or IDN sectors.

Discussions, largely with the IP constituency members, provided a rough order of magnitude estimate of 100-200 applications from brand owners. No estimate was performed regarding the IDN segment due to its speculative nature and expense. As a placeholder, demand in this area was roughly estimated at 100 or less. Therefore, total demand was estimated to be approximately 500 applications (with considerable margin for error).

These estimates were made prior to the economic downturn. Discussions indicate significant demand dropoff – especially in the area of brand owners. The estimate of demand was reduced to the 400-500 range.

### ***How Long: The Time to Process Applications***

TLD applications will take varying times to process based upon different considerations. The shortest period of time between application and delegation will be approximately 8 months; the longest will be 18 months. Also, above certain volumes, applications will be handled in batches. Therefore, delegations

will not occur as a step function some set time after the application period closes. Rather, the delegations will occur at a graduated rate over a several month time span.

The time necessary to process TLD applications are indicated by the next few charts. Applications that pass initial evaluation, with no objection or contention (i.e., the most straightforward applications), will be delegated 8 months after receipt of application. Some applications will require additional “evaluation paths”: extended evaluation, dispute resolution, and resolution of contention between identical strings. These applications will enter into different combinations of these additional paths. An application facing some or all of these additional evaluation steps could require up to 18 months to complete the process.

Batching – As indicated in the charts below, initial evaluation, for purposes of this paper, is expected to take 4 months. The evaluation process cannot be scaled process any number of applications in that period. It is difficult to assure consistent results if there are over a certain number of evaluators.

If more than 500 applications are received, it is likely that the applications will be batched. The implication is that the delegation rate does not increase linearly with the number of applications but will go asymptotically to a maximum value. This is why the delegation rate for 1000 applications is only 21% greater than of 400 applications.

### ***What Will Happen: Probability for Each Evaluation Path***

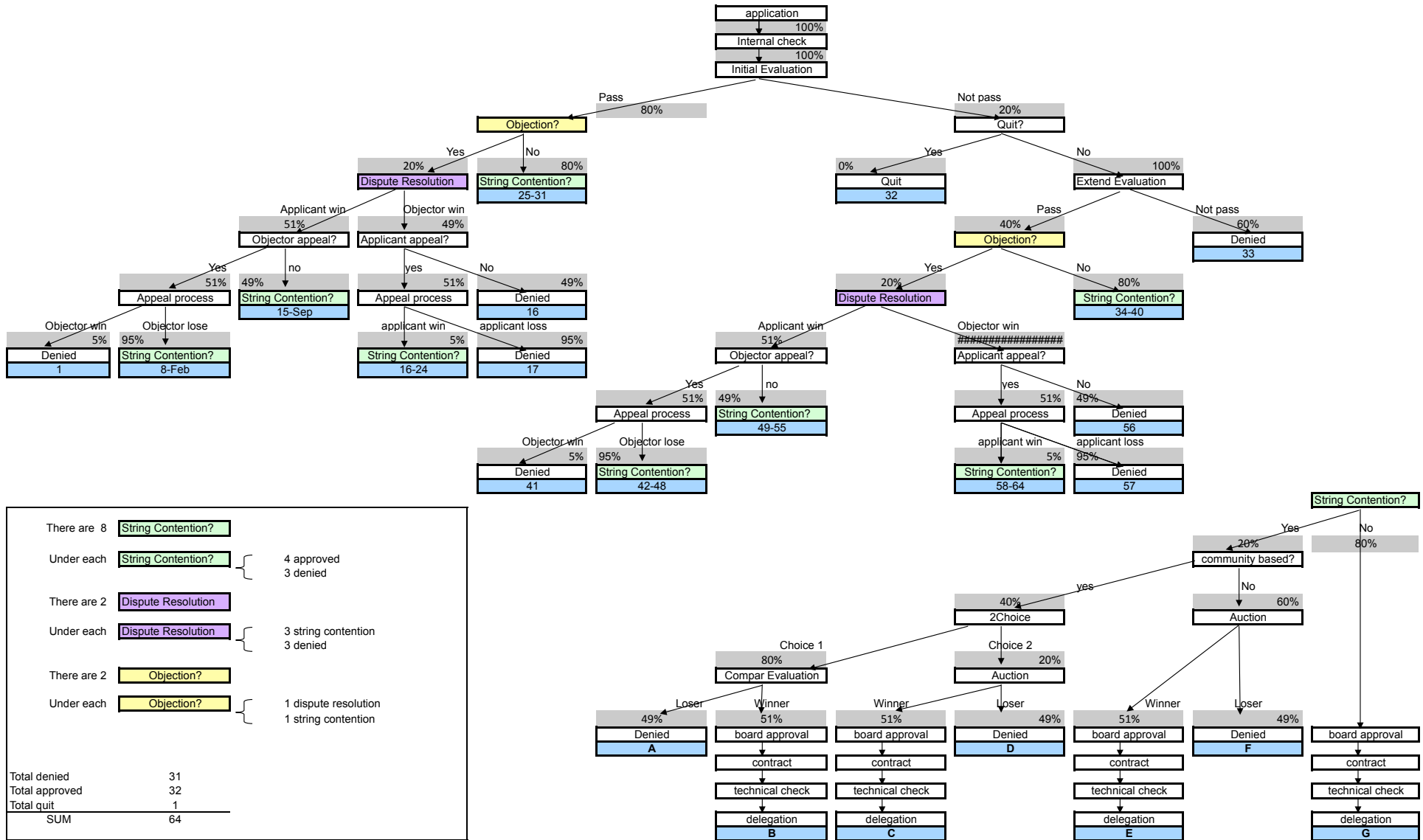
ICANN created an evaluation path tree that identified all the possible paths an evaluation can take. Some of the decision nodes are:

- Will the applicant pass initial evaluation?
- If the applicant fails initial evaluation, will it pass extended evaluation?
- Will there be an objection?
- What is the outcome of the objection?
- Will there be contention for that applied for string?

A likelihood or probability was assigned to each decision node. The result is demonstrated in the chart below. At the end the model assigned probabilities to each of 64 outcomes.

These probabilities are combined with the time to process each path and application volumes to calculate the delegation rates. The chart indicates that approximately 72% of all applications will pass through to delegation. For purposes of this calculation we increased the pass rate by 5% (to 77%) to provide a more conservative estimate.

III. Application fee analysis  
 3. Cost for processing applications of new gTLDs  
 A. Application path chart



There are 8 String Contention?

Under each String Contention? { 4 approved, 3 denied

There are 2 Dispute Resolution

Under each Dispute Resolution { 3 string contention, 3 denied

There are 2 Objection?

Under each Objection? { 1 dispute resolution, 1 string contention

Total denied	31
Total approved	32
Total quit	1
SUM	64

# Working Plan Adopted 28 October 2010

