Radus Crowdsale Specification

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Contents

Introduction

The goal of this paper is to outline a sustainable model for a crowdsale. In the current crypto space, many have attempted multiple flawed token sale designs and without significant understanding or regulation, such as launching subpar ICOs to capitalize on hype. Tokens have served as a means for companies to raise money quickly, without bearing any measure of accountability. Our model attempts to introduce both stability and accountability into current models. By introducing a phase based system, we create a reasonable, fair evaluation by creating a growth plan for success of the product itself.

Many companies have tried to address the current state of the ICO market by employing a reverse dutch auction. A reverse dutch auction in theory settles on the optimal price per token given the supply and market interest. In an irrational market, many investors buy in early at prices well above what they would be willing to pay in a more rational setting. This causes very few tokens to be sold at very high prices, forcing the company to either burn the unsold tokens or act as a central bank. Thus a single reverse dutch auction can often cause sub-optimal outcomes in irrational markets such as the current ICO space. Our phase-based model also allows us to offload all tokens, except for a limited specified amount kept for the company, mitigating this issue.

In this revised ICO model, we want the ICO incentives to align with the objectives of the founding team. Ideally, we create an ICO that promotes stability and fairness to the investors. Previous ICOs have had their valuations rise exponentially on the basis of unwarranted hype and investor FOMO. While this sounds like a good thing, a responsible founding team wants their token's valuation to be tied to the inherent value of platform rather than speculative hype. In this document, we've outlined a way to achieve that by setting a token cap based on expected market interest; bringing in institutional investors early to provide stability, credibility, and accountability; and creating a prolonged release of the token as well as locking periods to further cement the token's stability.

A. Important Definitions :

Let F be the decreasing price function for every auction round defined by the founding team. It takes input time in days and outputs the corresponding price for our token in eth.

Let TTC be the total token cap defined as a constant value after the pre-sale to institutional investors.

Let time T_CAP be the time after the round starts where the first cap (money, time, or token) is hit in a given round.

Let ER be the exchange rate of our token as soon as the auction reaches one of the caps.

II. Key Components:

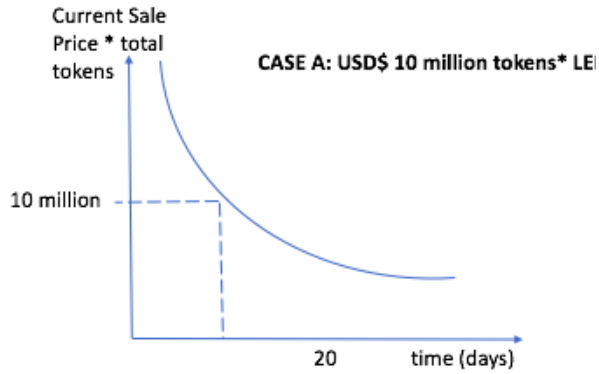
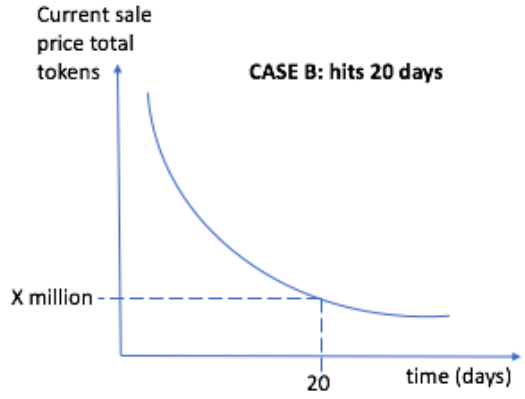


Figure 2: Graph showing time cap

Figure 1: Graph showing money cap



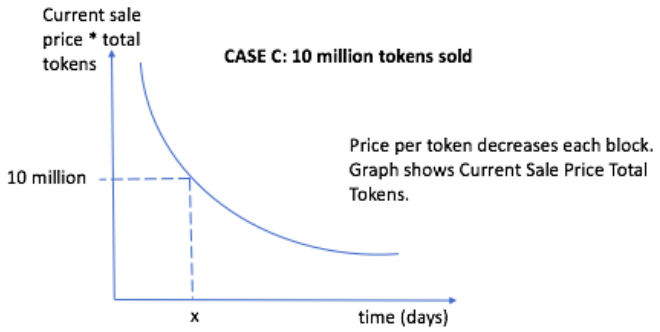


Figure 3: Graph showing token cap

II. Key Elements

A. Round 0 (Presale) : Venture Capitalists

1. At the start of our sale we offer a maximum of 10% of our total tokens to institutional investors. In Round 0, we set two potential caps based on either the amount of money raised or the amount of time passed. When the first cap (either the amount of money or the amount of time) is reached, the tokens sold define 10% of the total amount of tokens that can be sold over the duration of the sale. This means that the token total is **at most** 10M USD * LER (where LER is the lowest exchange reached in the decreasing price function in Round 0), which occurs if the first cap we hit is the 10 million dollar money cap, the highest cap. The second potential cap would be the time cap. We are limiting our sale to 20 days. So in Round 0, there are two possible outcomes:
    a) The money cap is hit and we will have sold 10 million dollars worth of tokens. The TOTAL TOKEN CAP is defined as 10M USD * LER. (LER defined above)
    b) The time cap is hit, and after 20 days we will have sold less than 10 million dollars worth of tokens. Let X be the money we raised within 20 days. The TOTAL TOKEN CAP IS X * LER. Here, LER is the price determined by our decreasing price function at time t = 20 days
2. Benefits: In previous ICO's, the choice was between capped and uncapped ICOs. In uncapped ICO's the founders come off as selfish, because they are willing to raise arbitrary amounts of money even if they only need a fixed amount to develop their platform. Investors also have no guarantee of what percentage of the total valuation they are buying, increasing the investor risk of participation in the token sale. This is irresponsible and can affect the long term reputation of the token and the team behind it. In a capped sale, the founders make a mostly arbitrary decision on what the cap should be without an adequate way to gauge market interest beforehand. Thus, if the founders choose a token cap X and the market desires tokens Y > X, this creates an unneeded scarcity after the token sale has completed, and the valuation spikes. As stated in our goals, we want a stable valuation that isn't prone to spikes from market hype.
    a) Phase 0 is crucial for our ICO model to work. It establishes credibility by bringing on VC firms who can enforce deadlines and hold founders accountable. The investors in this round also set the initial valuation and total token cap. Rather than having founders arbitrarily decide on an initial valuation and token cap, we use institutional investors as a proxy for general market interest for our token. We believe this is a valid assumption because the information available to VC's will also be made available to the public, but more

importantly, VC interest in the company will vastly influence public interest. There is a concern for collusion between firms to secure a lower price for the token, but it is mitigated by the fact that we have a floor on the price because of our time cap. Regardless the founders would be wise to whitelist a diverse enough set of investors for the institutional round to lower the probability of successful collusion.

Tokens Allocated to Company: the company itself will keep 10% of the overall token supply, giving some tokens to the founders of the company as individuals as reward for creating the platform and tying incentives to the platform itself, and keeping the majority of the 10% in the name of the company itself.

B. Round N: All Subsequent Rounds after Round 0
    1. Each round, N, will occur 2 months after the previous round - typical startup sprint time. All subsequent rounds of token sales will be like Round 0 except it will be open to the general public and will have another cap feature based on amount of tokens that can be sold, creating 3 possible outcomes in each round, N:
        a) Money Cap
            (1) See Money Cap explanation in Round 0
            (2) Assuming we hit the money cap at every round, then here are the following defined money caps for the next 8 rounds.
                (a) If we hit the money cap, then we increase the money cap by 30% for the subsequent round. If we hit the money cap each time, there will be 8 rounds, because we are selling 10% of the token supply in each round, with 10% having been sold in Phase 0 and 10% allocated to the company.
                    (i) Round 1: 10 million
                    (ii) Round 2: 13 million
                    (iii) Round 3: 16.9 million
                    (iv) Round 4: 21.97 million
                    (v) Round 5: 28.561 million
                    (vi) Round 6: 37.129 million
                    (vii) Round 7: 48.268 million
                    (viii) Round 8: 62.748 million
                (b) If we do not hit the money cap at a particular round, then that specific money cap carries over into the next

round. We keep carrying over the money cap until we hit it. For example, if the money cap in Round 1 is 10 million, and the money cap is not hit, then the money cap in Round 2 will also be 10 million.

(c) If at any particular point we feel like we no longer need funds, our smart contract is stoppable, allowing us to cut the rounds short if necessary.

b) Time Cap
   (1) See Time Cap explanation in Round 0

c) Token Cap
   (1) Because Round 0 defined the total number of tokens that can be sold, we can now add a token cap which we will set at 10% of the total token supply. Note, it can be any number that is TTC - tokens sold up to this point.

III. Analysis of a given Reverse Dutch Auction Round:

Let round number be N
Let the money cap (defined as the maximum amount of money the developers are willing to raise to achieve their development goals) be MC.
Let the token cap (in our example this is defined as 10% of the total tokens at each round, but it could be any number below TOTAL TOKEN CAP - tokens already sold) be TKC.
Let the time cap be the maximum number of days we are willing a single round of Reverse Dutch Auction to take place (in our example 20 days) be TC.

In the case we hit the money cap:
The tokens we sell for the round is:
$MC * F(t_{end})$
Where t_{end} is the time at which the MC is hit.
The money we raise by definition is MC

In the case we hit the time cap:
Let amount of money we raise within auction round be X.
The tokens we sell for the round is:
X * F(T_CAP)
The money we raised by definition is X

In the case we hit the token cap: (A token cap does not exist for Round 0)
The tokens we raise is by definition TKC.

The money we raise is also just how much money was put in the auction round by the time the token cap hit.