Topic : Adjustment of **BlocksPerYear** to come aligned with actual block time

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1. Summary
   - Adjust BlocksPerYear parameter to normalize the inflation rate and reward rate

2. **BlocksPerYear** parameter
   - There is a parameter called "**BlocksPerYear**" in genesis file.
   - The parameter estimates the "number of blocks in a year"
   - It is used to calculate block provision, which is the inflation reward for each block.
   - Current **BlocksPerYear** value is 6,311,520, fixed in genesis.json

3. Current Block Time of Secret Network
   - 6,311,520 can be derived by below formula:

     *6,311,520 = 365.25 days * 24 hours * 60 minutes * 60 seconds / **5 seconds***

   - **5 seconds** is the assumption that each block is produced every **5 seconds**.
   - The current Secret Network has an average **5.95 second** block time.

4. Influence On Inflation Rewards
   - block provision : total inflation rewards for whole chain for each block
   - block provision is calculated as below formula :

     *block provision = (inflation_rate / staking_ratio) / **BlocksPerYear***

     staking_ratio = bonded SCRT amount / total SCRT supply

   - Number of blocks produced in the current Secret Network is approximately 19% lower than the current **BlocksPerYear** parameter because of **5.95 second** block time.
   - Therefore, all validators, the community fund pool, and the foundation pool are receiving approximately **19% less inflation rewards** than theoretical reward rate.

5. Derivation of difference between theoretical reward rate and "actual" reward rate (Example)

- Current Total SCRT supply = 74,700,000 SCRT
- Inflation = 15%
- Inflation SCRT per year = 74,700,000 * 15% = 11,205,000 SCRT
- **BlockPerYear** = 6,311,520 (defined in genesis)
- inflation SCRT per block = 11,205,000 SCRT / 6,311,520 = 1.775 SCRT
- **actual** block per year with our speed = seconds in a year / actual blocktime = 365.25 * 24 * 60 * 60 / 5.95 seconds = **5,303,798 blocks**
- actual total inflation atom in one year = 1.775 SCRT * 5,303,798.32 = 9,415,966.39 SCRT
- actual yearly inflation rate = 9,415,966.39 / 74,700,000 = **12.605%** (2.395% less than 15%)
- Theoretical reward rate = inflation rate / staking ratio = 15% / 54.81% = 27.367%
- Actual reward rate = actual inflation rate /staking ratio = **12.605%** / 54.81% = 22.998% (**4.37%** less than 27.367%)

6. Future Expectation
   - When more validators join the network, the moving average will stay pretty close to the current rate due to the Intel SGX requirements limiting the variety of hardware that can be used for validators

7. Proposal
   - Adjust the BlocksPerYear parameter from **6,311,520** to **5,303,798** so that it aligns with current blockchain status and expected future expectation.

8. Effect
   - The actual inflation rewards received after adjusting the parameter will be lifted about 19% so that the reward rate will be align with theoretical reward rate.
   - Increased reward rate will encourage SCRT holders to stake their holdings, result in higher staking ratio and more stable network.

9. Possible Issues for Consideration

   - Average block time of the network may vary from 5.95 in the future. If this occurs this parameter can be re-visited and re-adjusted through another governance proposal.