

In terms of usability, even if it is good enough for now, it is unreasonable to ask users to do things like manually setting default listen ports, etc... That is undesirable even in the case of the genesis user or miners, and entirely unacceptable in the case of end-users who may not have the technical expertise to do this. As these users may simply want to use the service or the application that the network provides, it would be wrong to expect them to set the ports manually.

Eleutheros intends to overcome this issue by linking the P2P network settings to the ChainID. That is, to derive P2P network settings from a random unique 256-bit binary string (aka ChainID) so that knowledge of ChainID also grants knowledge of the P2P network settings to connect to that network. This amounts to using ChainID as an unstructured P2P 'magic number'<sup>28</sup>.

The idea is still immature (and feedback or suggestion are welcome), but the direction is promising. Effective implementation would shield all the users (the genesis user, miners, and end-users) from the underlying P2P complexity. So, all that a user needs to know to securely connect to an Eleutheros network is the magic number of that particular network and not the knowledge associated with the P2P network settings.

Furthermore, when combined with the previously discussed genesis block public mechanism, it provides scope for further improvements with regards to usability. So, the knowledge of "the number" (AKA ChainID) would enable a new Eleutheros node to determine the unstructured P2P networking settings of that Eleutheros network, configure itself to connect with it, and obtain information regarding that network published in the genesis block by the genesis user (including the proof-of-work operation used by that network, if the genesis user has published it).

Now, this is nowhere close to the present-day networking technologies that have gone through their share of developmental metamorphosis and are easy to use. Until the blockchain technology goes through that sort of a transformation, it may not become a mainstream networking technology.

Moving on to the discovery problem, the use of the ChainID as a P2P magic number provides the genesis user with the basic means to investigate whether the proof-of-work operation they have in mind is ChainID already in use. Moreover, this can be done without the need for a central auGPity or registry. The process would be to calculate the ChainID associated with the proof-of-work operation they have in mind (by subjecting ID\_value to the possible Proof-of-work operation), and

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<sup>28</sup> In the sense of a global unique identifier, not the general sense