

Add any other information relevant to server specifications and hosting, including planned availability of your maintenance team and how you would propose to handle an unscheduled restart.

This is a broad question. Our server specification is as above. The significant drivers of this specification were: the formal specification for mainnet servers issued by Factom, appropriate headroom and adequate redundancy, including mirrored drives and dual redundant PSUs. The rationale for hosting provider is detailed in Proposal Attachment 2 "Server Location Analysis" and is largely governed by location and ISO 2700/1 certification and Uptime performance. We have ensured they have appropriate redundancy in case of any faults with their primary systems for delivery of power, network and cooling.

We have decided to go a slightly different route to ensuring optimal backup and availability of servers than existing ANOs. We have opted for 2 flagship primary servers in Sweden and Switzerland, both incredibly desirable countries to host servers due to their strong stance on personal privacy and excellent infrastructure. However this comes at significant cost.

To offset that we will host the 2 backup servers in a high-spec datacentre in the UK within a short travelling time from the systems administrators' residences. In these we will colocate our own hardware that will host 2 backup nodes and several testnet nodes. The initial specification for this server will be a high performance AMD EPYC processor system with 24 cores and 128Gb RAM.

We will run this with the open-source Proxmox hypervisor and our nodes will be allocated guaranteed resources that meet or exceed the maximum specifications detailed in the Factom Governance documents. This gives us all the advantages of dedicated servers (by ensuring we know what is running on it) but with the flexibility of using Virtual Machines (VMs). It also offers us an opportunity to gauge whether the flexibility of using VMs with Snapshots can be gained without sacrificing the reliability afforded by our bare-metal flagship servers. In addition we will also be capable of very easily scaling up to significant hardware demands without requiring any additional purchases should the Factom network suddenly see a huge uptick in usage.

By purchasing our own servers for the UK datacentre it makes it significantly more affordable to continue supporting the Factom nodes in Sweden and Switzerland over the long-term even if the Factoid market remains in the doldrums for a prolonged period of 18 months plus because there is just one up-front cost and the colocation fees are significantly less than renting the hardware. We have identified at least 2 UK datacentres that meet our strict specifications, one a tier 3 the other a tier 4 and we are scheduling visits to assess them in person within the next month.

In addition to the above two dedicated flagship servers and one colocated server we will add one VPS to the same hardware specification as the two dedicated servers. It will only be operated for updates and synchronising once a month, except when the functioning of one of our other datacentres or servers is in question. In this latter scenario it will be spun up and kept operational until we have confirmation that our Swedish, Swiss and UK operations are back at full availability. It will be operated by a "pay as you go" VPS provider. Provisionally this is likely to be DigitalOcean but we are in negotiations with another "pay as you go" provider who operates in a Tier 4 Luxembourg datacentre.

This additional backup setup will ensure that at any time we should have at least 3 independent locations with servers up and running. In the event of one complete datacentre or server outage we will be capable of sustaining one further datacentre or server outage without affecting our ability to provide 2 Authority nodes to the Factom network.

We will have at least one team member available on a 24/7 basis to monitor servers, respond to service calls and rapidly implement/test upgrades. We will have an internal rota that will govern which of our system administrators is on duty at any point in time and will use a shared calendar synchronised with our phones to manage this.

We have ensured that our monitoring and remote access sites also have redundancy through availability of secondary machines, uninterruptible power supplies (UPS) where appropriate and back-up internet access routes. In addition we will also maintain 2 independent VPS servers that run different monitoring scripts on our servers and will alert the on-duty system administrator via SMS or phone call. These servers will also monitor each other so it is not possible for us to be inadvertently running without any monitoring. An extension to this system will require the on-duty system administrator to confirm they have received the alert and are looking into it. If this confirmation is not received the automated system will then call additional system administrators after a pre-determined amount of time.

We will continue to run 4 Testnet servers to ensure all members of the team get regular experience administering the Factom node software. These requirements are economically demanding and not sustainable with employed or contracted staff as evidenced by our budget. We are sufficiently committed to the Factom community that the founders will cover this activity for at least the next 24 months and we are prepared to access our reserves to extend and bolster this as appropriate.

In the event of an unscheduled restart we will be alerted first by our own monitoring servers. In addition we will ensure that our details are always up to date so that we can be reached easily by the community. Following receipt of any of these alerts the on-duty system administrator will follow the incident procedures we will have for a range of scenarios. These include:

We will log on to the community Discord to assist in determining the cause of the problems and ensuring we can rapidly implement any necessary action.

We will log on to the relevant servers to assess their status and access their logs.

In the event of any incidents that indicate a potential datacentre or server fault, we will spin up one of our secondary backup on-demand services to ensure we have an additional node ready to go as soon as possible (not to be confused with our primary backup follower nodes of which there will always be 2 permanently on and synced).