1. What is object storage ?

Benefits of Object Storage

- Scalability: Object storage solutions can handle large amounts of data, making them ideal for growing storage needs.
- Global Accessibility: Data stored in object storage can be accessed from any location, facilitating collaboration among distributed teams.
- Cost-Effectiveness: Many object storage services offer a pay-as-you-go model, which can be economical for varying storage requirements.

S3 Horizontal Scaling

S3 is truly horizontally scalable — you can store unlimited objects across multiple regions and availability zones without architectural changes. There's no practical upper limit on capacity or concurrent connections.

NFS/iSCSI Limitations

NFS and iSCSI don't scale horizontally in the same way, but the constraint differs:

- NFS: A single NFS share (export) is limited by the backend storage system it's mounted from. You can add more NFS shares/exports, but you're adding discrete storage pools, not transparently scaling a single namespace. Multiple NFS shares require application-level awareness of where data lives.
- iSCSI: Similar constraint — a single LUN is bounded by its underlying storage. You can add multiple LUNs, but again, you're managing separate storage targets, not seamless horizontal scaling.

For PBS Remote Backup Context

This is relevant: A PBS system backing up to NFS or iSCSI on a traditional SAN can hit capacity limits and requires manual expansion (adding new shares/LUNs). S3 removes this constraint entirely — capacity expands transparently.

However, PBS-to-PBS replication over a network still provides better deduplication than S3, even if S3 scales more elegantly. The trade-off is between efficiency (PBS-to-PBS) and unlimited scalability (S3).

So you're identifying a real architectural advantage of S3 that shouldn't be overlooked when designing remote backup infrastructure.

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