

## Product features

ExpressVM is a Hyper-converged infrastructure. Unlike traditional cloud infrastructure with isolated storage resource, ExpressVM provides unified storage pool to cloud service by leveraging the distributed local storage. This scale-out hyper-converged model has following features:

- Converged with compute resource, the single physical server provides local compute and networking resource as well as storage service for other compute nodes. It makes sure that both VM and storage are in the same cluster.
- VM-awareness, it is aware of all the IO requests raised by each virtual machine and make them localized as much as possible.
- Scales-out allows the smooth expansion from several nodes to hundreds of nodes.
- Enhanced availability, ensures no single point of failure.

## Components of ExpressVM:

ExpressVM Controller

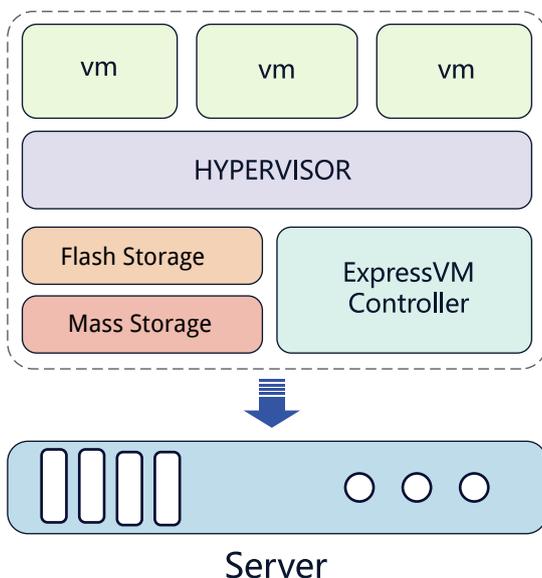
Auto Tier

Auto Rebalance

Data Localization

Data Protection

Real-time deduplication



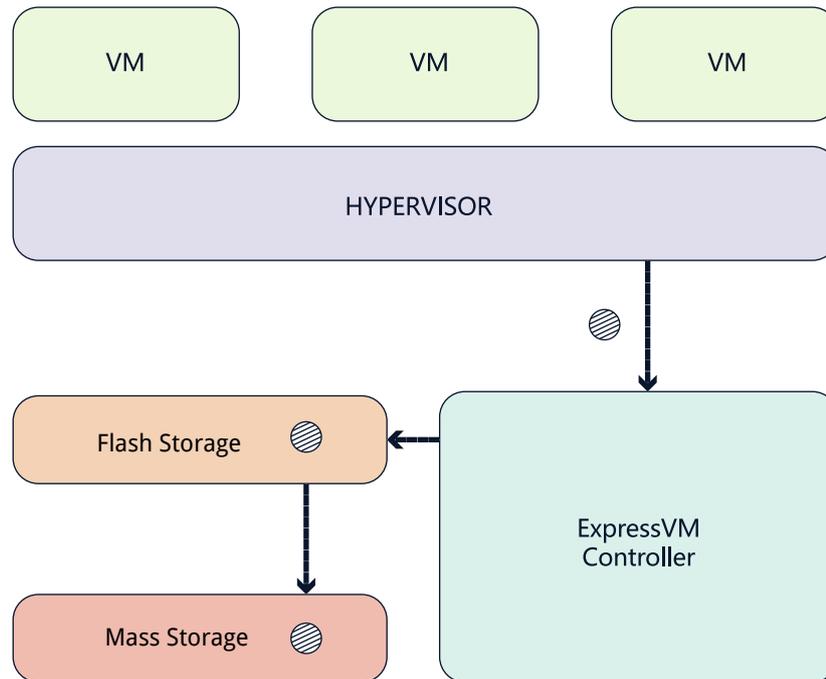
## ExpressVM Controller

Unlike traditional storage solution with no more than eight controllers, ExpressVM runs controller on every single node.

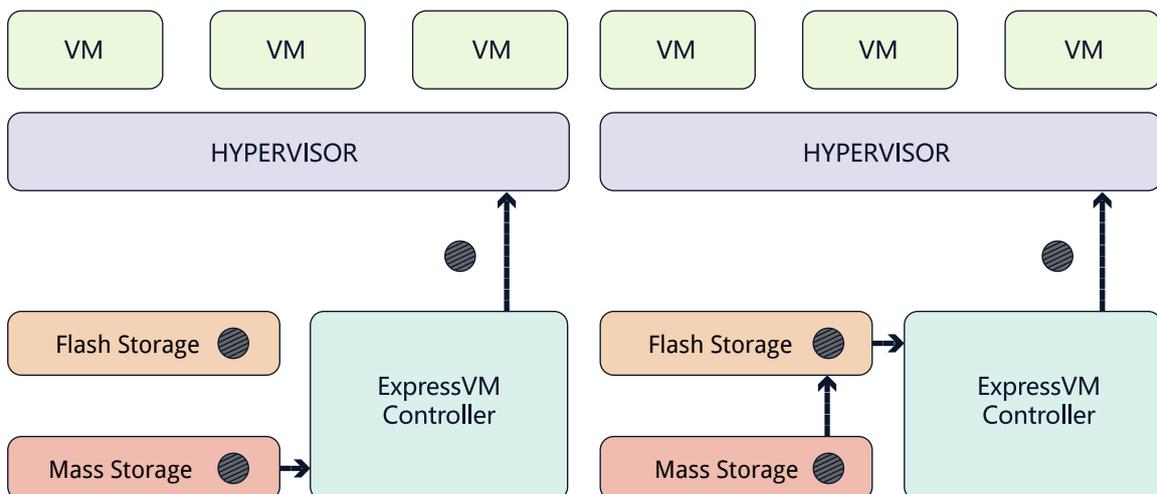
Within the distributed system, each node runs an EVM controller agent and communicates with other agents via TCP/IP. The controller is responsible for the local IO request as well as facilitating the cluster's IO request from other nodes. This architecture EVM a robust cluster by eliminating single point of failure.

## Auto Tier

Auto Tier is a data classification technology. Data is primarily written into the faster SSD with proper priority. As data becomes 'cold', Auto Tier moves the 'cold' data from SSD into the larger HDD.

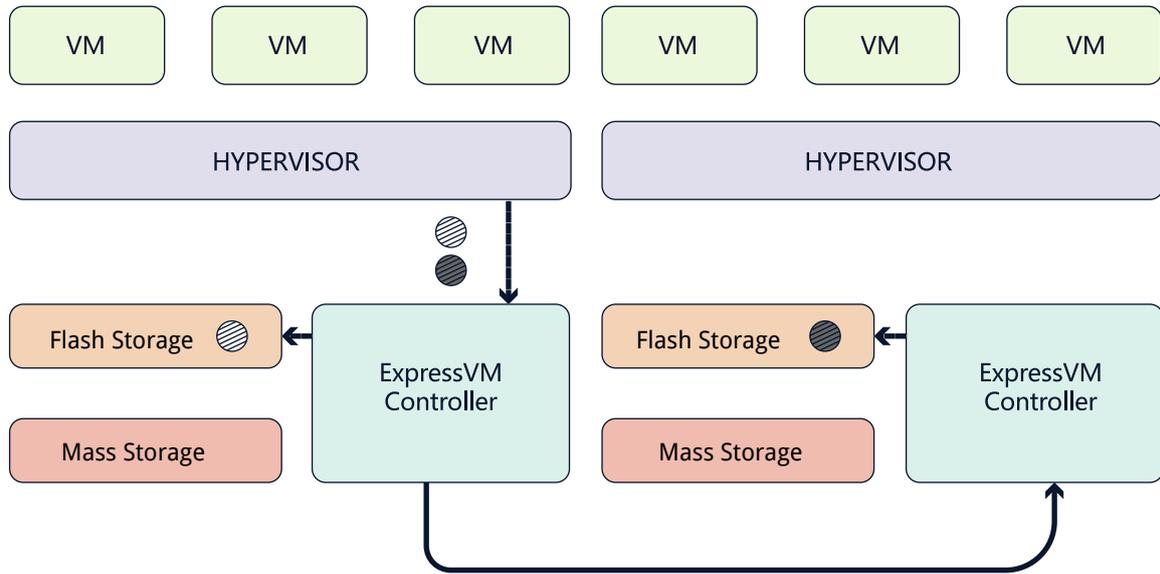


Data is primarily read from SSD. As data becomes 'hot', Auto Tier moves the 'hot' data from HDD to faster SSD.



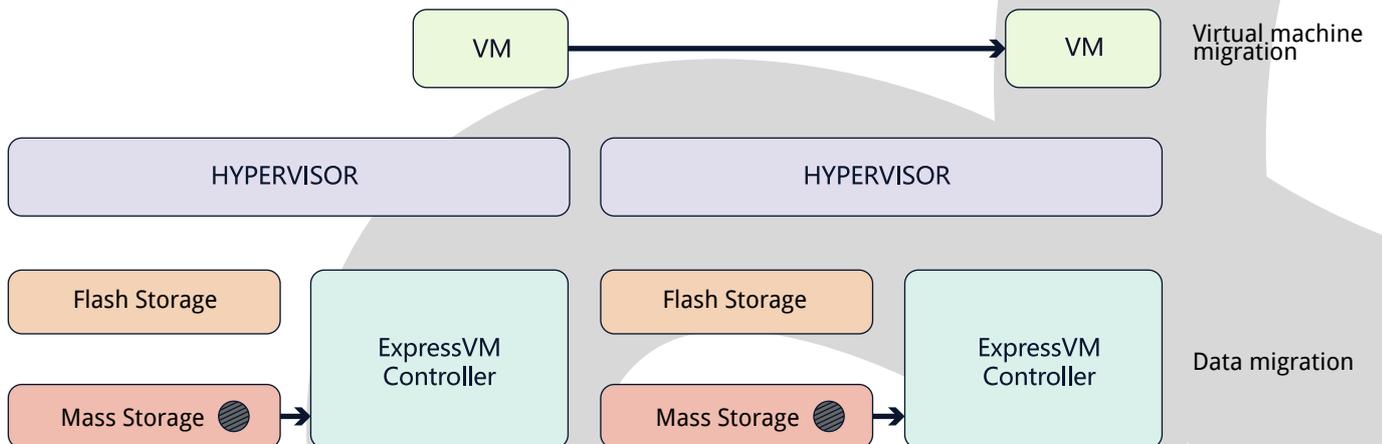
## Auto Rebalance

Auto rebalance provides the global load balance for the entire cluster with the growth of cluster size.



## Data Localization

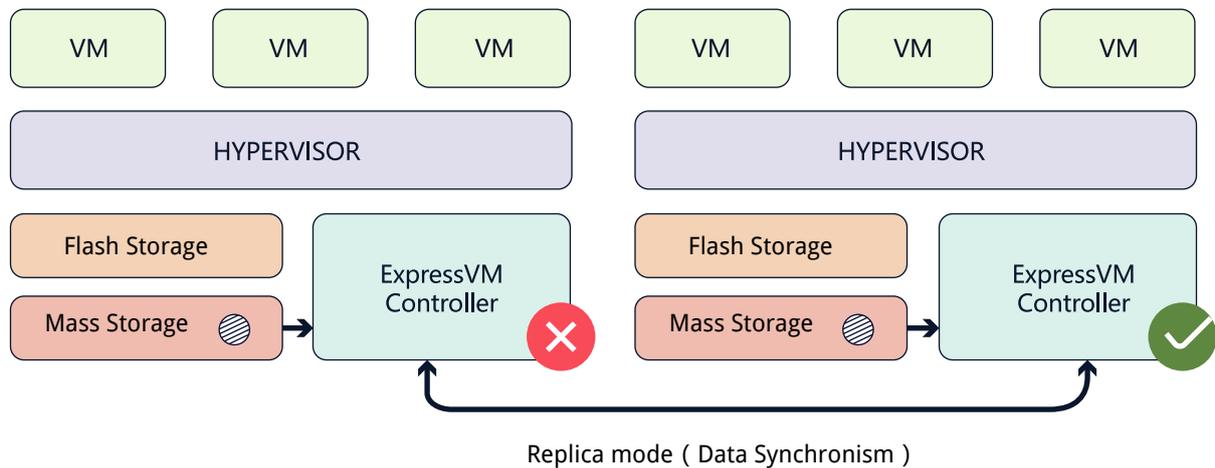
In the traditional solution, VM images are stored in back-end storage media like SAN or NAS. As a result, each I/O request is treated as a remote operation. EVM Data Localization keeps data proximate to the VM and allows I/O operations to be localized on that same node. For example, if a VM moves to another node, a data migration is then triggered. The data follows that VM to the same node in order to maximize the using to local I/O.



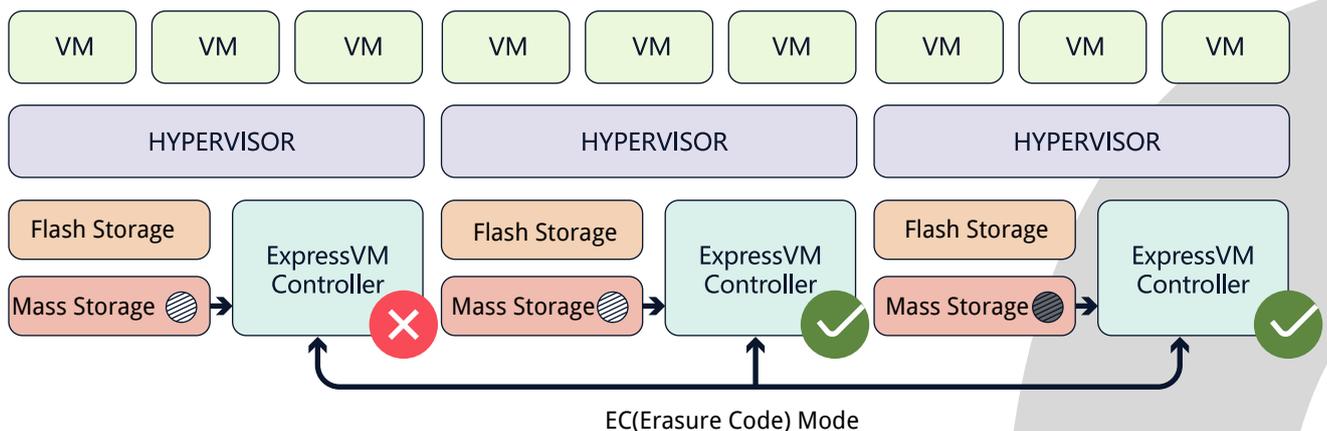
## Data Protection

Express VM provides two kind of data protection:

Replication mechanism replicates data image across multiple nodes to provide fault tolerance.



Erasure coding will spread data and erasure codes across all nodes which not only provides the protection for the cluster, but also resolves the overhead problem caused by replication.



## Real-time deduplication and compression(optional)

In Cloud, virtualization will generate mass VM images and data duplication within VM is very common. Real-time deduplication and compression will scan the data and safely remove the duplication data among these images without any impact for VM.

## Why ExpressVM?

Traditional IT infrastructure falls short of the demands from fast-changing business due to its complexity and high TCO. ExpressVM provides an elastic and robust hyper-converged storage solution which solves issues such as remote I/O operation, data duplication, data protection and live VM migration.