High Availability with Mirroring

February 2018
Agenda

1. What is High Availability?
2. System Architecture
3. Components of a High Availability System
4. Monitoring
What is High Availability?

• High availability is a characteristic of a system, which aims to ensure an agreed level of operational performance, usually uptime, for a higher than normal period. (source: Wikipedia)

• New with v8.15, the High Availability module within IM achieves this by utilizing Intersystems Mirroring Technology with automatic failover.

• High Availability differs from Hot-Backup in that the failover process is automatic.
Hot-Backup Architecture

- **Hot-Backup**
  - Failover is a manual process
  - Acting Primary system needs primary’s IP Address and Hostname
  - Only a Disaster Recovery Option
High-Availability Architecture

• Mirroring
  – Allows both High Availability and Disaster Recovery options
  – No IP Addresses or Hostnames have to be changed
  – Limited IT involvement for failover action
  – High Availability allows automatic failover
  – Hot Backup failover is manual in a single click
Components of a High-Availability System

• All systems are **Mirror Members**
  - A Mirror Member can have different roles
    ▪ Failover (High Availability)
    ▪ Read-Write Reporting (Report Server)
    ▪ Disaster Recovery (Hot Backup)
  - A Failover member can be in different states
    ▪ Primary
    ▪ Backup
    ▪ Connected
  - The status of the system is logged in cconsole.log
    ▪ Instrument Manager - Mirror Member Role: Failover: This instance is configured as a failover member
    ▪ Instrument Manager - Mirror Status:PRIMARY
Components of a High-Availability System

• Virtual IP (VIP)
  – This is just an IP Address that is included in the sites local DNS with a hostname assigned to it.

• How is it used?
  – As a Failover Member becomes the Primary it takes ownership of that Virtual IP.
  – Configure connections to IM and Thin Clients using the Virtual IP, so connections do not need to be reconfigured if failover occurs.
Components of a High-Availability System

• Arbiter System
  – This system can be any system, existing or new, that is on 24 hours a day and has network access to all of the mirror members.
  – The Arbiter is a system running the ISCAgent. The ISCAgent is also running on each mirror member where Caché is installed.
  – The ISCAgent is a heartbeat for the local Caché instance to the other members in the mirror set.
  – The Arbiter system allows for smarter decisions as to when the acting primary system is no longer available and another system should become the primary.
Monitoring

• Status Display
  – Columns
    ▪ Connection - The hostname of the computer of the mirror member
    ▪ Database Time Latency – Time it takes the secondary system to apply journal files to its databases.
    ▪ Journal Time Latency – Time it will take the secondary system to process the journal records that it copied from the source but has not yet applied to its databases.
    ▪ Mirror IP - The IP address of the system
    ▪ Mirror Member Role - The current role of the system

• Caché Management Portal: System Operation -> Mirror Monitor
  ▪ Status of connection to Arbiter system
  ▪ Status of all mirror members (one screen shows status from all members if they are able to communicate)
  ▪ Status of databases in regards to local system (Activated, Caught Up, De-journaling)
Questions?

Thank you for your time!