SCADA FEST
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VTScada
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A Delta Group Company

Historian Enhancements Pushing Peak Performance

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Introduction

Topics:

- Live Historian Compression
- Existing Data Compression
- Extended Historian Storage

Historian Storage – it fills up fast

- 1000 data changes per second will require **~900 GB/year**
- No deleting by default
- What do you do when your Historian storage fills up?
  - Copy the existing folder to a bigger drive
  - Reconfigure the Historian to use this new location
- Not ideal

Historian Storage – How can we improve it?

- Two main issues:
  - Storing a lot of data
  - Adding storage is not easy
- Our new Historian features aim to improve these two issues
- These tools reduce the size of large data sets, and make dealing with large data sets far easier

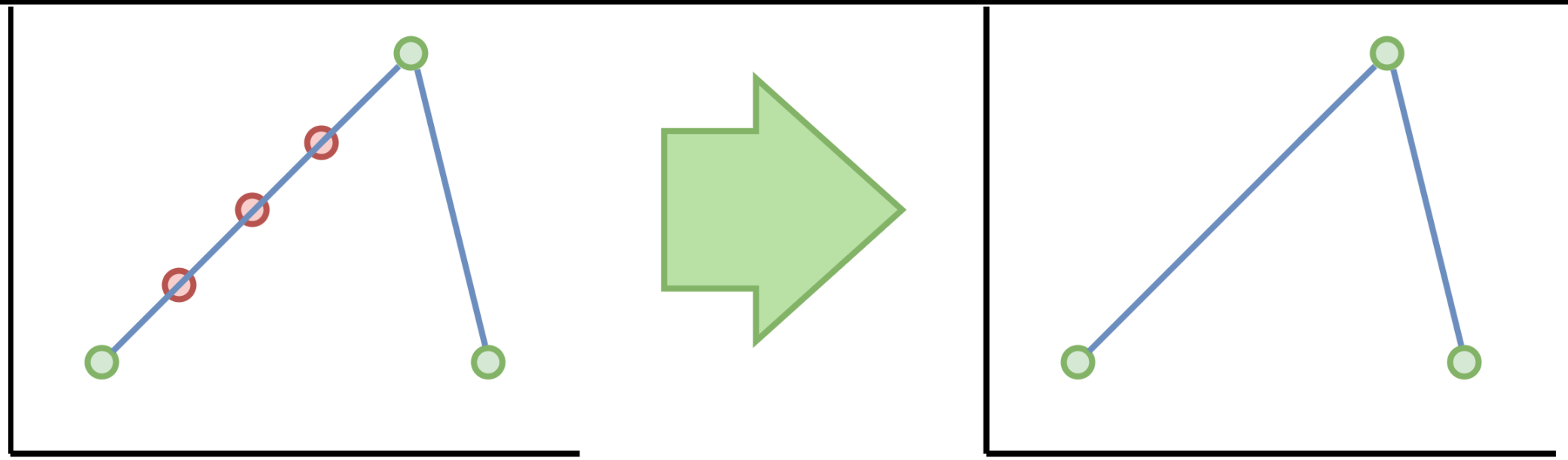
Three Solutions

1. **Reducing the volume of incoming data**
2. Reducing the volume of existing data
3. Allowing more storage space to be allocated in the future

Advantages Over Archiving

- Our solution was to compress data over archiving it
- Compressed data is seamlessly retrievable
- Reduces volume of incoming AND existing data
- Recompress data with a tighter deadband

Live Historian Compression



Same plot, less data.

The new Historian Compression algorithm allows you to log the same trends while using far less disk space, and without sacrificing data fidelity

Data Compression – How does it work?

- Goal: same trends, less data, no accuracy lost
- Swinging Door Trending compression algorithm
  - Captures data **trends** over raw data
- Live compression algorithm
  - Data is compressed in real time, as it comes in
- **40% reduction** in disk space requirements

Historian Compression

- Straight line, trending real time compression technique
- Preserves the overall **trend** of the data while eliminating raw data points
- Acceptable error range defined by a tags deadband
- A logged point represents several “raw” points

Users Perspective

- Nothing changes – HDV and reporting plots look the same
- But less data!
- Data is still fully accessible
- Data is now faster to retrieve
- Lower CPU/disk usage allowing higher performance

Users Perspective

- Configurating is an app wide setting – on or off
- Possible to use Context tags to set on a per Context tag basis
- Will work for non-memory Analog IO tags and AnalogStatus tags
  - Can set fidelity of compression
  - Can be disabled

Three Solutions

1. Reducing the volume of incoming data
2. **Reducing the volume of existing data**
3. Allowing more storage space to be allocated in the future

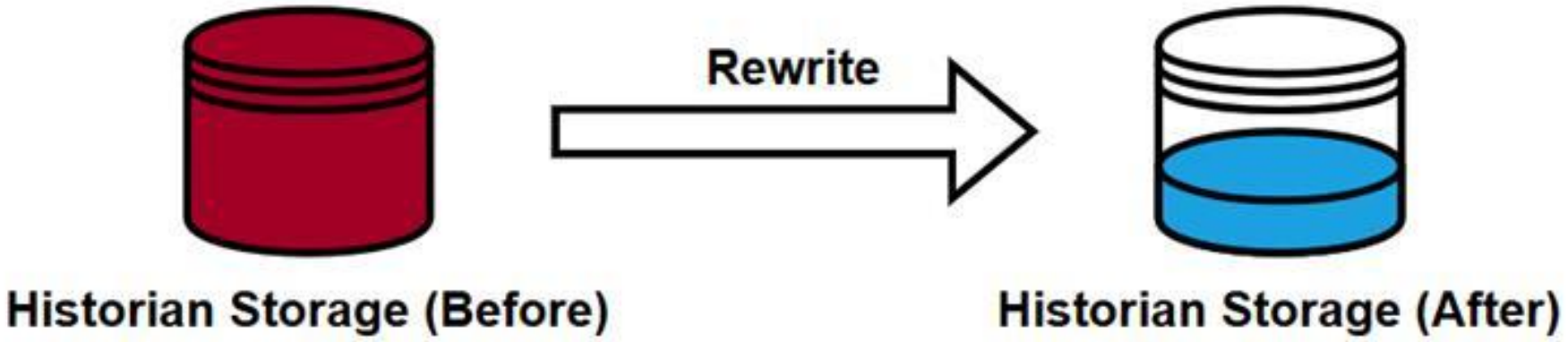
Existing Data Compression

- Compressing live data is great, but…
- Many customers have a lot of existing data
- How can we reduce the volume of existing data?

Compressing Existing Data

- Easy – Apply the same algorithm to our existing data!
- While designed for live data, our compression algorithm can also work on existing datasets
- Compress existing, traditionally deadbanded data using the new Historian Compression so that it takes up less space

Compressing Existing Data

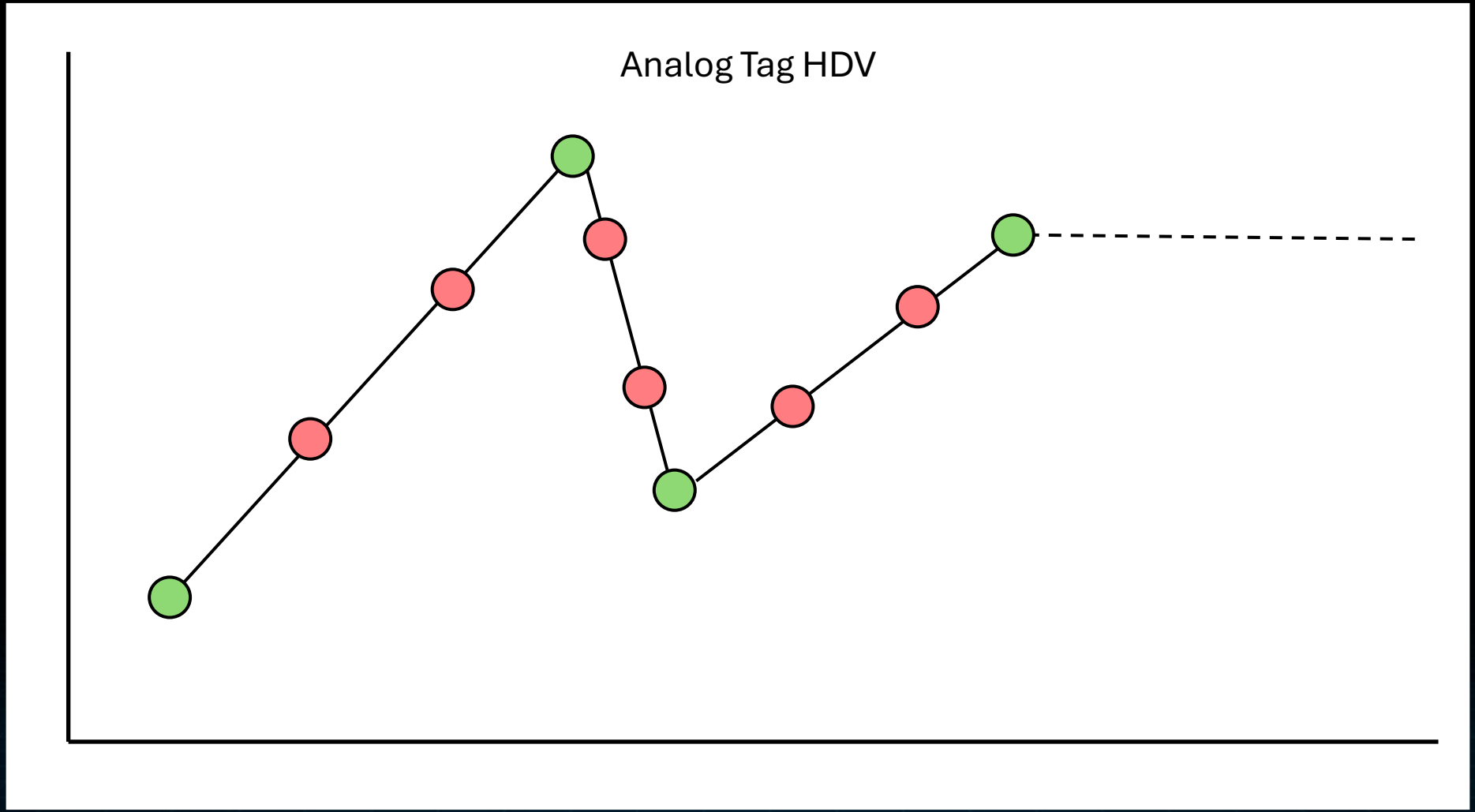


Compress and fix existing historical data by rewriting the data with the Historian Compression algorithm.

Compressing Existing Data

- Per Historian, per tag basis
- Manually started by the user
- Runs in the background – no impact on historical data retrieval or active Historian logging
  - Uncompressed data is only deleted after compression is complete
- Capture the **trend** while removing extraneous data points

Compressing Existing Data



User Perspective

- Select an Analog tag
  - Includes tags that are not actively running
- Select the age of data to be compressed, or all of it
  - Data older than 3 years, data from this data backwards, etc.

Recompression

- Recompress already compressed data
- Useful for…
- Older data that requires less granularity
- Bad deadbands set from the start
- Test data

Three Solutions

1. Reducing the volume of incoming data
2. Reducing the volume of existing data
3. **Allowing more storage space to be allocated in the future**

Extended Historian Storage

- Compressing old and new data is great, but…
- Inevitably, drives will fill
- How do we make the process of adding storage to the Historian easier?

Adding Storage

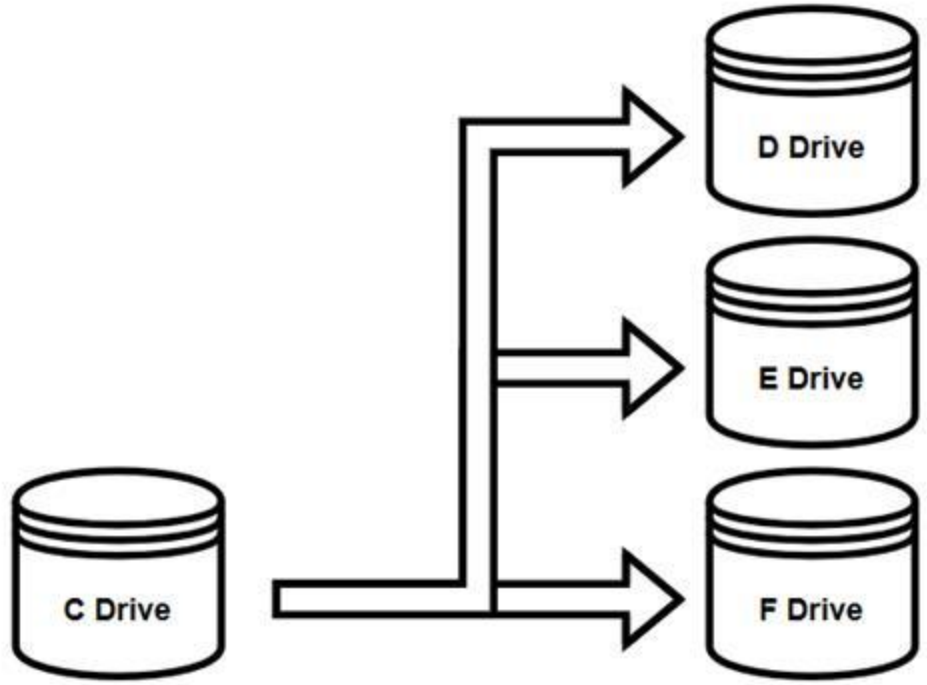
- Current process
  - Stop VTScada
  - Install a new drive
  - Start VTScada
  - Reconfigure Historians
  - Stop VTScada
  - Copy Historian folder
  - Start VTScada
  - Windows/Antivirus configuration

Adding Storage

- VTScada must be stopped - disrupts business
- Manual process
- Slow
- Error prone (usually requires VTScada support staff on the line)
- Painful if many servers need to be upgraded
- Storage filling up can sneak up on you

Extended Historian Storage

Extended Historian Storage Locations Support



Extended storage locations can now be setup to relieve old data from the primary historian location, with seamless reading/writing.

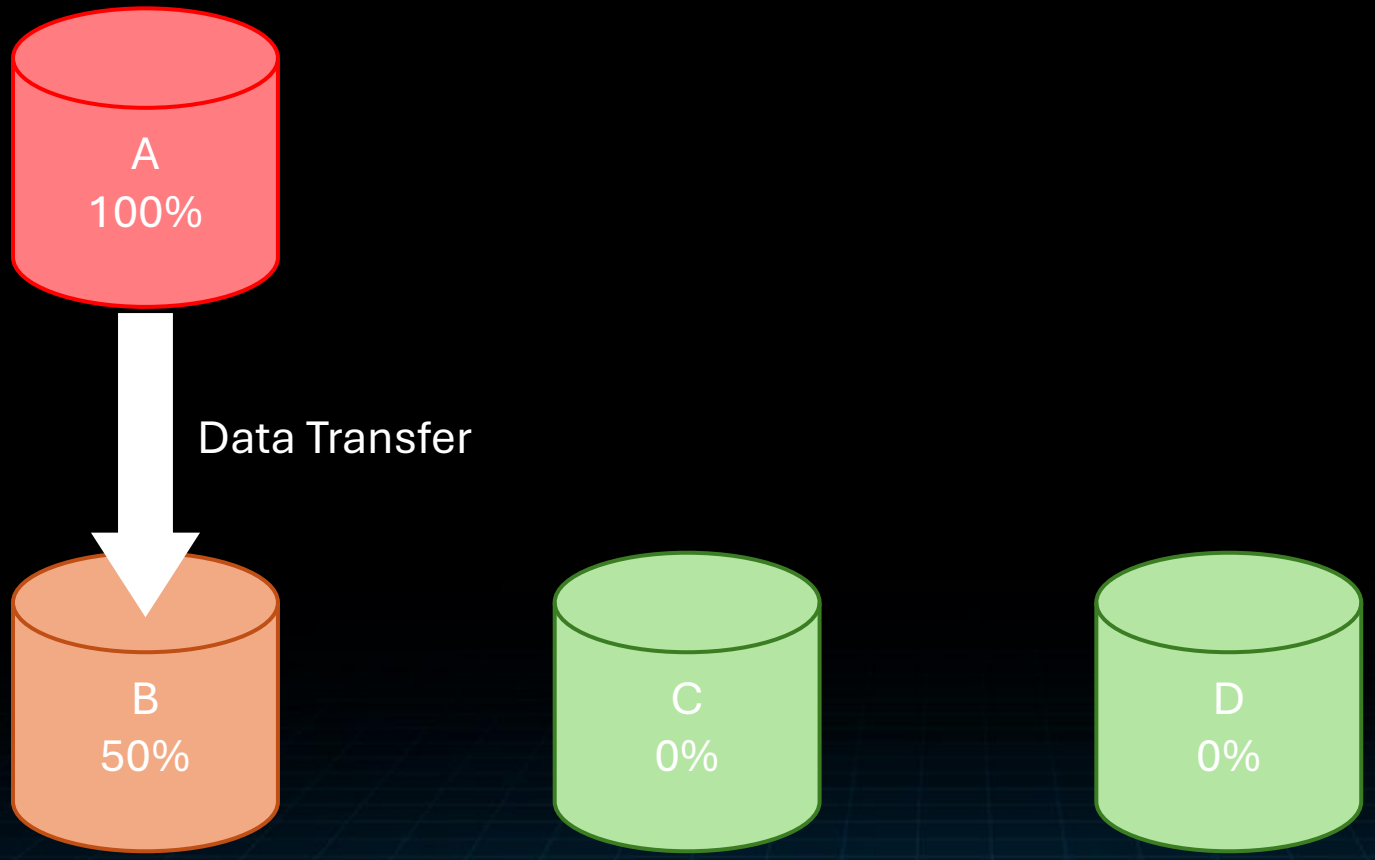
Extended Historian Storage

- Historian storage can now be added seamlessly
  - Simply plug in a new drive and configure the Historian to use it
- Retrieval is seamless
  - All drives accessible without any extra work from the user
  - Uniform history across multiple drives

Extended Historian Storage

- Configurable from the Historian tag config folder
- Hierarchies of storage locations
  - Fastest drive as the primary location
  - Slower drives as secondary locations
- When the primary location fills up, we move the data to secondary locations

Extended Storage – Data Transfer



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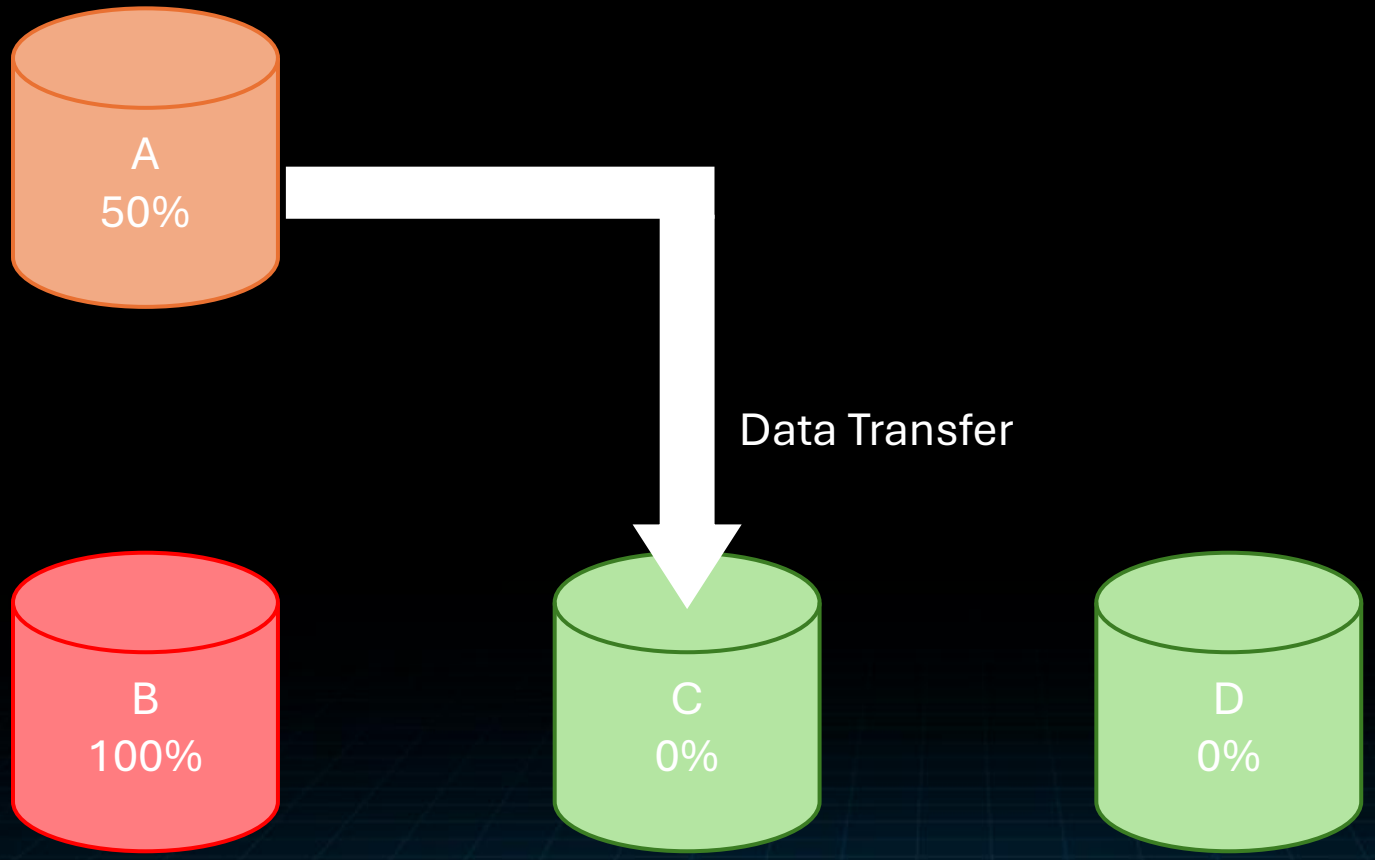

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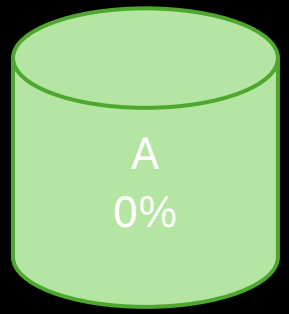
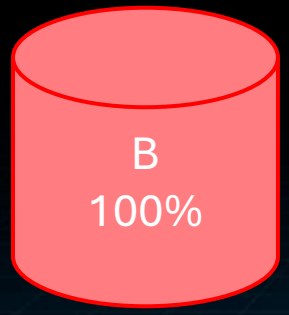
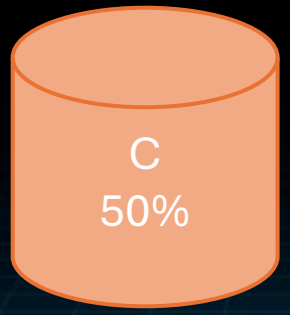
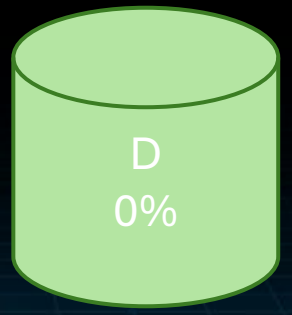


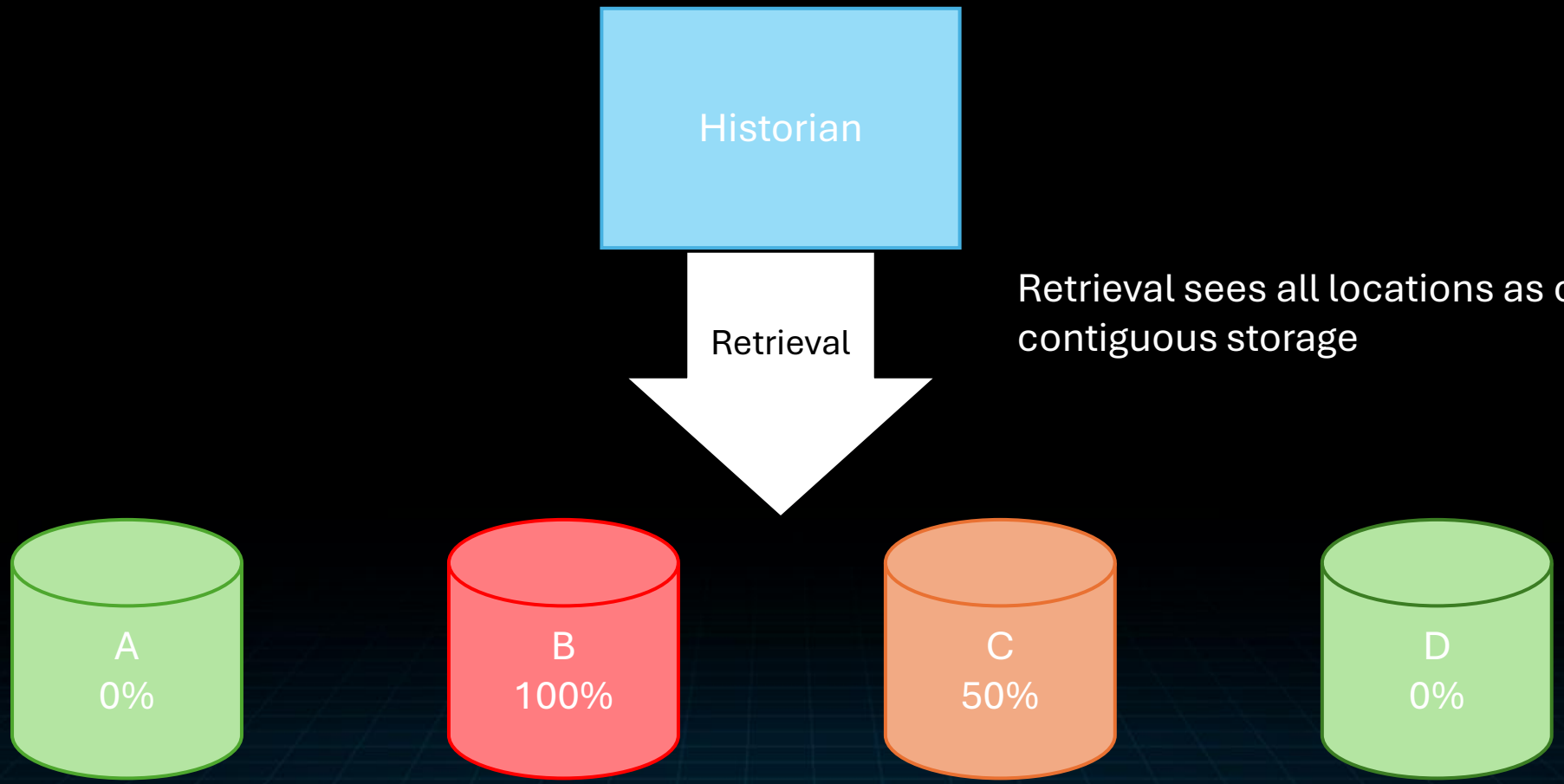
Ready for more data







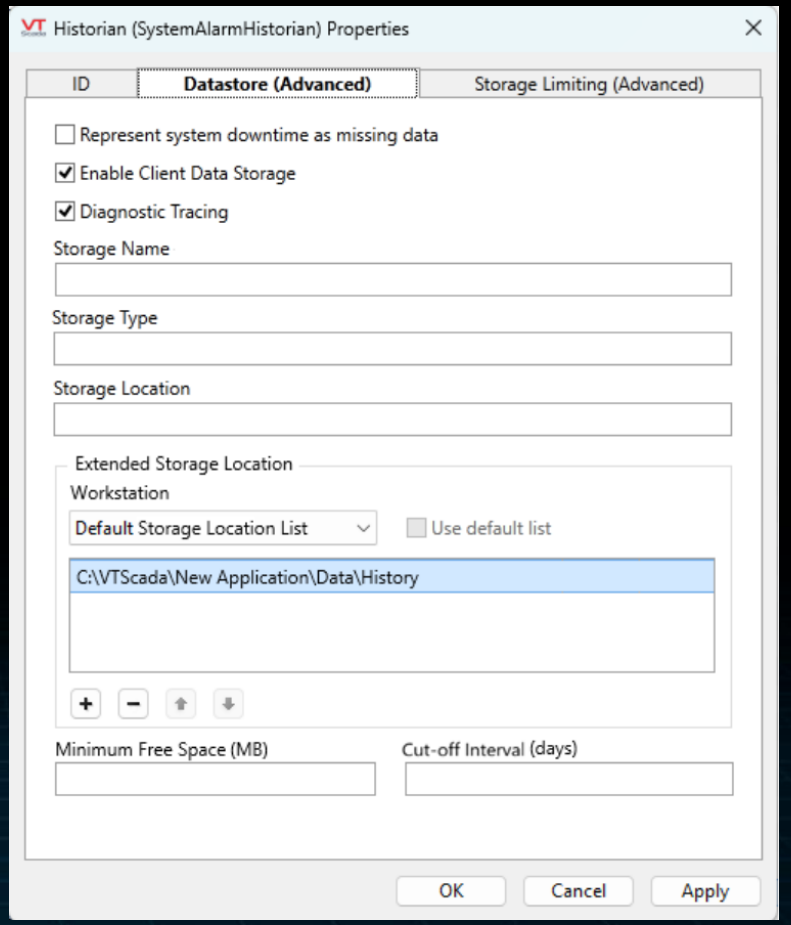
Extended Storage – Retrieval



Retrieval sees all locations as one contiguous storage

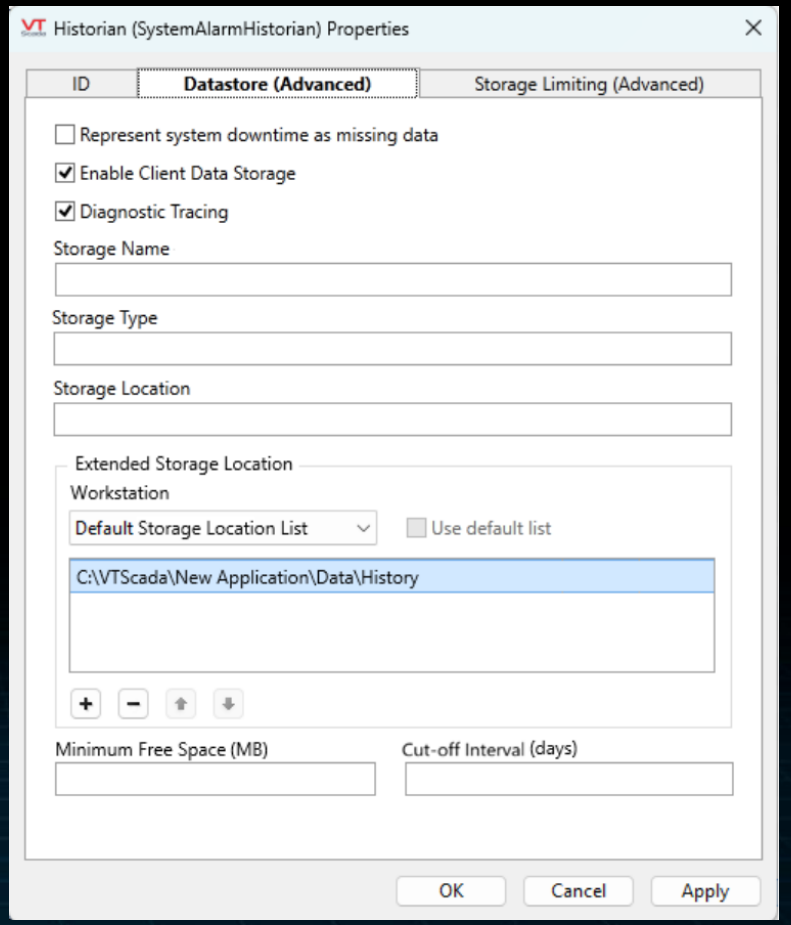
User Perspective

- Secondary locations configured per Historian, per workstation
- Central configuration of secondary locations on all servers
- Can use a default list, or customize per workstation



User Perspective

- Configure the minimum free space before the primary location data should be copied to a secondary location
- When only 50GB remain in the primary, transfer data to secondary



Bad Actors Tool

- Still in the planning phase
- Learn which tags have been logging the most
- Allows you to catch tags with bad deadbands early, before they pollute your history with useless data
- Live statistic for most active tags
- Generate reports on the busiest logging tags over a given time period

Review

We covered…

- Live Historian Compression
  - Reducing the volume of incoming data
- Existing Data Compression
  - Reducing the volume of existing data
- Extended Historian Storage
  - Allowing more storage space to be allocated in the future

Questions?

Thank you for attending this session!

- Fill out the 2-question feedup survey via the App!
- Especially if you need a Continuing Education Credit or Professional Development Hours certificate.
- Don’t have the app, fill out the paper form included in your conference kit and hand into Natashia.

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