Technical Justification for Comprehensive Changes

DATE	06/01/22
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TITLE / ROLE	Lead Infrastructure Engineer

What is the scope of the changes?

This document outlines planned changes for updating firmware on Hitachi storage frames in the Zebulon Data Center, Halls A and B. The vendor (Hitachi) recommends implementing these changes to address a vulnerability that could disrupt connectivity between storage frames and switches and impact downstream systems and applications. In each data hall, storage frames will be updated after hours on separate infrastructure change weekends in June to minimize downtime.

This document is an addendum to change requests ITCM000375 and ITCM000379 submitted 5/31/22.

What is the purpose of the changes?

The vendor (Hitachi) advised Storage Management of a vulnerability with the current firmware version (3.4) on Hitachi storage frames. Hitachi recommends updating storage frames in the Zebulon Data Center to the latest version (4.4) to prevent potential connectivity disruption.

What systems will be impacted by the changes?

The updates will impact physical systems with attached storage, including VMware infrastructure systems hosting virtual instances. After the storage frame firmware is updated, platform and application engineers will redirect applications to systems in the parallel data hall. This will ensure system availability during the change minimizing the impact of scheduled tasks and distributed jobs and ensuring application connectivity should the change run beyond the planned time frame. After the firmware is updated on all storage frames, platform engineers will assist in redirecting applications back to systems in the data hall with updated storage frames. Application testing and validation will be performed by the application support teams.

What is the impact of the storage frames remaining at the current firmware version?

Storage frames with the current version (3.4) installed may experience a loss of connectivity between Hitachi storage frames and Cisco fiber switches if unplanned switch cluster failovers occur.

What are the time frames for the changes?

Hall A, Sunday, June 11, 2022, 00:00 – 06:00 ITCM000375 Infrastructure change weekend #1
Hall B, Sunday, June 25, 2022, 00:00 – 06:00 ITCM000379 Infrastructure change weekend #2

Has the new firmware version been tested and certified?

Storage Management tested the latest Hitachi firmware version (4.4) in the Wilson Test Data Center on test storage frames. The results were certified by test engineers. Platform and application engineers conducted similar tests for applications on test systems in the Wilson Test Data Center. The results were certified by test engineers.

Have affected users and application support engineers been notified of the scheduled changes?

Platform and infrastructure support teams have been engaged. Users and application support teams were notified in separate directed communications.

What are the tasks involved in the changes?

1) Before the firmware updates, platform and application support engineers will fail over applications to systems in the parallel data hall.

2) Storage management will update firmware on Hitachi storage frames.

3) Platform and application support engineers will fail applications back to systems attached to storage on updated storage frames.

4) Application validation will be conducted by application support engineers and any issues addressed.

What is the backout strategy?

If problems are encountered with the new storage frame firmware version, Storage Management will reinstall firmware for the previous version (3.4) on storage frames. Applications will remain on the systems in the data hall not affected by the updates until all issues are resolved.

Will vendor support be required during the changes or be available if issues arise?

Cisco and Hitachi support engineers have been engaged and will be available on the scheduled dates.