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Introduction

This document describes how SAP HIgh Performance Analytic Appliance (HANA) scale-out solutions with Electromagnetic Compatability (EMC) VNX storage and applies to the Cisco SAP HANA appliance as well as to SAP HANA Tailored Datacenter Integration (TDI) implementations. It also explains how multipath configuration changes to mitigate unexpected outages of the environment.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Problem: U

For SAP HANA the required data and log file systems are mounted via fiber channel from the EMC VNX storage. Mounting and unmounting of the devices is controlled by the SAP HANA storage API and is based on the Linux Device Mapper Multipath (DM-MP) module. The configuration consists of eight paths (active/passive) to each storage device.

With SUSE Linux Enterprise System 11.3, Linux kernel 3.0.101-0.40 a bug in the multipathing logic has been detected

This may result in unexpected outages of the SAP HANA scale-out environment.

The bug is not encountered as long as the hardware and cabling is error free.

Solution

Update the SUSE Linux Enterprise System 11.3 kernel to version

```
rr_min_io
```

```
flush_on_last_del
```

```
fast_io_fail_tmo
```

```
dev_loss_tmp
```

The resulting configuration file must look like this:

```
defaults {
user_friendly_names     no
}
devices {
        device {
                vendor                  "DGC"
                product                 ".*"
                product_blacklist       "LUNZ"
                features                "0"
                hardware_handler        "1 emc"
                path_selector           "round-robin 0"
                path_grouping_policy    group_by_prio
                failback                immediate
                rr_weight               uniform
                no_path_retry           5
                rr_min_io               1000
                path_checker            emc_clariion
                prio                    emc
                flush_on_last_del       yes
                fast_io_fail_tmo        off
                 dev_loss_tmo            120
        }
}
```

> **Note**: The EMC white paper [VNX Configuration Recommendations for SAP HANA TDI](#), page 20, does not mention these changes because the white paper had been created before the kernel bug was detected.

Related Information

- **[EMC KB article 203541 - "SUSE Linux DM-MPIO on VNX storage losing paths randomly in a SAP HANA TDI environment"](#)**
- **[Technical Support & Documentation - Cisco Systems](#)**