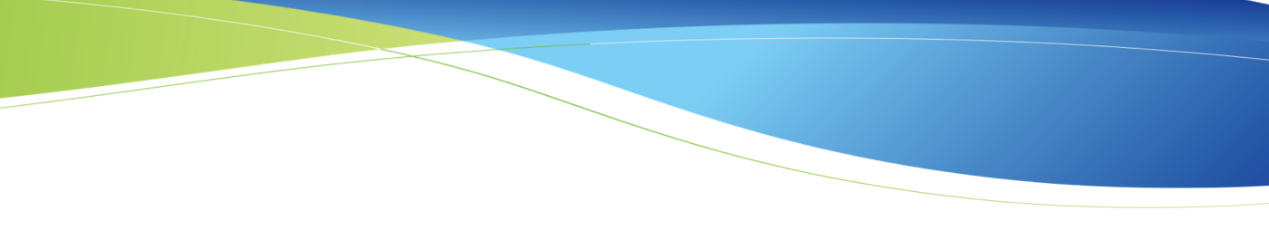


Sangfor HCI Performance Monitoring and Diagnosis

Check Report by SAIL

**Sangfor Technologies Inc.**

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Preface

**About This Document**

This document provides a check report by SAIL on HCI performance monitoring and diagnosis. SAIL is a script that can collect performance data in real time and then display critical indexes based on the monitoring and analysis of multiple layers, such as NUMA, VMs, programs, vCPUs and physical cores.

**Intended Readers**

[Network Design Engineer](https://www.fieldengineer.com/skills/network-design-engineer" \t "https://cn.bing.com/_blank)

[Operations Engineer](https://study.com/articles/Operations_Engineer_Job_Description_and_Education_Requirements.html" \t "https://cn.bing.com/_blank)

Note Icons

The following icons may appear in this article, and their descriptions are as follows.

|  |  |
| --- | --- |
| **Icon** | **Description** |
|  | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. |
|  | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
|  | Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury. |
|  | Indicates a hazardous situation, which if not avoided, could result in settings failing to take effect, equipment damage, or data loss. |
|  | Calls attention to important information, best practices, and tips. |

Graphical user interface elements will display in this article, and their descriptions and formats are as follows.

|  |  |  |
| --- | --- | --- |
| **Description** | **Format** | **Example** |
| Menu name, window name, and other elements | [ ] | The [New User] window pops up.  Select [System Settings/Interface Configuration]. |
| Button name | < > | Click <OK> button. |

**Revision History**

The revision history includes each document update. The latest document version contains updates from all previous document versions.

|  |  |  |
| --- | --- | --- |
| **Version** | **Released on** | **Description** |
| 02 | Mar. 15, 2021 | Add the check for XX. |
| 01 | Feb. 09, 2021 | This is the first release of this document. |

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1. Introduction
   1. Scope

This report includes the following:

Visualized monitoring of the performance and full-stack resources from the vCPU layer to the host layer.

System health and performance diagnosis.

* 1. Contact Info

|  |  |  |  |
| --- | --- | --- | --- |
| Company Name |  | | |
| Contact Person |  | Phone Number |  |
| Checked by |  | Phone Number |  |
| Checked on |  | | |

* 1. Objectives

Assess and summarize the performance and best practices of the customer’s HCI.

Provide the suggestions based on the current performance and management and the future extension of customer’s HCI.

* 1. Symbol Conventions

|  |  |  |
| --- | --- | --- |
| No. | Mark | Description |
| 1 |  | Pass: Check passed. |
| 2 |  | Fault: Critical issue that must be fixed immediately. |
| 3 |  | Alert: Potential issue that may affect services. |
| 4 |  | No data available, |

* 1. Items
     1. Best Practice Check

|  |  |
| --- | --- |
| Item | Subitem |
| Host | Turbo Boost enabled |
| Hyper-Threading enabled |
| Sufficient memory |
| Low SWAP space usage |
| Virtual Machines | Huge-Page Memory enabled |
| Critical VM option checked |
| Proper vCPU configuration |
| Compatible NIC |
| Pre-allocation VM disk |
| Low VM disk latency |
| Para-Virtualized Clock enabled |
| Normal host CPU preemption and interruption |
| Normal host memory mapping |

* + 1. Performance Check

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Subitem | Variable | Description |
| Host | CPU turbo frequency | Bzy\_MHZ | Check turbo frequency of each logical CPUs |
| CPU base frequency | TSC\_MHZ | Check base frequency of each logical CPUs |
| Single-core CPU usage | %usr | Check CPU usage of a core |
| CPU usage by IO | %iowait | Check CPU usage of a core for IO |
| CPU usage by VMs | %guest | Check CPU usage of a core for running VMs |
| Bandwidth usage of NUMA nodes | QPI / UPI | Check bandwidth usage between NUMA nodes |
| Disk read latency | r\_await | Check the average wait time for each disk read IO |
| Disk write latency | w\_await | Check the average wait time for disk write IO |
| Disk IO usage | %util | Check the average wait time for disk IO |
| Virtual Machines | Para-virtualized clock | MSR\_READ | Check whether Para-Virtualized Clock is enabled |
| External interruption | EXTERNAL\_INTERRUPT | Check whether the host CPU interruption frequency is too high due to frequent preemption |
| Memory page table | EPT\_VIOLATION | Check whether the host memory performance is degraded due to frequent mapping |
| vCPU scheduling latency | cpu\_wait | Check the wait time ratio of vCPU thread scheduling |
| Configured memory size of VMs | mem\_conf | Check configured VM memory size |
| Used memory size of VMs | mem\_act | Check used VM memory size |
| Huge-page memory | Hugepage | Check whether Huge-Page Memory is checked |
| System Consumption of vCPU | system% | Check system consumption usage of each vCPU |
| Application Consumption of vCPU | guest% | Check application consumption usage of each vCPU |
| vCPU scheduling latency | READY% | Check the wait time ratio of each vCPU |
| qemu read latency | r\_await | Check read latency of the qemu layer |
| qemu write latency | w\_await | Check write latency of the qemu layer |
| VS read latency | r\_await | Check read latency of the virtual storage layer |
| VS write latency | w\_await | Check write latency of the virtual storage layer |

1. Summary
   1. Basics

|  |  |
| --- | --- |
| HCI Version | {{hci\_version}} |
| Checked on | {{now\_time}} |
| Host IP | {{host\_ip}} |

* 1. Summary of Abnormalities

This section summarizes the detected abnormalities. The abnormalities will be sorted in order of severity, and an abnormality with  will be sorted ahead of that with . If two abnormalities have the same mark, they will be sorted in order of subitems in Section 1.5.

|  |  |  |
| --- | --- | --- |
| Abnormalities | Must Be Fixed | Recommended to Be Fixed |
| {%tr if check\_result%} | | |
| {{check\_result.summary}} | {{check\_result.must\_fix}} | {{check\_result.suggest\_fix}} |
| {%tr else %} | | |
| Normal | | |
| {%tr endif%} | | |

* 1. Performance Abnormalities

This section summarizes the issues of the host and VMs on the host detected during performance check and provides the corresponding suggestions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Severity | Item | Abnormality | Suggestions & Impacts |
| {%tr if check\_diagnose%} | | | | |
| {%tr for v in check\_diagnose %} | | | | |
| {{check\_diagnose.index(v) + 1}} | {{v.level}} | {{v.check\_item}} | {{v.check\_result}} | {{v.suggestion}} |
| {%tr endfor%} | | | | |
| {%tr else %} | | | | |
| Normal | | | | |
| {%tr endif%} | | | | |

1. Check Details
   1. Host Performance

|  |  |  |
| --- | --- | --- |
| **Host** | **Item** | **Suggestions** |
| {%tr if host\_diagnose%} | | |
| {%tr for host,info in host\_diagnose.items()%} | | |
| {%tr for k,v in info.items()%} | | |
| {%vm%}{{host}} | {{k}}{{v.level}} | {{v.suggestion}} |
| {%tr endfor%} | | |
| {%tr endfor%} | | |
| {%tr else %} | | |
| Normal | | |
| {%tr endif%} | | |

* 1. Virtual Machine Performance

|  |  |  |
| --- | --- | --- |
| Guest | Item | Suggestions |
| {%tr if guest\_diagnose%} | | |
| {%tr for guest,info in guest\_diagnose.items()%} | | |
| {%tr for k,v in info.items()%} | | |
| {%vm%}{{guest}} | {{k}}{{v.level}} | {{v.suggestion}} |
| {%tr endfor%} | | |
| {%tr endfor%} | | |
| {%tr else %} | | |
| Normal | | |
| {%tr endif%} | | |