Understand show resources CLI on 5G SA application

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Introduction

This document describes how to understand the output of **show resources** CLI on Cisco 5G SA application.

How it works

The **show resources** CLI lists resource information for all pods(mainly protocol and service pods) in the cluster. The resource information is collected periodically from each pods and presented to the CLI.

Sample output:

```
[unknown] smf# show resources
TOTAL USED DISK
NODE POD USAGE GO GC
CPU MEMORY MEMORY IN ROUTINES GC PAUSE
POD INSTANCE USAGE IN MB IN MB KBPS COUNT COUNT IN NS
-----------------------------------------------------------------------
cache-pod-1 2 32011 85 0 172 29684 85
cache-pod-2 2 32011 83 0 172 29627 83
gtpc-ep-0 2 32011 70 0 69 29088 70
li-ep-0 5 32011 51 0 56 29095 51
oam-pod-1 2 32011 98 0 157 29095 98
smf-nodemgr-0 7 32011 94 0 213 29096 94
smf-protocol-0 3 32011 135 0 206 29092 135
smf-rest-ep-0 4 32011 125 0 203 29091 125
smf-service-0 3 32011 321 0 247 34958 321
smf-udp-proxy-0 1 32011 82 0 88 29083 82
```

Description of the output

POD INSTANCE	Pod name
CPU USAGE CPU	CPU usage of the pod
TOTAL NODE MEMORY IN MB	Total Memory of worker node where the pod runs
USED POD MEMORY IN MB	Memory used by pod
DISK USAGE IN KBPS	Disk I/O rate in Kbps

GO ROUTINES COUNT	Number of Go Routine
GC COUNT	Garbage Collection Routine Count
GC PAUSE IN NS	Garbage Collection Routine Pause in NanoSecor

Additional explanation for Go proglamming language

Go Routine is kind of "thread" in Go programming language. It is used for some purpose such as better performance and so on. In a problematic scenario, Go routine leak can be seen where Go Routines are not properly finished and new Go Routines keep creating. The impact of Go Routine leak is similar to memory leak. This can be identiied by looking at GO ROUTINES COUNT in show resources output. If dramatic or constant increase is observed then there is potential of Go Routine leak.

Garbage Collection is a memory management function built-in Go. It runs continuously and clean up objects which is no longer used to save memory usage. GC COUNT and GC PAUSE IN NS can be used to monitor if Garbage Collection works without any issue. For example, too many GC count for specific pod or too long GC pause can indicate some issue.