KPI Monitoring Dashboard

User Document

Purpose

High CPU and high WNCD processes on Wireless LAN Controllers (WLCs) can impact clients. At the onset of either, location tracking data can go stale or missing. As things worsen, mDNS/multicast services can suffer, and eventually clients can begin to fail during association/authentication or can experience very high delays during this stage of getting connected.

Low memory can result in certain critical processes begin to fail, which can eventually lead to an unexpected reload/switchover.

This tool provides an alerting feature for both conditions. Additionally, it also monitors Key Performance Indicators (KPIs) that can cause high CPU and WNCD processes, as well as client-related information. The dashboard is separated into three functional areas: CPU, Radius/Memory/CAC/Punts, and Client/AP. The remainder of this document describes each area.

All if this provides a systemic single-pane of visibility into key areas that can effect performance and stability.

CPU Section

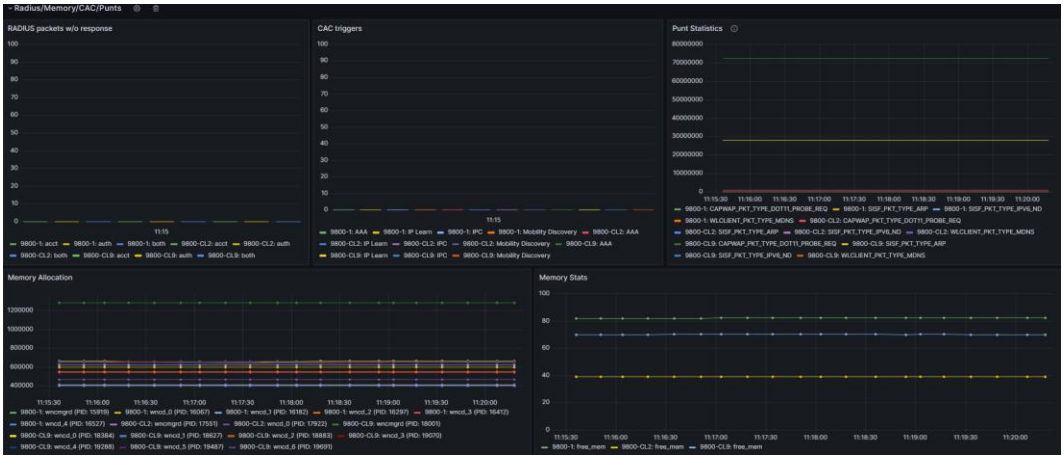
1st panel titled *"WNCD CPU usage 5s"*

- Provides historical performance of all WNCD CPU Processing, from all controllers or can be filtered to a specific controller based on selection (see WLC selections below for more information)
- Presents it in real-time based on the last 5 secs
- Will show sustained levels as well as spikes
- Can be used to help identify a real time event (i.e., students moving between classes; a configuration change which certain ones can cause radios to reset resulting a sudden registration of clients) or in conjunction with one of the KPIs below, to identify the cause.
- Triggers the email alert based on CPU usage going above 85%

2nd panel titled *"WNCD CPU 1 Minute"*

- Provides historical performance of all WNCD CPU Processes from all controllers (no filtering available)
- Provides a simple way to see longer duration WNCD CPU increases
- More 'immediate' visualization and evaluation of how high the utilization is based on a percentage

Radius/Memory/CAC/Punts Section



1st panel titled *"RADIUS packets w/o response"*

- This displays the different type of radius packets that are not be responded to by the AAA, from all controllers or can be filtered to a specific controller based on selection
- In cases where AAA is down or not functioning correctly, failed responses will result in the WLC continuing to retransmit them, which in turn can increase WNCD process utilization
- Reflects the total number of packets over time. Once the issue is resolved, the data will continue to reflect the number of packets that were not responded to, until controller is reloaded or counters are cleared

2nd panel titled *"CAC triggers"*

- This displays certain CAC triggers that have been associated with high WNCD process utilization, from all controllers or can be filtered to a specific controller based on selection
- Reflects the total number of triggers over time. Once the issue is resolved, the data will continue to reflect the number of triggers that occurred until controller is reloaded or counters are cleared

3rd panel titled *"Punt Statistics"*

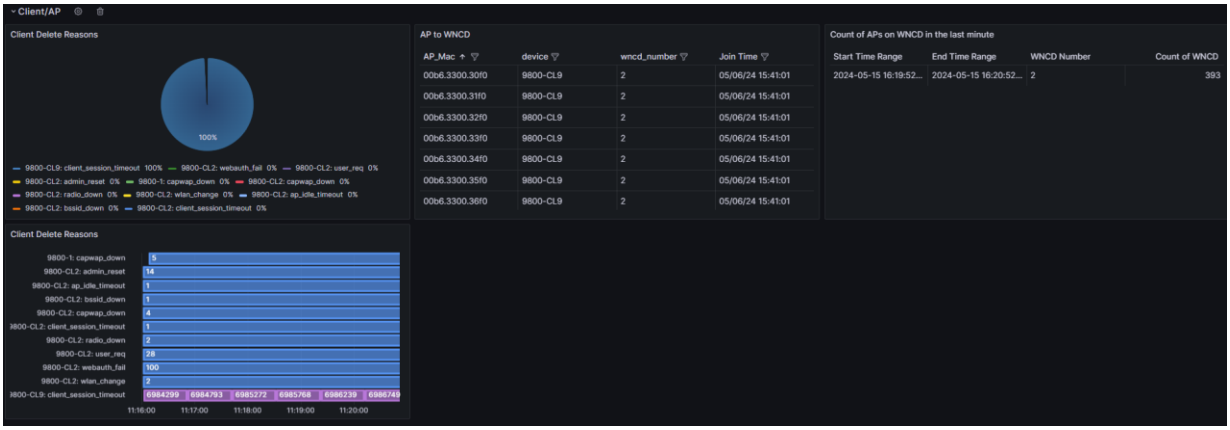
- This displays different punted packets (to the CPU) and also provides a more granular context for certain traffic types that have been found to cause high WNCD process utilization, from all controllers or can be filtered to a specific controller based on selection
- Like *"WNCD CPU every 5 secs"* this gives both historical and real-time visualization of traffic reaching the control plane

- Currently there are four types that have been associated with high WNDC process utilization, but if other causes/culprits are identified they will be added to future versions

4th and 5th panels titled *"Memory Allocation"* and *"Memory Stats"*

- These provide memory-related statistics, from all controllers or can be filtered to a specific controller based on selection
    - **Memory Allocation**
        - provides a real-time view of how much memory is getting assigned to wireless-related processes, like each WNCD process and WNCMRGD
    - **Memory stats**
        - Percentage of free memory for the entire WLC
        - This provides the ability to see if there are any leaks occurring which is reflected in memory continuing to decrease over time
        - Triggers the email alert when memory drops below 21%, which allows for preemptively monitoring and starting the activity of determining what process is taking away memory, if it is different from the ones tracked under 'Memory Allocation'

Client/AP Section



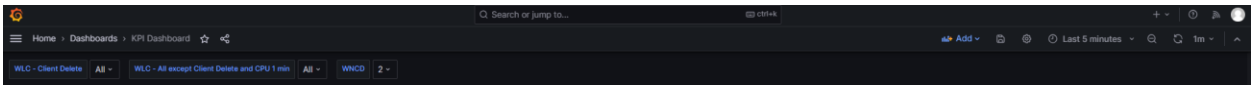
1st and 2nd panels both titled *"Client Delete Reasons"*

- Provides client delete reasons both in percentage/pie form, as well as counts, from all controllers or can be filtered to a specific controller based on selection
- Helps to understand/see where clients are having failures (i.e., IP thefts, no IP addresses, failed authentications, etc)
- Provides a systemic view of the WLC from the perspective of clients

3rd and 4th panels titled *"AP to WNCD"* and *"Count of APs on WNCD in the last minute"*

- Provides distribution of APs to WNCDs individually (using AP MAC) and as an overall count/WNCD, from all controllers or can be filtered to a specific controller and/or WNCD based on selection
- Easy way to determine if all WNCDs are equally loaded
- An imbalance can result in high utilization for any overloaded WNCD

WLC/WNCD Selection



By using the following filter options, you can drill down to a specific WLC and/or WNCD

- WLC - Client Delete
  - This applies to the two panels titled *"Client Delete Reasons"*
- WLC - All except Client Delete and CPU 1 min
  - This applies to all panels with the exception of the *"WNCD CPU 1 Minute"* and the two panels titled *"Client Delete Reasons"*
- WNCD
  - This applies the two panels titled *"AP to WNCD"* and *"Count of APs on WNCD in the last minute"*