10時より開始します

Cisco Community Expert Series Community Live

Catalyst 9800 のトラブルシューティング

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Technical Consulting Engineer
May 22nd, 2024

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Download the Presentation!

本日の資料はこちらからダウンロードいただけます
https://community.cisco.com/t5/-/-/ec-p/5052699

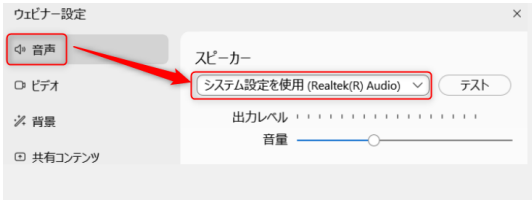
イベントの音声について

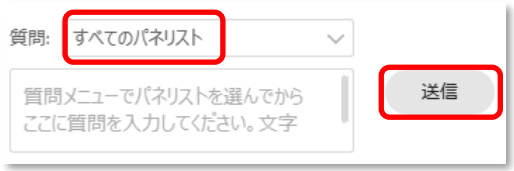
イベントが開始されるとコンピュータより自動的に音声が流れ始めます。

イベントの音声が流れない場合、[ウェビナー設定] の [音声] > [スピーカー] タブより 接続中のイヤホンやスピーカーが選択されている事を確認します。

必要に応じて [音量] スライダーで調整、テストを実施頂きコンピュータより音声が流れているかどうかご確認ください。

音声接続に関する詳細はこちらをご参照ください。
解決しない場合は、Q&A ウィンドウより
[すべてのパネリスト (All Panelists)] 宛にお知らせください。
https://community.cisco.com/t5/-/-/ta-p/4980452





※ Q&A ウィンドウが画面右側に見つからない場合はここから表示

ご質問方法

Community Live中のご質問は、
画面右側の Q&A ウィンドウから
すべてのパネリスト (All Panelists)
宛に送信してください

本日のエキスパートご紹介

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質問 1. 現在利用されているコントローラはどれですか？

ⓘ Start presenting to display the poll results on this slide.

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質問 2. Catalyst 9800製品のバージョンは下記のどちらでしょうか？

ⓘ Start presenting to display the poll results on this slide.

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質問 3. IOS-XEを使用している製品は下記のどちらでしょうか？

ⓘ Start presenting to display the poll results on this slide.

本日のアジェンダ

1. Cisco 9800 アーキテクチャ
2. ヘルスモニタリング
3. CPU トラブルシューティング
4. Memory トラブルシューティング
5. GUI トラブルシューティング

1. 9800アーキテクチャ

Catalyst 9800 Wireless Controller

C9K-SW

200 AP
4000 クライアント

C9800-L

250 AP
5000 クライアント

C9800-40

2000 AP
32000 クライアント

C9800-80

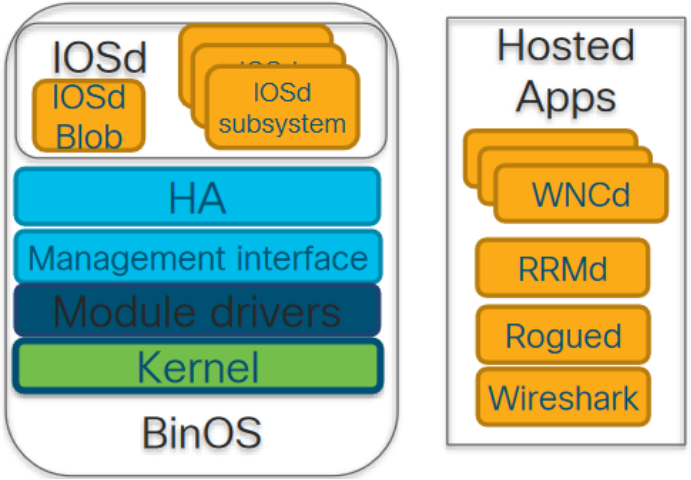
6000 AP
64000 クライアント

C9800-CL

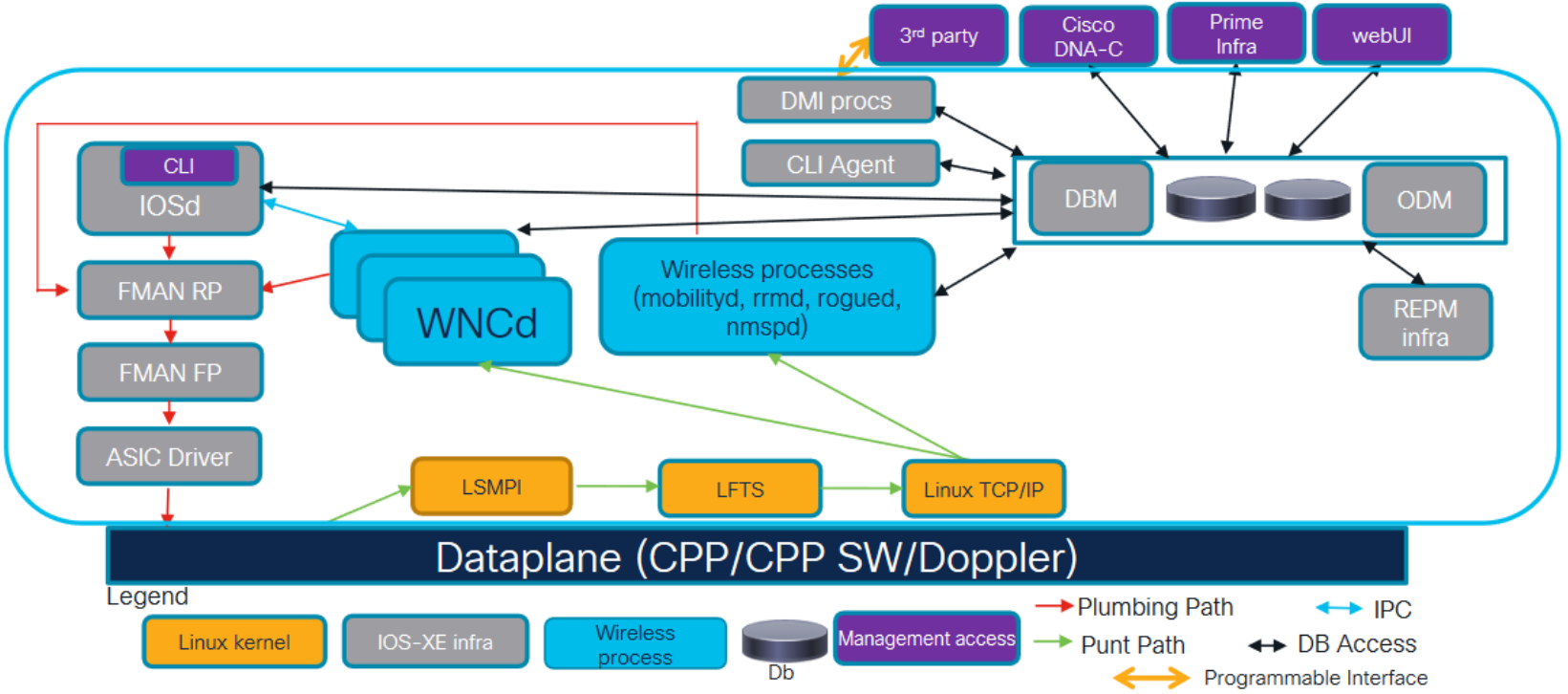
1000/3000/6000 AP
10000/32000/64000
クライアント

IOS-XE

- BinOS をベース(Linux Kernel)
- IOSは現在 IOSdしてLinux daemons
- 無線関連のProcess
- IOS-XE 16.x/17.x はEN 製品で同じ



SoftWare アーキテクチャ



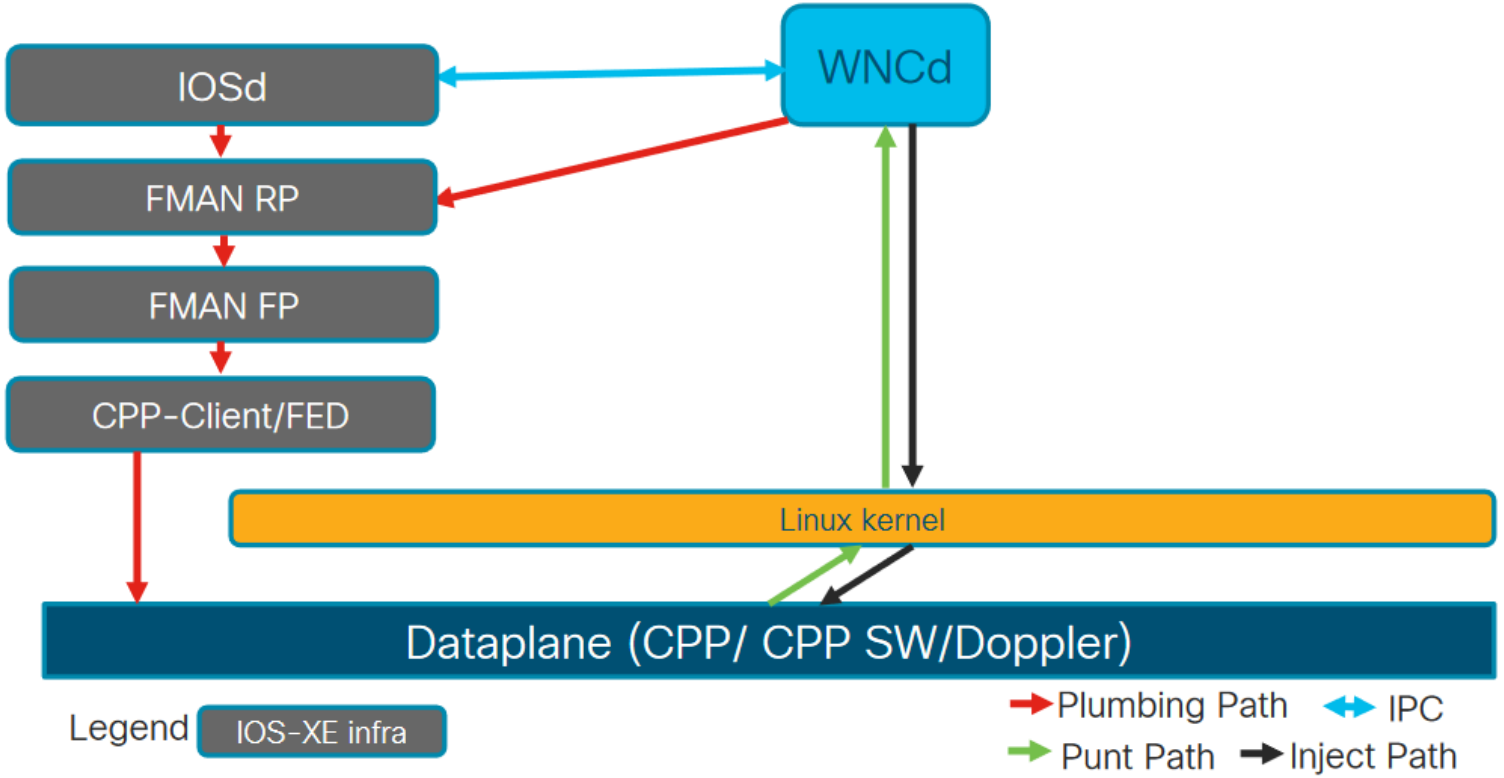
省略語

- REPM = Replication Manage(HA処理)
- NMSPd= Handles communications with Location Server
- Rogued = Rogue 機能
- RRMd = Radio Resource Management機能
- Mobilityd = Mobility機能

- IOSd = IOS daemon
- DBM = Database Manager
- ODM = Operational Data Manager * 各processは自分のDatabaseがあります。

- FMAN-RP = route processor (Control Plane/CP)
- FMAN-FP = forwarding processor (Data Plane/DP)
- LSMPI = Linux Shared memory Punt Interface（linux kernel ）
- LFTS = Linux Forwarding Transport Service（linux kernel ）

Punt/Inject/Plumb Path



WNCdとは

WNCd はWireless Network Control Daemon の省略となり、APとクライアントセッションを管理するプロセス

- CAPWAP
- Dot11
- AAA
- IP Learn
- Policy Manager
- LISP

Platform	WNCd Instances
EWC (on AP and Catalyst 9k switches)	1
C9800-L	1
C9800-CL (small)	1
C9800-CL (medium)	3
C9800-40	5
C9800-CL (large)	7
C9800-80	8

WNCdの確認

1 WNCD数確認

```
WLC9800#show processes memory platform sorted | inc wncd
 23899      995     368432      136      13824     368432          wncd_0
WLC9800#
```

2 APがどのwncd

```
WLC9800#show wireless loadbalance ap affinity mac ac2a.a111.63ac
AP ac2a.a111.63ac is connected to wncd 0
Discovery Timestamp - 04/26/24 06:36:36, Join Timestamp - 04/26/24 06:36:42
```

3 WNCDにどのAP

```
WLC9800#show wireless loadbalance ap affinity wncd ?
  <0-7>  Enter wncd instance number

WLC9800#show wireless loadbalance ap affinity wncd 0
AP Mac          Discovery Timestamp      Join Timestamp           Tag
------------------------------------------------------------------------------
[redacted]      04/17/24 09:58:39        04/17/24 09:58:44        default-site-tag
ac2a.a111.63ac  04/26/24 06:36:36        04/26/24 06:36:42        default-site-tag
```

Enhanced Site Tag-Based Load Balancing

New in 17.10.1

```
WLC9800(config)#wireless tag site test_balancing1
WLC9800(config-site-tag)#load ?
  <0-1000>  Estimate of the relative load contributed by the site. AP count can
            be used as an approximation

WLC9800(config-site-tag)#load 100
WLC9800(config-site-tag)#
```

1 Load数設定

注:**The default value 0 means no load recommendation for the site.**

```
WLC9800#sho wireless tag site detailed test_balancing1

Site Tag Name         : test_balancing1
Description           :
-------------------------------------
AP Profile            : default-ap-profile
Local-site            : Yes
Image Download Profile: default
Fabric AP DHCP Broadcast : Disabled
Fabric Multicast Group IPv4 Address : 232.255.255.1
test_balancing1 Load : 100
```

2 該当site tag情報確認

```
WLC9800#sho wireless loadbalance tag affinity
Tag                                Tag type    No of AP's Joined    Load Config    Wncd Instance
-------------------------------------------------------------------------------------------------
default-site-tag                   SITE TAG    1                    NA             0
test_balancing1                    SITE TAG    1                    100            0
```

3 各site tag情報

Catalyst 9800のログ

- **Trace-on-failure:** 検知されたイベントの概要
  #show logging trace-on-failure summary(17.1以前）
  #show logging profile wireless trace-on-failure(17.1以降)

- **Always-on-tracing:** debugなしで常に記録されるログ
  #show logging profile wireless start timestamp “time” filter mac <addr> to-file <filename>

- **RadioActive tracing: 事象再現時に取得する詳細ログ**
  # debug wireless {mac | ip} {aaaa.bbbb.cccc | x.x.x.x }
  注：Conditional Debuggingとも読む

それ以外にも

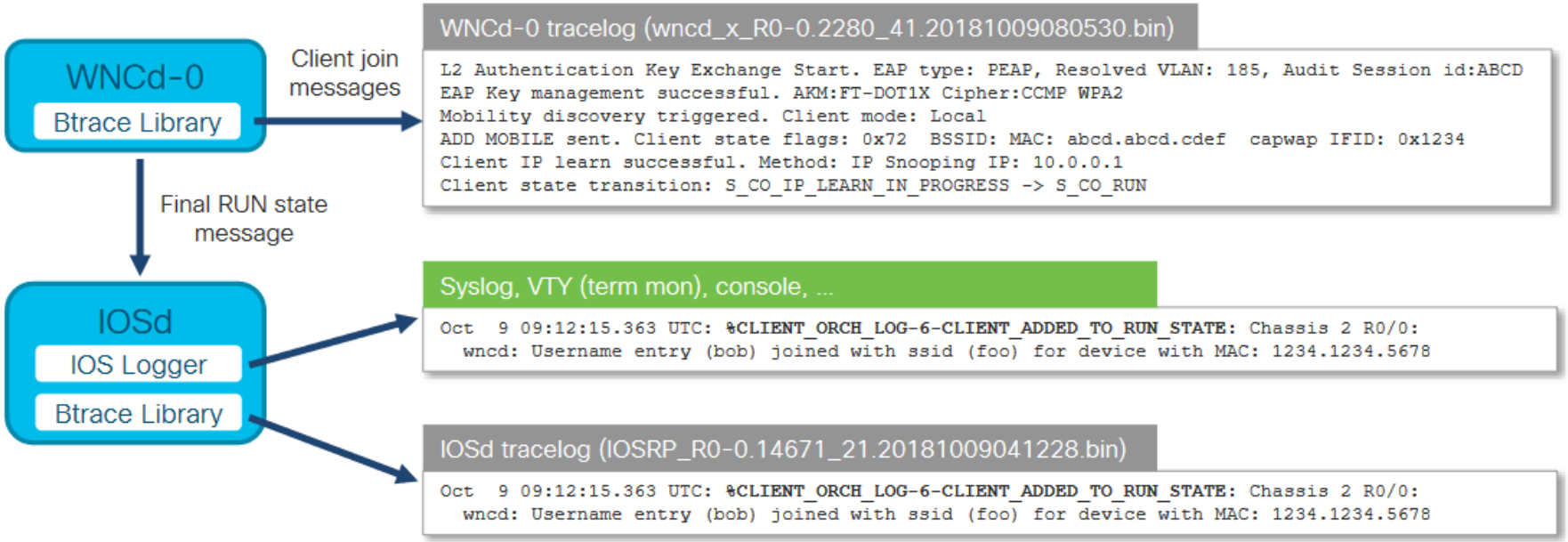
- **IOSd Logging**
- **Binary Tracing**
- **Live Debugging**
  注:#monitor logging profile wireless filter mac<>で、AireOS “debug client”のように
- **Data Plane Packet Tracing**
- **Embedded Packet Capture**

参考:Catalyst 9800ワイヤレスLANコントローラのワイヤレスデバッグとログ収集について

- **Per-Process Non-Conditional Debugging**

#show logging process <process> to-file <debugtrace.txt>

IOSd logging Vs btrace



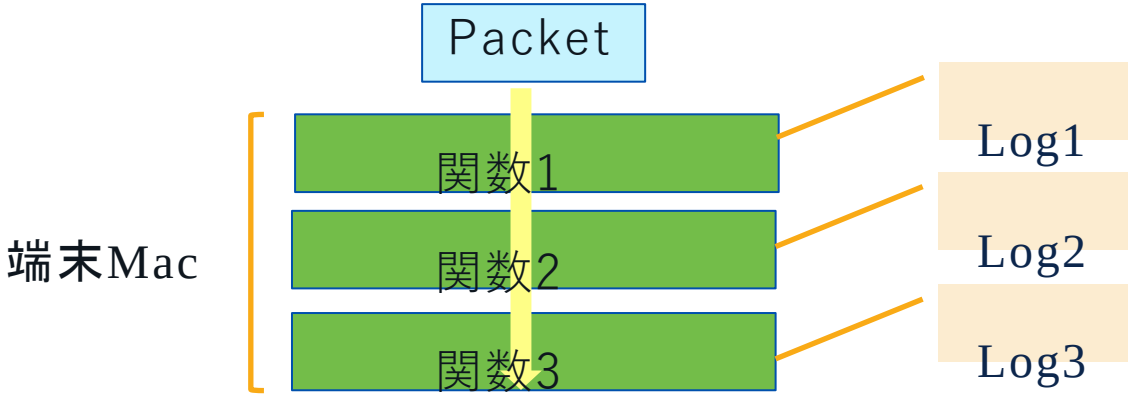
参考 :

1:Catalyst 9800 シリーズで Trace archive ログを取得する方法

2: 9800 の Trace ログを動作検証しながらモニタする

Radioactive Tracingは

- Conditional Debug
- 特定なIP or MACに対して
- もっと詳しいログ
  比較：Always On: 18 lines & Radioactive: 180 lines



Wireless Client Debug Bundle機能

無線端末の場合、a single debug commandで簡単に以下のログを全部取得することが可能

RA Traces	• 該当端末の RA traces(debug level) と internal RA
Client detail	• テスト前後の“Show tech wireless client MAC”とAP logs
Packet Capture	• 端末の通信に関わっている WLC control plane のPacket captures

Commands – 流れ

#debug wireless bundle client mac <mac>

```
WLC9800#debug wireless bundle client mac 9607.26fe.88e7

Wireless Client debug bundle add event

WLC9800#
```

1 端末mac

Commands – 流れ

#debug wireless bundle client start
Or
#debug wireless bundle client start <ap-archive> <epc> <time>

```
WLC9800#debug wireless bundle client start

Wireless Client debug bundle start event
```

2 Debug 定義

或いは 以下の項目

```
WLC9800#debug wireless bundle client start ?
  ap-archive    Enable ap archive collecting on a site tag
  epc           Enable embedded packet capture on control plane
  monitor-time  Max time to trace the condition (Default: 1800secs)
  <cr>          <cr>
```

2 Debug 定義

Commands – 流れ

```
RUN THE TEST
```

3 事象テスト開始

```
WLC9800#debug wireless bundle client stop-all collect all
Wireless Client debug bundle stop event
```

4 事象テスト完了

Commands – 流れ

5 ログファイル確認

```
WLC9800#show bootflash: | in Apr_15_2024.tar
816      243200 Apr 15 2024 14:38:19.0000000000 +00:00 wireless_bundle_143818_UTC_Apr_15_2024.tar
817      223744 Apr 15 2024 14:40:49.0000000000 +00:00 wireless_bundle_144049_UTC_Apr_15_2024.tar
818      252928 Apr 15 2024 14:43:20.0000000000 +00:00 wireless_bundle_144319_UTC_Apr_15_2024.tar
819      252928 Apr 15 2024 14:45:32.0000000000 +00:00 wireless_bundle_144532_UTC_Apr_15_2024.tar
WLC9800#
```

6 ログファイル取得

```
WLC9800#copy bootflash: tftp:
Source filename [test]? wireless_bundle_162453_UTC_Mar_27_2024.tar
Address or name of remote host []? 2.2.2.2
Destination filename [wireless_bundle_162453_UTC_Mar_27_2024.tar]?
```

例：Bundleで出力されたログ

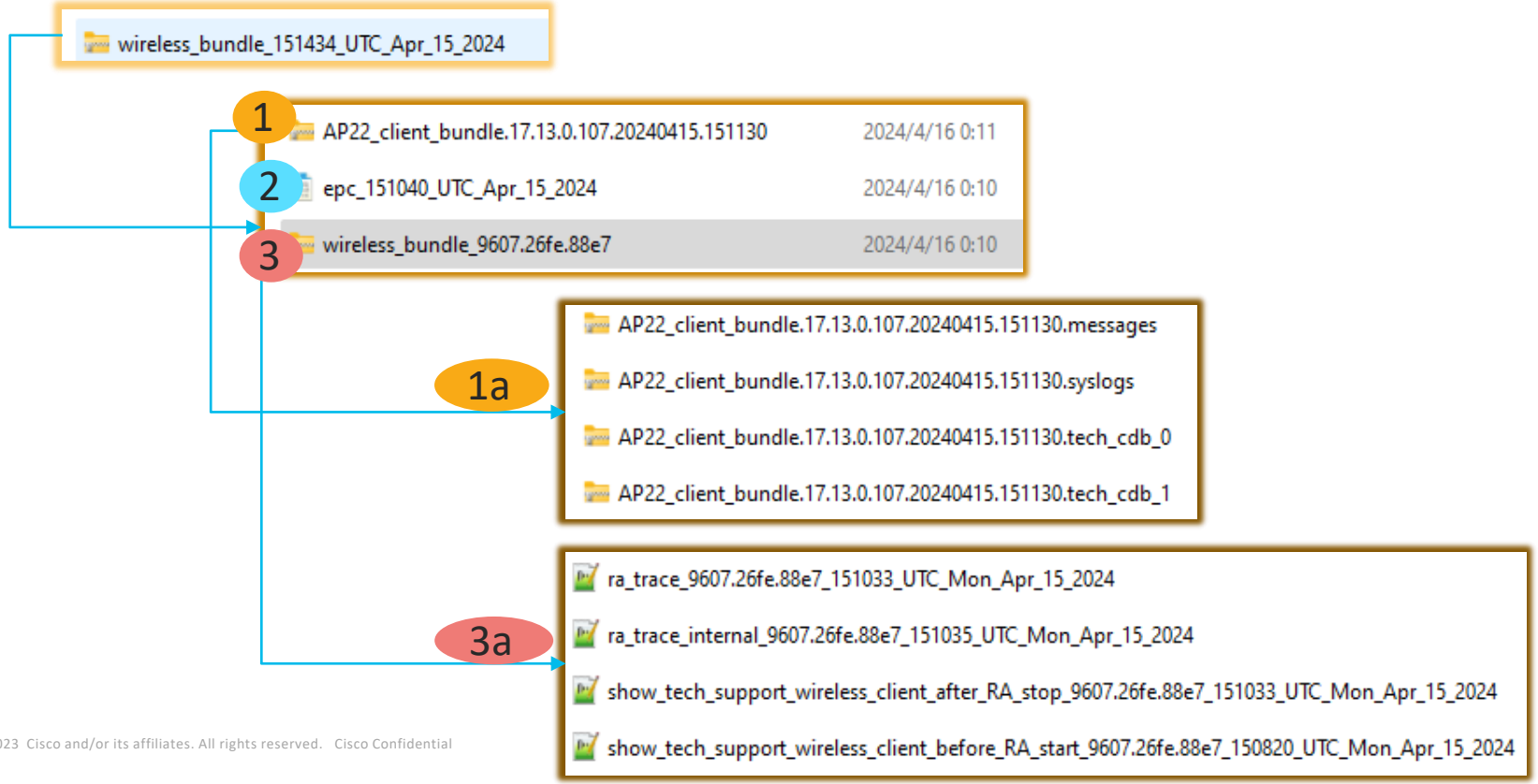
1. debug wireless bundle client mac 9607.26fe.88e7

2. debug wireless bundle client start epc monitor-time 120 ap-archive site-tag default-site-tag level debug

3. debug wireless bundle client stop-all collect all

```
WLC9800#show bootflash: | in Apr_15_2024.tar
815     243200 Apr 15 2024 14:38:19.0000000000 +00:00 wireless_bundle_143818_UTC_Apr_15_2024.tar
816     223744 Apr 15 2024 14:40:49.0000000000 +00:00 wireless_bundle_144049_UTC_Apr_15_2024.tar
823     330752 Apr 15 2024 15:14:35.0000000000 +00:00 wireless_bundle_151434_UTC_Apr_15_2024.tar
WLC9800#
```

例：Bundleで出力されたログファイル



2. ヘルスモニタリング

基本状況

1

```
WLC9800#show version | i uptime|Installation mode|Cisco IOS Software
Cisco IOS Software [IOSXE], C9800 Software (C9800_IOSXE-K9), Version 17.13.1, RELEASE SOFTWARE (fc9)
WLC9800 uptime is 1 week, 1 day, 20 hours, 47 minutes
Installation mode is INSTALL
```

2

```
WLC9800#show environment all
Sensor List:  Environmental Monitoring
 Sensor                   Location         State            Reading
 Temp: BRDTEMP1           R0               Normal           46 Celsius
 Temp: BRDTEMP2           R0               Normal           44 Celsius
 Temp: CPU Die            R0               Normal           55 Celsius
```

Tip: Install mode を推薦

3

```
WLC9800# dir bootflash:/core/ | i core|system-report
Directory of bootflash:/core/
997515  -rw-           40853  Jun  1 2022 23:53:01 +00:00  9800HA_1_RP_0-system-report_20220602-085249-JST-info.txt
286161  -rw-        34105288  Jun  1 2022 23:52:57 +00:00  9800HA_1_RP_0-system-report_20220602-085249-JST.tar.gz
997514  -rw-           35832  Apr 29 2022 01:56:54 +00:00  9800HA_1_RP_0-system-report_20220429-105647-JST-info.txt
269818  -rw-        13103110  Apr 29 2022 01:56:52 +00:00  9800HA_1_RP_0-system-report_20220429-105647-JST.tar.gz
997512  -rw-           22994  Apr 29 2022 01:12:57 +00:00  9800HA_1_RP_0-system-report_20220429-101242-JST-info.txt
997513  -rw-        13732067  Apr 29 2022 01:12:54 +00:00  9800HA_1_RP_0-system-report_20220429-101242-JST.tar.gz
997511  -rw-           26091  Apr 29 2022 00:28:59 +00:00  9800HA_1_RP_0-system-report_20220429-092842-JST-info.txt
269817  -rw-        17330285  Apr 29 2022 00:28:56 +00:00  9800HA_1_RP_0-system-report_20220429-092842-JST.tar.gz
997510  -rw-           26109  Apr 27 2022 21:01:52 +00:00  9800HA_1_RP_0-system-report_20220428-060136-JST-info.txt
269816  -rw-        16402582  Apr 27 2022 21:01:49 +00:00  9800HA_1_RP_0-system-report_20220428-060136-JST.tar.gz
```

基本状況

“show platform”、“show inventory”と “show license summary など

```
WLC9800#sho platform
Chassis type: C9800-L-C-K9

Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         C9800-L-C-K9        ok                    1w1d
 0/0      BUILT-IN-4x2_5GE    ok                    1w1d
 0/1      BUILT-IN-2x10GE-C   ok                    1w1d
R0        C9800-L-C-K9        ok, active            1w1d
F0        C9800-L-C-K9        ok, active            1w1d
P0        PWR-12V             ok                    1w1d
P1        C9800-L-C-K9-FAN    ok                    1w1d

Slot      CPLD Version        Firmware Version
--------- ------------------- ---------------------------------------
0         19050918            16.12(3r)
R0        19050918            16.12(3r)
F0        19050918            16.12(3r)
```

4

CPU、メモリー、Data Plan確認

#show platform resources

```
WLC9800#sho platform resources
**State Acronym: H - Healthy, W - Warning, C - Critical
Resource                 Usage                 Max             Warning         Critical        State
----------------------------------------------------------------------------------------------------
RP0 (ok, active)                                                                               H
 Control Processor       5.48%                 100%            80%             90%             H
  DRAM                   4793MB(30%)           15465MB         88%             93%             H
ESP0(ok, active)                                                                               H
 QFP                                                                                           H
  DRAM                   196509KB(10%)         1835008KB       85%             95%             H
  IRAM                   207KB(10%)            2048KB          85%             95%             H
  CPU Utilization        0.00%                 100%            90%             95%             H

WLC9800#
```

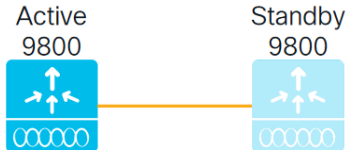
HAの確認

#show redundancy | i ptime|Location|Current Software state|Switchovers

```
WLJP2-WLC9800-1#$ancy | i ptime|Location|Current Software state|Switchovers
       Available system uptime = 1 week, 1 day, 19 hours, 38 minutes
Switchovers system experienced = 1
                Active Location = slot 2
         Current Software state = ACTIVE
        Uptime in current state = 2 days, 36 minutes
               Standby Location = slot 1
         Current Software state = STANDBY HOT
        Uptime in current state = 2 days, 31 minutes
```

1

HAの確認



#show redundancy switchover history

2

```
WLJP2-WLC9800-1#sho redundancy switchover history
Index  Previous  Current  Switchover          Switchover
       active    active   reason              time
-----  --------  -------  ----------          ----------
   1       1        2     active unit removed 01:37:16 UTC Mon Apr 15 2024

WLJP2-WLC9800-1#
```

参考：Cisco Catalyst 9800 ワイヤレス コントローラ高可用性 SSO 導入ガイド

Mobilityの確認

#show wireless mobility summary

```
WLJP2-WLC9800-1#sh wireless mobility summary
Mobility Summary

Wireless Management VLAN: 2529
Wireless Management IP Address: [redacted]
Wireless Management IPv6 Address:
Mobility Control Message DSCP Value: 48
Mobility High Cipher : False
Mobility DTLS Supported Ciphers: TLS_ECDHE_RSA_AES128_GCM_SHA256, TLS_RSA_AES256_GCM_SHA384, TLS_RSA_AES128_CBC_SHA
Mobility Keepalive Interval/Count: 10/3
Mobility Group Name: default
Mobility Multicast Ipv4 address: 0.0.0.0
Mobility Multicast Ipv6 address: ::
Mobility MAC Address: [redacted]
Mobility Domain Identifier: 0x34ac

Controllers configured in the Mobility Domain:
```

IP	Public Ip	MAC Address	Group Name	Multicast IPv4	Multicast IPv6	Status	PMTU
10.124.0.20	N/A	8c1e.0060.c8ab	default	0.0.0.0	::	N/A	N/A
[redacted]	[redacted]	[redacted]	default	0.0.0.0	::	Control And Data Path Down	576
[redacted]	[redacted]	[redacted]	test-h	0.0.0.0	::	Control And Data Path Down	1385
[redacted]	[redacted]	[redacted]	test	0.0.0.0	::	Control And Data Path Down	1385

[参考：Catalyst 9800 WLCでのモビリティトポロジの設定]

AP 接続確認 1

- **どちらのAPか？**

#show wireless stats ap join summary

```
WLC9800#show wireless stats ap join summary
Number of APs: 2

Base MAC       thernet MAC     AP Name              IP Address              Status       Last Failure Phase    Last Disconnect Reason
---------------------------------------------------------------------------------------------------------------------------------------
[redacted]     c2a.a111.63ac   AP22                 192.168.2.22            Joined       NA                    NA
               c64.f17f.ff84   AP23                 192.168.2.23            Not Joined   Run                   Heart beat timer expiry
```

AP 接続確認 2

• そのAPの原因は？

#show wireless stats ap mac-address <**AP Base MAC**>join detailed | b AP

```
WLC9800#$ss stats ap mac-address 1484.733b.1c40 join detailed | b AP
Last AP message decryption failure details
  Reason for last message decryption failure              : NA

AP reported disconnect detail
  Disconnect reason from AP                               : NA
AP reported reboot detail
  Reboot reason from AP                                   : No reboot reason

Last AP disconnect details
  Last Disconnect Phase                                    : NA
  Last Disconnect Reason                                   : NA
  Last Disconnect Time                                    : NA
  Current Join Status                                     : Joined
```

参考：Catalyst 9800 APの加入または接続解除の問題のトラブルシューティングフロー

端末確認 1

#show wireless stats client detail

```
WLC9800#show wireless stats client detail
Total Number of Clients : 1

Protocol Statistics

----------------------------------------
Protcol                Client Count
 802.11b                  : 0
 802.11g                  : 0
 802.11a                  : 0
 802.11n-2.4GHz           : 0
 802.11n-5 GHz            : 0
 802.11ac                 : 0
 802.11ax-5 GHz           : 1
 802.11ax-2.4 GHz         : 0
  802.11ax-6 GHz          : 0


Current client state statistics:
---------------------------------------
  Authenticating          : 0
  Mobility                : 0
  IP Learn                : 0
  Webauth Pending         : 0
  Run                     : 1
  Delete-in-Progress      : 0
```

- 全部の端末数
- Protocol baseの端末数
- 端末状態

端末確認 2


```
client global statistics:
------------------------------------------------------------
Total association requests received              : 34
Total L3 Access association requests received    : 0
Total association attempts                       : 34
Total FT/LocalAuth requests                      : 0
Total association failures                       : 0
Total association response accepts               : 34
Total association response rejects               : 0
Total association failures due to exclusion list      : 0
Total association drops due to multicast mac     : 0
Total association drops due to random mac        : 0
Total association drops due to throttling        : 0
Total association drops due to unknown bssid     : 0
Total association drops due to parse failure     : 0
Total association drops due to capwap queue delay when cac throttling is off: 0
Total association drops due to capwap queue delay at L1 cac stage: 0
Total association drops due to capwap queue delay at L2 cac stage: 0
Total association drops due to capwap queue delay at L3 cac stage: 0
Total association drops due to socket read delay when cac throttling is off: 0
Total association drops due to socket read delay at L1 cac stage: 0
Total association drops due to socket read delay at L2 cac stage: 0
Total association drops due to socket read delay at L3 cac stage: 0
Total association drops due to high per client association rate: 0
```

- 90種類以上のstats counters 情報

端末確認 3


```
client state statistics:
------------------------------------------------------------

Average Time in Each State (ms)
  Hssociated State    : 0
  L2 State        : 0
  Mobility State  : 0
  IP Learn State  : 3764
  L3 Auth State   : 0

Average Run State Latency (ms)   1885

Average Run State Latency without user delay (ms) : 1884

Latency Distribution (ms)
   1 - 100               : 1
   100 - 200             : 0
   200 - 300             : 0
   300 - 600             : 0
   600 - 1000            : 0
   1000+                 : 24
```

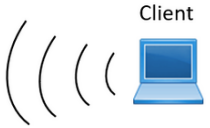
•処理時間情報

端末確認 4


```
Webauth HTTP Statistics
-----------------------
  Intercepted HTTP requests   : 0
  IO Read events              : 0
  Received HTTP messages      : 0
  IO write events             : 0
  Sent HTTP replies           : 0
  IO AAA messages             : 0
  SSL OK                      : 0
  SSL Read would block        : 0
  SSL write would block       : 0
  Socket opens                : 0
  Socket closes               : 0

Time spent in each httpd states (in msecs)
                          Total       Max         Min         Samples
-------------------------------------------------------------------
IO Reading state              0         0           0           0
IO Writing state              0         0           0           0
IO AAA state                  0         0           0           0
Method after reading          0         0           0           0
Method after writing          0         0           0           0
Method after AAA              0         0           0           0

Webauth HTTP status counts

 HTTP 200 OK                  : 0
 HTTP 201 Created             : 0
 HTTP 202 Accepted            : 0
 HTTP 203 Provisional Info    : 0
```

- Webauth関連の情報

端末確認 5




```
Total client delete reasons
---------------------------
Controller deletes
---------------------------
---------------------------
No Operation                                                    : 0
Unknown                                                         : 0
Session Manager                                                 : 0
Connection timeout                                              : 0
Datapath plumb                                                  : 0
WPA key exchange timeout                                        : 0
802.11w MAX SA queries reached                                  : 0
Client deleted during HA recovery                               : 0
Inter instance roam failure                                     : 0
Inter instance roam success                                     : 0
Inter controller roam success                                   : 0
Due to mobility failure                                         : 0
NAS error                                                       : 0
Policy Manager internal error                                   : 0
80211v smart roam failed                                        : 0
DOT11v association failed                                       : 0
DOT11r pre-authentication failure                               : 0
SAE authentication failure                                      : 0
DOT11 failure                                                   : 0
DOT11 SAE invalid message                                       : 0
DOT11 denied data rates                                         : 0
802.11v Client RSSI lower than the association RSSI threshold   : 0
invalid QoS parameter                                           : 0
DOT11 IE validation failed                                      : 0
DOT11 group cipher in IE validation failed                      : 0
DOT11 invalid pairwise cipher                                   : 0
DOT11 invalid AKM                                               : 0
DOT11 unsupported RSN version                                   : 0
```

- Controller視野から端末の切断した情報

端末確認 6


```
Client initiate delete
------------------------------
Deauthentication or disassociation request                    : 0
Client DHCP                                                   : 0
Client EAP timeout                                            : 0
Client 8021x failure                                          : 0
Client device idle                                            : 0
Client captive portal security failure                        : 0
Client decryption failure                                     : 0
Client interface disabled                                     : 0
Client user triggered disassociation                          : 0
Client miscellaneous reason                                   : 0

AP Deletes
----------------------------------
When client is sending disassociation                       : 0
Idle timeout                                                : 23
Client ACL mismatch                                         : 0
AP authentication stop                                      : 0
Association expired at AP                                   : 0
4-way handshake failed                                      : 0
DHCP timeout                                                : 0
```

•端末とAP視野から切断した情報

参考：Catalyst 9800クライアントの接続に関する問題のトラブルシューティングフロー

3. CPU トラブルシューティング

IOSd & IOS-XE どちらのCPU使用率か

先ず下記のshow で、どちらのcpu使用率かの確認

- show processes cpu　　ー＞IOSd側
- show processes cpu platformー＞ IOS-XE 側

推薦：terminal exec prompt timestampの設定で時間情報も含める

IOSdの確認

show processes cpu | ex 0%

```
WLC9800#show processes cpu  | ex 0%
No time source, *15:18:21.668 Japan Fri Mar 22 2024

 PID Runtime(ms)     Invoked      uSecs   5Sec   1Min   5Min TTY Process
 355      163861       50101       3270  1.19%  0.42%  1.09%   0 HTTP CORE
 372       17389       56501        307  0.15%  0.03%  0.07%   0 SEP_webui_wsma_h

This command only shows processes inside the IOS daemon.
Please use 'show processes cpu platform'
to show processes from the underlying operating system.
```

IOS-XEの確認

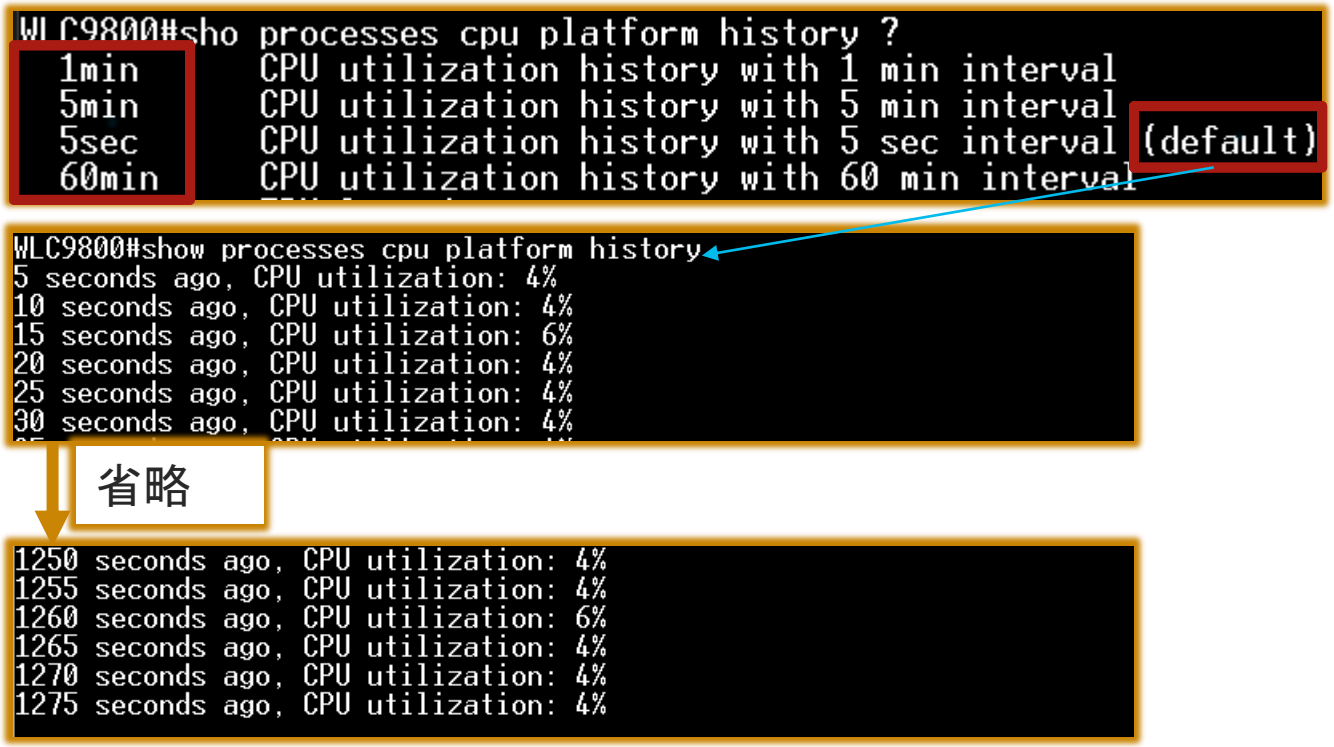
#show processes cpu platform sorted | ex 0%

```
WLC9800#show processes cpu platform sorted | ex 0%
No time source, *15:17:21.624 Japan Fri Mar 22 2024

CPU utilization for five seconds:  4%, one minute:  5%, five minutes:  5%
Core 0: CPU utilization for five seconds:  1%, one minute:  4%, five minutes:  3%
Core 1: CPU utilization for five seconds:  1%, one minute:  2%, five minutes:  3%
Core 2: CPU utilization for five seconds:  1%, one minute:  2%, five minutes:  3%
Core 3: CPU utilization for five seconds:  5%, one minute:  6%, five minutes:  6%
Core 5: CPU utilization for five seconds:  4%, one minute:  5%, five minutes:  5%
Core 6: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 7: CPU utilization for five seconds: 35%, one minute: 36%, five minutes: 36%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
-------------------------------------------------------------------------------
 22082   22062     54%     54%     54%  S           310556  ucode_pkt_PPE0
 23876   23844      1%      1%      1%  S           231904  fman_fp_image
  4333    4179      1%      1%      2%  S          1462284  linux_iosd-imag
```

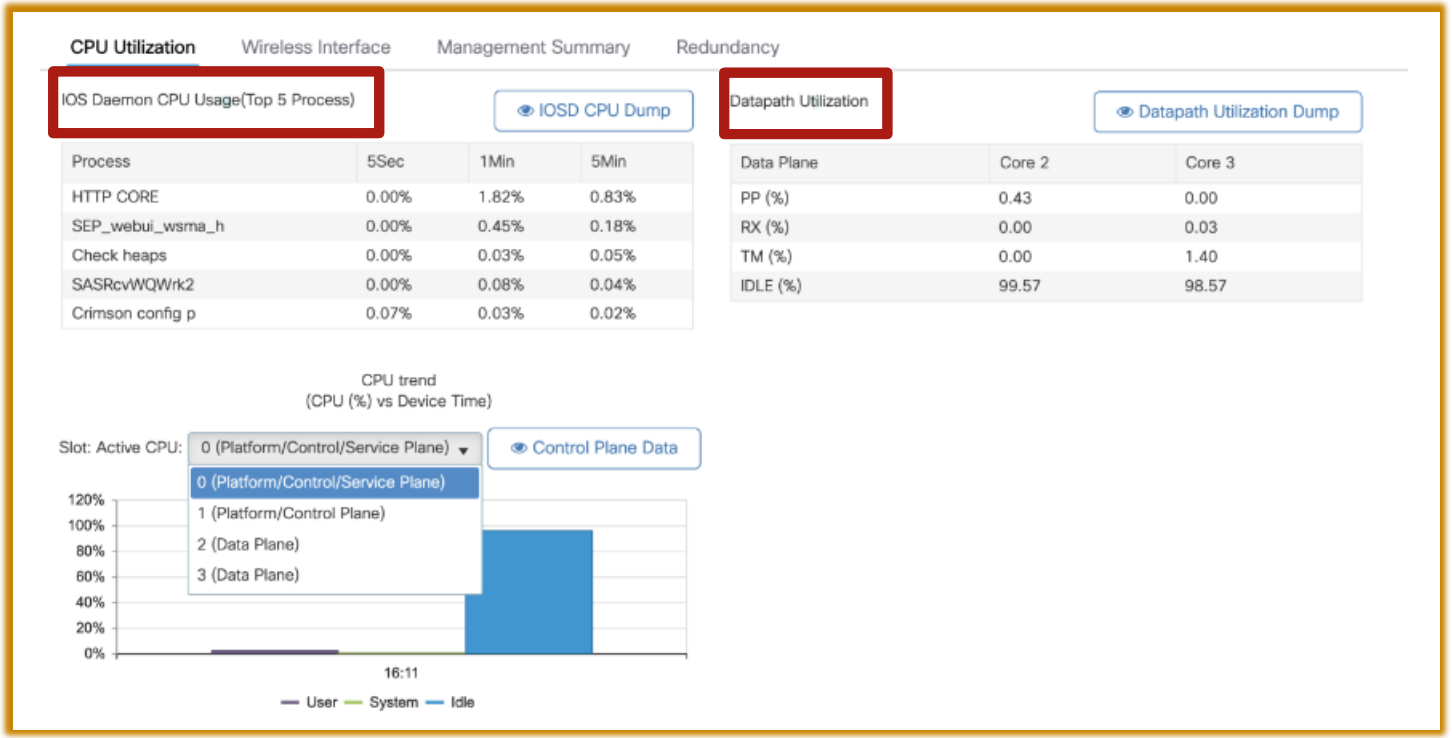
例外：9800-CL と 9800-L：データ転送に CPU コアを使用することで“ucode_pkt_PPE0” の使用率が高いが正常の動作。

CPU History

#show processes cpu platform history



GUI から



Data Planeの確認

#show platform hardware chassis active qfp datapath utilization

```
WLC9800#show platform hardware chassis active qfp datapath utilization
  CPP 0: Subdev 0              5 secs        1 min        5 min       60 min
Input:  Priority (pps)             1            1            1            1
                (bps)          1840         5904         5976         6056
    Non-Priority (pps)             4            5            5            5
                (bps)          1768         2504         2408         2232
           Total (pps)             5            6            6            6
                (bps)          3608         8408         8384         8288
Output: Priority (pps)             0            0            0            0
                (bps)             0            0            0            0
    Non-Priority (pps)             4            5            5            4
                (bps)         24760        32136        26760        17488
           Total (pps)             4            5            5            4
                (bps)         24760        32136        26760        17488
Processing: Load (pct)             0            0            0            0
```

Data Plane –> AP Drop

Capwap:

#show platform hardware chassis active qfp feature wireless **capwap** datapath statistics drop all

```
WLC9800#$active qfp feature wireless capwap datapath statistics drop all

Drop Cause                                                           Packets              Octets
============================================================================= ====================
Wls Capwap unsupported link type Error                                     0                   0
Wls Capwap invalid tunnel Error                                            0                   0
Wls Capwap input config missing Error                                      0                   0
Wls Capwap invalid TPID Error                                              0                   0
Wls Capwap ingress parsing Error                                           0                   0
Wls Capwap invalid FC subtype Error                                        0                   0
Wls Capwap SNAP Invalid HLEN Error                                         0                   0
Wls Capwap Invalid SNAP Error                                              0                   0
Wls Capwap ipv4 tunnel not found Error                                    74               21583
```

Data Plane –> Client Drop

Wireless Client:

#show platform hardware chassis active qfp feature wireless **wlclient** datapath statistics drop all

```
WLC9800#$active qfp feature wireless wlclient datapath statistics drop all

Drop Cause                                                    Packets               Octets
============================================================ ==================== ====================
Wls Client V6 Max Address drop                                      0                    0
Wls Client IPGlean Counter Index Error                              0                    0
Wls Client IPGlean Counter Unchanged Error                          7                  914
Wls Client IPGlean alloc no memory Error                            0                    0
Wls Client IPGlean bucket max limit drop                            0                    0
Wls Client iplearn l2 punt data packet skip                         0                    0
Wls Client iplearn v4 punt data packet skip                        32                 3082
Wls Client iplearn v6 punt data packet skip                       127                16774
Wls Client input subblock missing error                             0                    0
```

Data Plane –> Global Wireless Drops

#show platform hardware chassis active qfp statistics drop all | in ---|Global|Wls

```
WLC9800#$m hardware chassis active qfp statistics drop all | in ---|Global|Wls
-------------------------------------------------------------------------------
Global Drop Stats                                   Packets                Octets
-------------------------------------------------------------------------------
PuntGlobalPolicerDrops                                    0                     0
SdwanGlobalDrop                                           0                     0
WlsCapwapError                                           29                  9780
WlsCapwapFragmentationErr                                 0                     0
WlsCapwapNoVidb                                           0                     0
WlsCapwapReassAllocErr                                    0                     0
WlsCapwapReassFragConsume                                 0                     0
WlsCapwapReassFragDrop                                    0                     0
WlsClientError                                           18                  1974
WlsClientFNFV9Err                                         0                     0
WlsClientFNFV9Report                                      0                     0
WlsDtlsProcessingError                                    0                     0
WLC9800#
```

Data Plane –> Punt to Control Plane

show platform hardware chassis active qfp feature wireless punt statistics

```
WLC9800#$rm hardware chassis active qfp feature wireless punt statistics
CPP Wireless Punt stats:

                                App Tag     Packet Count
                                -------     ------------
          CAPWAP_PKT_TYPE_DOT11_PROBE_REQ             517
               CAPWAP_PKT_TYPE_DOT11_MGMT             120
               CAPWAP_PKT_TYPE_DOT11_IAPP          190819
               CAPWAP_PKT_TYPE_DOT11_RFID               0
                CAPWAP_PKT_TYPE_DOT11_RRM               0
              CAPWAP_PKT_TYPE_DOT11_DOT1X               0
         CAPWAP_PKT_TYPE_CAPWAP_KEEPALIVE           18134
       CAPWAP_PKT_TYPE_MOBILITY_KEEPALIVE               0
             CAPWAP_PKT_TYPE_CAPWAP_CNTRL          115034
              CAPWAP_PKT_TYPE_CAPWAP_DATA               0
          CAPWAP_PKT_TYPE_CAPWAP_DATA_PAT              54
           CAPWAP_PKT_TYPE_MOBILITY_CNTRL               0
                          WLS_SMD_WEBAUTH               0
                        SISF_PKT_TYPE_ARP             341
                       SISF_PKT_TYPE_DHCP              46
                      SISF_PKT_TYPE_DHCP6               0
                    SISF_PKT_TYPE_IPV6_ND             172
                 SISF_PKT_TYPE_DATA_GLEAN               0
              SISF_PKT_TYPE_DATA_GLEAN_V6              26
                 SISF_PKT_TYPE_DHCP_RELAY              46
                  WLCLIENT_PKT_TYPE_MDNS               0
          CAPWAP_PKT_TYPE_CAPWAP_RESERVED               0
```

4. Memory トラブルシューティング

9800メモリー

Cisco Catalyst 9800-L Wireless Controller

16G

Cisco Catalyst 9800-40 Wireless Controller

32G

Cisco Catalyst 9800-80 Wireless Controller

64G

メモリー

#show platform resources

```
WLC9800#show platform resources
**State Acronym: H - Healthy, W - Warning, C - Critical
Resource                 Usage                Max              Warning          Critical         State
----------------------------------------------------------------------------------------------------
RP0 (ok, active)                                                                                 H
 Control Processor       6.51%                100%             80%              90%              H
  DRAM                   4796MB(31%)          15465MB          88%              93%              H
ESP0(ok, active)                                                                                 H
 QFP                                                                                             H
  DRAM                   196541KB(10%)        1835008KB        85%              95%              H
  IRAM                   207KB(10%)           2048KB           85%              95%              H
  CPU Utilization        0.00%                100%             90%              95%              H

WLC9800#
```

Stateとメモリ使用量を確認する。

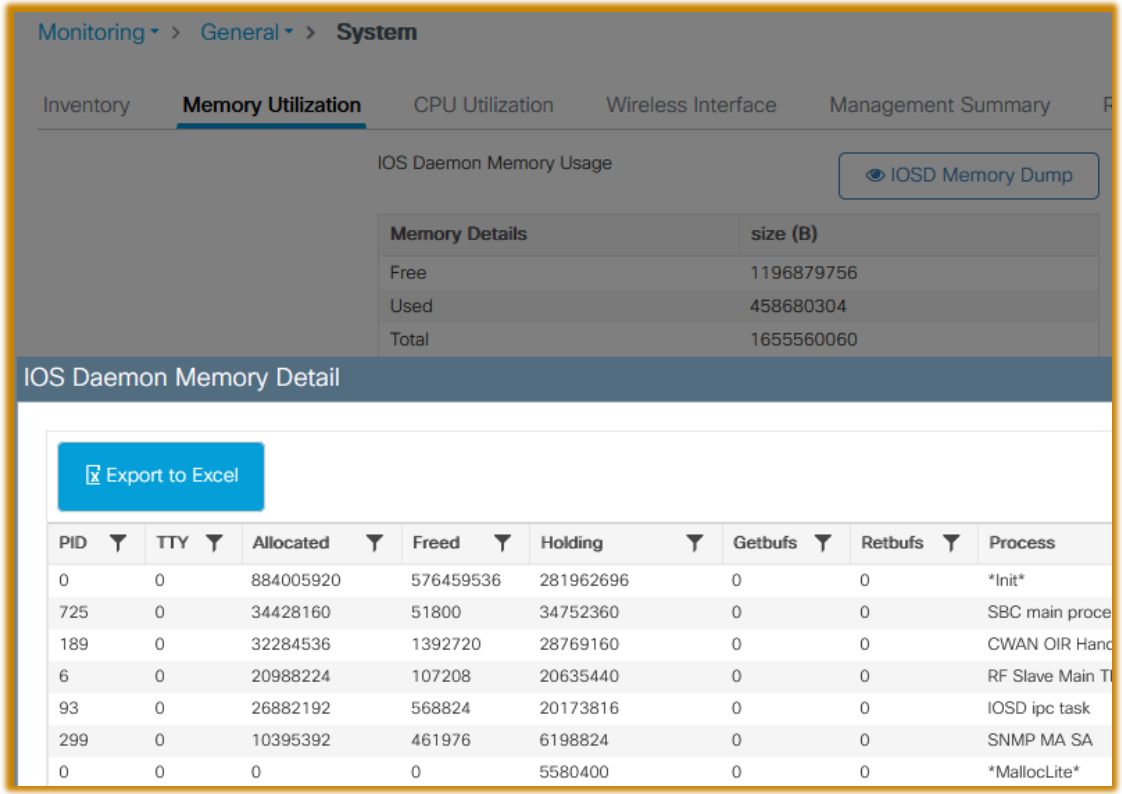
IOSdを確認

#show processes memory sorted

```
WLC9800#sho processes memory sorted
Processor Pool Total: 1655560060 Used:  457665640 Free: 1197894420
reserve P Pool Total:     102404 Used:         88 Free:     102316
 lsmpi_io Pool Total:    6295128 Used:    6294296 Free:        832

 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0  884005920  576459536  281962696          0          0 *Init*
 725   0   34428160      51800   34752360          0          0 SBC main process
 189   0   32284536    1392720   28769160          0          0 CWAN OIR Handler
   6   0   20988224     107208   20635440          0          0 RF Slave Main Th
  93   0   26929344     568824   20141120          0          0 IOSD ipc task
 299   0   10395392     461976    6198824          0          0 SNMP MA SA
   0   0          0          0    5514768          0          0 *MallocLite*
```

空きメモリとプロセスを特定する。

GUIから確認



IOS-XEを確認

#show processes memory platform sorted

```
WLC9800#show process memory platform sorted
System memory: 15836760K total, 4912564K used, 10924196K free
Lowest: 10872532K
   Pid     Text       Data    Stack   Dynamic       RSS              Name
--------------------------------------------------------------------------
  4333   422565    1468188      136       480   1468188  linux_iosd-imag
 22841      995     589768      136     13844    589768           wncd_0
 22357      188     359012     3956      4728    359012          wncmgrd
 22082    23036     345300      136      1024    345300   ucode_pkt_PPE0
 27226      568     339388      136     53376    339388              dbm
 23480      425     254072      136      1460    254072       cpp_cp_svr
 23876    14458     232300      136      3228    232300    fman_fp_image
 27484       56     213672      136       228    213672        cli_agent
 24623      139     201396      136      3776    201396        mobilityd
 23249       57     187180      136      4176    187180              rrm
 25721      159     183784      136      6072    183784         sessmgrd
 23674       54     178388      136      3836    178388           rogued
```

空きメモリとプロセスを特定する。

メモリ使用量

#show processes memory platform accounting

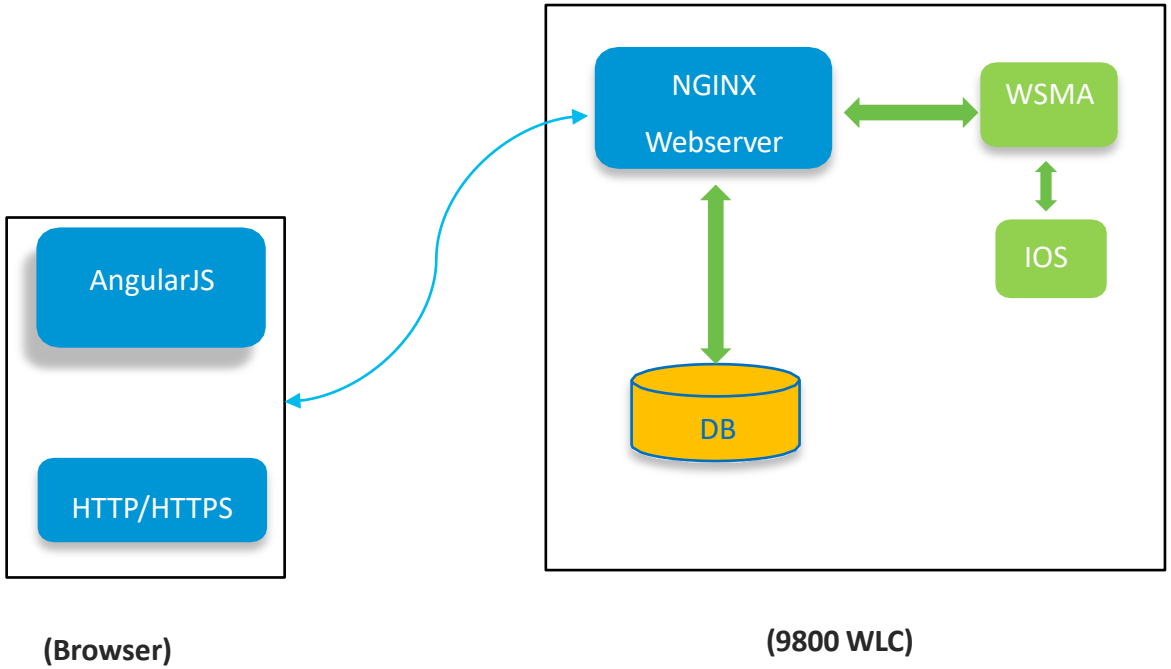
```
WLC9800#show processes memory platform accounting
  Hourly Stats

  process                    callsite_ID(bytes)        max_diff_bytes    callsite_ID(calls)    max_diff_calls  tracekey                              timestamp(UTC)
  -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  sessmgrd_rp_0                7F9D1FF0381D0003             1317399        11B8F825A8768000             12585  1#7795f457ffa1070328449c4e207613d3    2024-04-17 10:57
  linux_iosd-imag_rp_0         3B0178764BECC001              636672        E2AA338E11594003             13538  1#0cb8ba5580a38579dd7fa71a775ac122    2024-04-17 14:42
  cpp_cp_svr_fp_0              A956951D8CCFC005              230053        E2AA338E11594003              1281  1#6b522d82a894043da3491aab32550143    2024-04-17 14:48
  nmspd_rp_0                   24BA6E12C37C400A              222336        24BA6E12C37C400A               221  1#829fa9dffc494a4e3be87f19d51cd606    2024-04-17 14:07
  wncloudm_rp_0                D0DE528A166A4001              196584        A0B683EB82A6C002                 2  1#ed718d57e4870047df62f6d19663f2d6    2024-04-17 11:07
  wncd_0_rp_0                  FD88BB90501F8003              184320        D9B196BAE4BE4000                16  1#c7e89256a805e5a773244431875fb005    2024-04-17 14:22
```

```
WLC9800#show processes memory platform accounting | in Stats|process|--|
  Hourly Stats
  process                    callsite_ID(bytes)        max_diff_bytes
  -------------------------------------------------------------------------
  wncd_0_rp_0                  FD88BB90501F8003              1400832
  Daily Stats
  process                    callsite_ID(bytes)        max_diff_bytes
  -------------------------------------------------------------------------
  wncd_0_rp_0                  537A9134A236C001                   48
  Weekly Stats
  process                    callsite_ID(bytes)        max_diff_bytes
  -------------------------------------------------------------------------
  wncd_0_rp_0                  537A9134A236C001                   48
  Monthly Stats
  process                    callsite_ID(bytes)        max_diff_bytes
  -------------------------------------------------------------------------
  wncd_0_rp_0                  537A9134A236C001                   48
  Yearly Stats
  process                    callsite_ID(bytes)        max_diff_bytes
  -------------------------------------------------------------------------
  wncd_0_rp_0                  537A9134A236C001                   48
```

統計は　時、日、週、月、年単位。

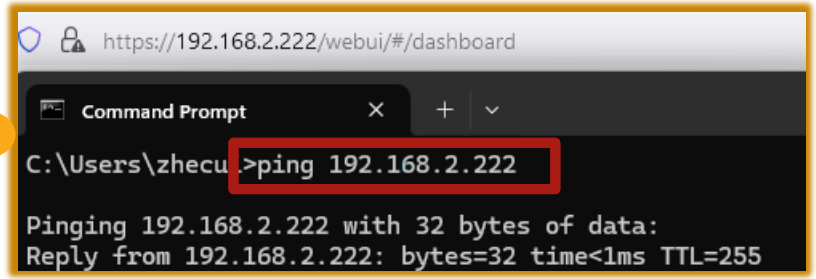
5. GUI トラブルシューティング

Web UI アーキテクチャ



基本確認

1



- Ping 9800 通信できるか

2

```
WLC9800#show running-config | in crypto
crypto pki trustpoint TP-self-signed-2934361478
crypto pki trustpoint SLA-TrustPoint
crypto pki certificate chain TP-self-signed-2934361478
crypto pki certificate chain SLA-TrustPoint
WLC9800#
```

- 証明書の確認

3

```
WLC9800#show running-config | sec ip http
ip http server
ip http authentication local
ip http secure-server
WLC9800#
```

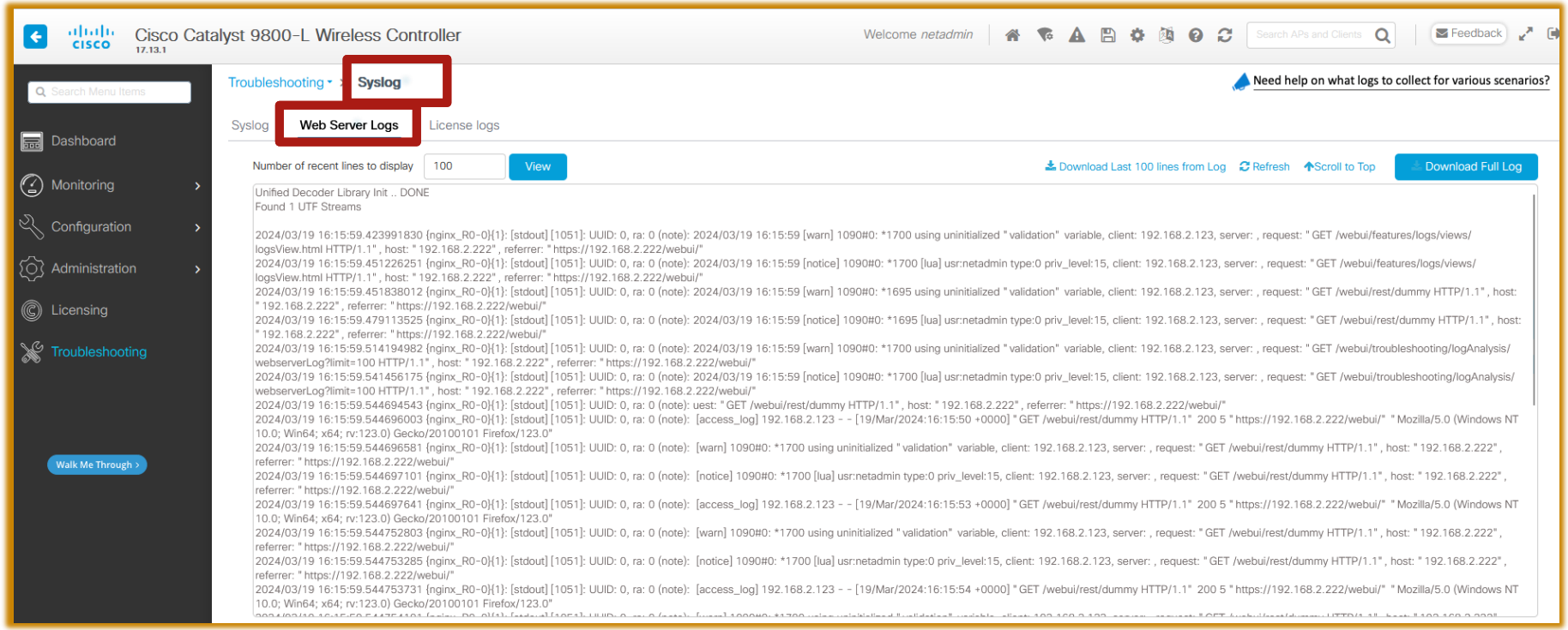
- HTTP/HTTPSの設定確認

NGINX Process

```
WLC9800#show platform software yang-management process
confd               : Not Running
nesd                : Not Running
syncfd              : Not Running
ncsshd              : Not Running
dmiauthd            : Not Running
nginx               : Running
ndbmand             : Not Running
pubd                : Not Running
gnmib               : Not Running

WLC9800#
```

‘Not Running’ となる場合, webserver process がdown

GUIからWeb Server Logs を取得



NGINX プロセス

set platform software trace all verbose

```
WLC9800#set platform software trace all verbose
WLC9800#
WLC9800#
```

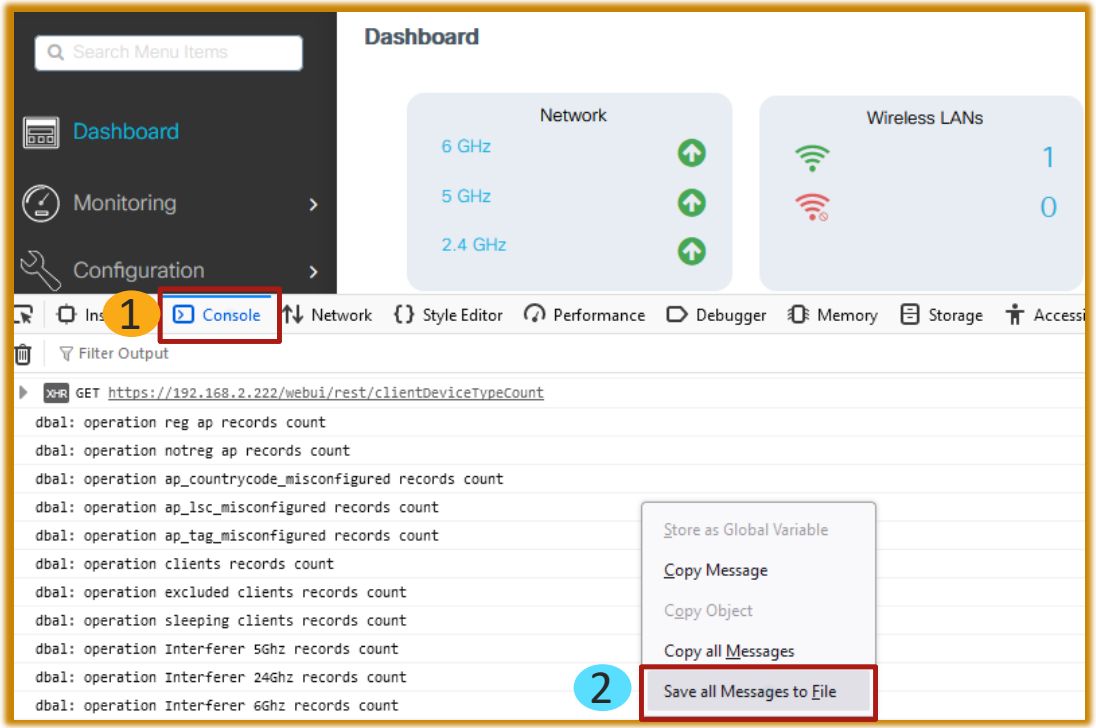
事象テスト実施

```
WLC9800#show loggin process nginx internal to-file bootflash:testnginx1
Logging display requested on 2024/04/17 17:44:32 (Japan) for Hostname: [WLC9800], Model:
 [17.13.01], SN: [FOC25060H0Z], MD_SN: [FCL250600A4]

Displaying logs from the last 0 days, 0 hours, 10 minutes, 0 seconds
executing cmd on chassis 1 ...
Files being merged in the background, please check [/bootflash/testnginx1] output file
Unified Decoder Library Init .. DONE

unified trace decoder estimates: [14] number of files, [1954197] number of messages
        that may be processed. Use CTRL+SHIFT+6 to break.
Found 1 UTF Streams
        2024-04-17 17:44:32.810791 - unified trace decoder estimate: processed 5%
        2024-04-17 17:44:33.002845 - unified trace decoder estimate: processed 10%
```

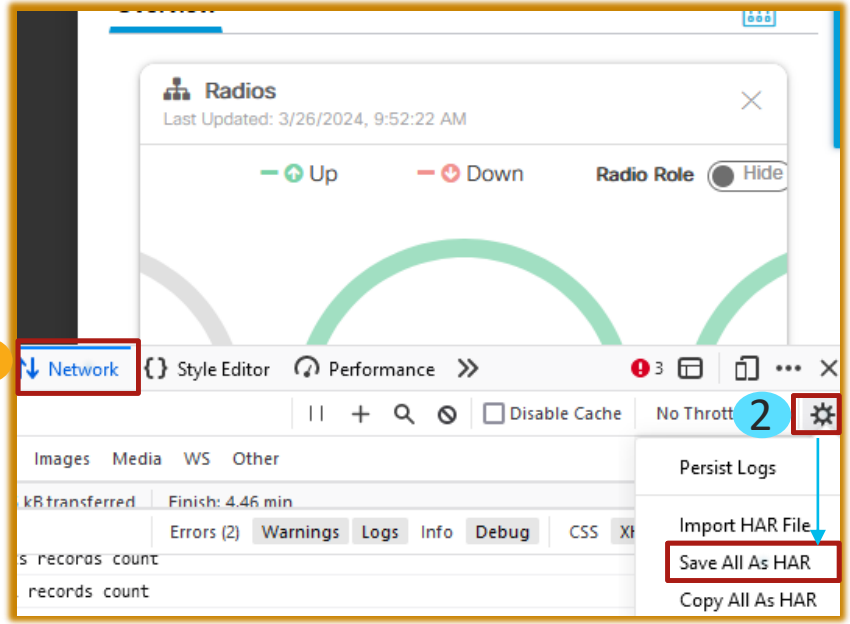
NGINX ログファイル情報

```
2024/04/17 17:44:32 (Japan) for Hostname: [WLC9800], Model: [C9800-L-C-K9        ], Version: [17.13.01],
 {nginx_R0 0}{1}: [stdout] [1847]: (note): 2024/04/17 17:39:10 [warn] 1886#0: *658 using uninitialized "
 {nginx_R0 0}{1}: [stdout] [1847]: (note): 2024/04/17 17:39:10 [warn] 1886#0: *658 [lua]
 {nginx_R0 0}{1}: [stdout] [1847]: (note):  LuaModule:
 {nginx_R0 0}{1}: [stdout] [1847]: (note):  User session has expired, client: 192.168.2.123, server: , r
 {nginx_R0 0}{1}: [stdout] [1847]: (note): 2024/04/17 17:39:10 [warn] 1886#0: *658 [lua]
 {nginx_R0 0}{1}: [stdout] [1847]: (note):  LuaModule:
 {nginx_R0 0}{1}: [stdout] [1847]: (note):  Blocking forbidden uri=/webui/logout.html, client: 192.168.2
 {nginx_R0 0}{1}: [stdout] [1847]: (note): 2024/04/17 17:39:18 [warn] 1886#0: *662 using uninitialized "
 {nginx_R0 0}{1}: [stdout] [1847]: (note): 2024/04/17 17:39:18 [notice] 1886#0: *662 [lua] usr:netadmin
 {nginx_R0 0}{1}: [stdout] [1847]: (note): 2024/04/17 17:39:19 [warn] 1886#0: *662 using uninitialized "
 {nginx_R0 0}{1}: [stdout] [1847]: (note): , server: , request: "GET /webui/rest/dummy HTTP/1.1", host:
```

ブラウザからコンソールログ



ブラウザから HARファイル



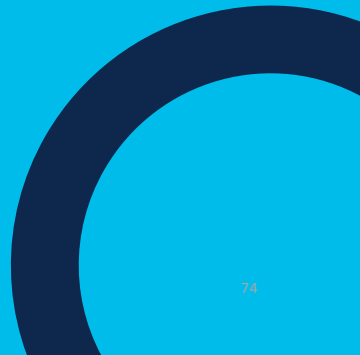
参考:
Web ブラウザ上でのキャプチャ (HAR ファイル) 取得方法

- Google Chrome から取得する
- Firefox から取得する
- Microsoft Edge から取得する
- Internet Explore から取得する

事象後の取得ログは下記:

1. Console log
2. HAR
3. 問題となる画面capture

Thank You



5 mins Break

まもなく Q&A セッションを開始します。ご参加される方は
少々お待ちください。

Q&A

画面右側の Q&A ウィンドウから、
すべてのパネリスト (All Panelists) 宛
に送信してください。

次回の オンラインセミナー予定

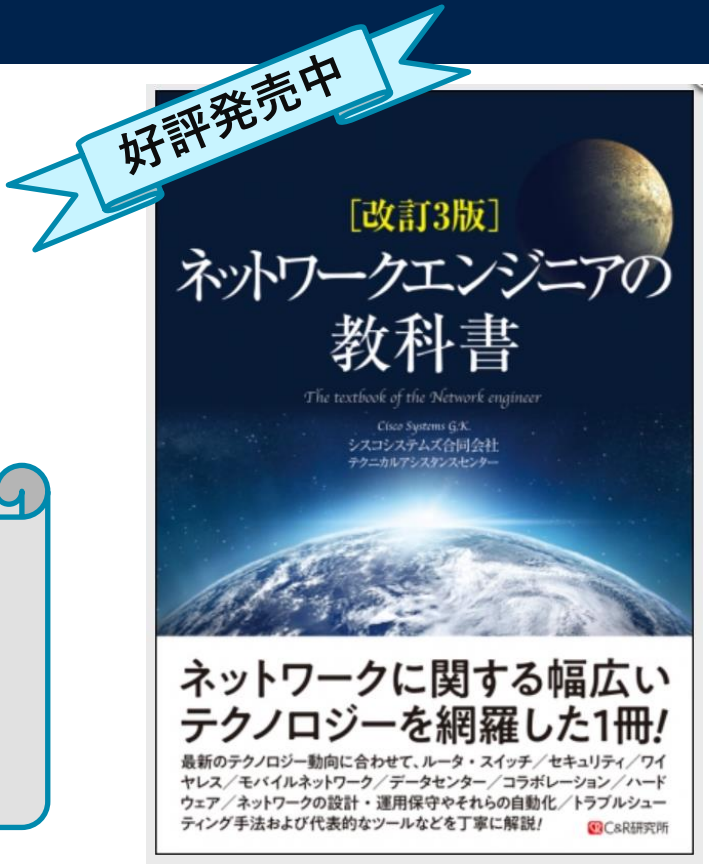
Microsoft Teams Rooms デバイスのトラブルシューティング 基礎知識
2024 年 6 月 5 日 (水) 10:00 - 11:30

馬 妍 (Marianne Ma)
シスコシステムズ
グローバル カスタマー エクスペリエンス センター
テクニカル コンサルティング エンジニア

登録受付中
https://community.cisco.com/t5/e-/-/ec-p/5072908

書籍ネットワークエンジニアの教科書 紹介

- 弊社TAC監修の書籍が改訂3版として出版！
- 各製品担当のエキスパートエンジニアが
  わかりやすい言葉で各テクノロジーを解説！！
- ネットワーク初心者に最適な入門書として是非！！！



書籍情報

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セッション後のアンケートに回答くださった方から抽選で１名様へ書籍「ネットワークエンジニアの教科書」を差し上げます！

終了後、ブラウザに表示されるアンケートにご回答ください。フリーコメントもお願いします。

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