

Licensing

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Secondary Controller Running Permanent AP Count License

A secondary controller running a permanent AP count license provides support for the number of APs specified in the permanent license. For instance, a 5508 WLC running a 50 AP count license and configured as a secondary controller provides support for 50 APs. (See Figure 3-1 and Figure 3-2)

ululu cisco		CONTROLLER	WIRELESS	SECURITY	MANAGEMENT	COMMANDS	HELP FEED	BACK	
fanagement	Licenses								SECONDARY WLC
Summary	License		Туре	Time(expires)	Count	Priority	Status	
	base		permanent	No Exp	piry	NA	Medium	Not in Use	
HTTP-HTTPS	base-ap-count		permanent	No Exp	piny	12	Medium	Inactive	
Teinet-SSH	base-ap-count		permanent.	No Ex;	piry	50	Medium	In Use	
Serial Port	base-ap-count		evaluation	# wee	ks, 4 days	500	None	Snactive	
Local Management Users									
User Sessions									
Logs									
Mgmt Via Wireless									
Software Activation Licenses License Usage Commands License Agent									
Tech Support									

Figure 3-1 Licenses on Secondary WLC (GUI)

 cısco	MONITOR WLANS	CONTROLLER WIRELES	S SECURITY MANAGE		
Management Summary F SNMP	License Level			SECON	DARY WLC
HTTP-HTTPS	License Capacity				
Telnet-SSH	Counted Feature	Max Count	Current Count	Remaining Count	
Serial Port	AP Count	50	0	50	
Local Management Users					
User Sessions					
> Logs					
Mgmt Via Wireless					
Software Activation Licenses License Usage Commands License Agent					
Tech Support					

Figure 3-2 License Capacity on Secondary WLC (GUI)

HA-SKU Secondary Controller

A secondary controller running a minimum AP count license and configured as an HA- SKU controller provides the maximum AP capacity as supported by the hardware. For instance, a 5508 WLC running a 50 AP count license and configured as an HA-SKU secondary controller provides support for 500 APs. (SeeFigure 3-3 and Figure 3-4)

Figure 3-3	Licenses on HA-SKU Secondary WLC (GUI)
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ululu cisco	MONITOR Y	MLANS S	ONTROLLER	WIRELESS	SECURITY	MANAGEMENT	COMMANDS	HELP FEED	BACK	-
Management	Licenses									SECONDARY WLC
Summary SNMP	License			Туре	Time	(expires)	Count	Priority	Status	
HTTP-HTTPS	base			permanent	No Ex	piny	NA	Medium	Not in Use	
	base-ap-count	1		permanent	No Ex	piry	12	Medium	Inactive	•
Teinet-SSH Serial Port	base-ap-count	4		permanent	No Ex	piry	50	Medium	In Use	
Local Management Users User Sessions Logs Mgmt Via Wireless	base-ap-count			evaluation		ks, 4 days	500	None	Inactive	
Software Activation Ucenses Ucense Usage Commands Ucense Agent										
Fech Support										

cisco	MONITOR WLANS	CONTROLLER WIRELESS	SECURITY MANAGE	MENT COMMANDS HE	CECONDARY MILE
Management	License Level				SECONDARY WLC
Summary					
> SNMP					
HTTP-HTTPS	License Capacity				
Telnet-SSH	Counted Feature	Max Count	Current Count	Remaining Count	
Serial Port	AP Count	500	0	500	
Local Management Users					
User Sessions					
Logs					
Mgmt Via Wireless					
Software Activation Licenses License Usage Commands License Agent					
Frech Support					

Figure 3-4 License Capacity on HA-SKU Secondary WLC (GUI)

Failover Process

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In the N+1 HA redundancy model, one WLC serves as the backup controller for N primary controllers. When any of the primary WLCs fail, the APs connected to that controller fall back to the backup controller. The AP has to restart its CAPWAP state machine and go through a complete discovery phase before it joins the backup controller. The available AP count on the backup controller is reduced by the number of APs that fall back from the primary WLC to the backup WLC.

For example, when the primary controller supporting 90 APs fails, these APs fall back to the backup controller that has a maximum AP support of 500. The backup WLC is left with an available AP count of 500 - 90 = 410 APs. (See Figure 3-5.)



Figure 3-5 N+1 HA Failover

This is explained further in the following examples.

AP Connected to Primary WLC Running 12 AP Permanent Count License

To see the license capacity, navigate to Software Activation > License Usage. (See Figure 3-6)

Figure 3-6 License Capacity on Primary WLC (GUI)

	MONITOR WLANS CO	ONTROLLER WIRELESS	SECURITY MANAGE		WIC
Management	License Level			- FRIPARI	mee .
Summary SNMP HTTP-HTTPS Telnet-SSH	License Capacity	Max Count	Current Count	Remaining Count	
Serial Port	AP Count	12	1	11	
Local Management Users					
User Sessions					
> Logs					
Mgmt Via Wireless					
Software Activation Licenses License Usage Commands License Agent					
Firech Support					Control of the second s

On the CLI, use the show license capacity command. (See Figure 3-7.)

Figure 3-7 License Capacity on Primary WLC (CLI)

Application Visibility AP Name _{ntrol}	Ethernet MAC			
	fc:99:47:b0:f9:	9f 8 days, 04 h 1		0 days, 01 h 46 m 16 s
(5500) >show licen: + qos				
icensed Feature			Remainin	
AP Count	12	1	11	

AP Failover to Secondary Controller

With Release 7.4, the secondary controller can either be a permanent AP count controller or an HA-SKU controller.

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Secondary Controller Running Permanent AP Count License

In this example, the secondary controller is running a 50 AP permanent license and has a maximum AP capacity of 50. (SeeFigure 3-8 and Figure 3-9.)

Figure 3-8 License Capacity of 50 on Secondary WLC (GUI)

cisco	MONITOR WLANS	CONTROLLER WIRELESS	SECURITY MANAGE		
Management	License Level			SECON	DARY WLC
Summary					
▶ SNMP					
HTTP-HTTPS	License Capacity				
Telnet-SSH	Counted Feature	Max Count	Current Count	Remaining Count	
Serial Port	AP Count	50	0	50	
Local Management Users					
User Sessions					
▶ Logs					
Mgmt Via Wireless					
Software Activation Licenses License Usage Commands License Agent					
Tech Support					

Figure 3-9 License Capacity of 50 on Secondary WLC (CLI)

Licensed Feature	Max Count	Current Count	Remain	ing Count
AP Count	50	Θ	50	
(5500) >show licer StoreIndex: 2 Fe		count	Vers	sion: 1.0
License St	tate: Active, In Dunt: 50 /50 (Action Diority: Medium			

When the AP connected to the primary controller fails over to the secondary controller, the available AP license count is reduced from 50 to 49. (See Figure 3-10.)

ululu cisco	MONITOR WLANS	CONTROLLER WIRELESS	SECURITY MANAGE		
Management	License Level		64	S	ECONDARY WL
Summary				_	
SNMP					
HTTP-HTTPS	License Capacity				
Teinet-SSH	Counted Feature	Max Count	Current Count	Remaining Count	
Serial Port	AP Count	50	1	49	
Local Management Users					
User Sessions					
Logs					
Mgmt Via Wireless					
Software Activation Ucenses Ucense Usage Commands Ucense Agent					
First Support					

Figure 3-10 License Capacity Reduced to 49 on Secondary WLC (GUI)

On the CLI, use the show ap uptime and show license capacity commands to verify the change in license count. (See Figure 3-11.)

Figure 3-11 License Capacity Reduced to 49 on Secondary WLC (CLI)

Global AP User Nam	e er Name	Not C		
AP Name	Ethernet MAC			Association Up Time
	fc:99:47:b0:f9:9	f 8 days, 05 h 23		0 days, 00 h 00 m 10 s
(5500) >show licen	se capacity			
Licensed Feature	Max Count	Current Count	Remaining	; Count
AP Count	50	1	49	

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HA-SKU as Secondary Controller

With Release 7.4, an HA-SKU controller can be used as a secondary controller. In this example, the secondary controller is running a 50 AP permanent license and is configured to be an HA-SKU controller. Therefore it has a maximum AP capacity of 500. (See Figure 3-12 and Figure 3-13.)

Figure 3-12 License Capacity of 500 on HA-SKU Secondary WLC (GUI)

cisco	MONITOR WLANS O	ontroller wjreless	SECURITY MANAGE	MENT COMMANDS HE	SECONDARY WLC
Management	License Level				SECONDART WEC
Summary SNMP HTTP-HTTPS Telnet-SSH	License Capacity	Max Count	Current Count	Remaining Count	
Serial Port	AP Count	500	0	500 🥢	
Local Management Users User Sessions Logs Mgmt Via Wireless					
Software Activation Licenses License Usage Commands License Agent					
Tech Support					

Figure 3-13 License Capacity of 500 on HA-SKU Secondary WLC (CLI)

AP Count	500	0	500	
Licensed Feature	Max Count	Current Count	Remaining Count	
<pre>Netflow (5500) >show licen</pre>	se capacity			
Timers				
ApplicatLoidensettSt	pe: Permanent ate: Active, In unt: 50 /50 (Ac	Version: 1.0		
(5500) >show licen → 802.11b/g/m				

When the AP connected to the primary controller fails over to the secondary controller, the available AP license count is reduced from 500 to 499. (See Figure 3-14.)

 cısco	MONITOR WLANS	CONTROLLER	WIRELESS	SECURITY	MANAGEM	ENT COMM	-	
Management	License Level						SECONDARY WL	C
Summary								
SNMP								
HTTP-HTTPS	License Capacity							
Telnet-SSH	Counted Feature	Max C	ount	Current	Count	Remaining	Count	
Serial Port	AP Count	500		1		499		
Local Management Users								
User Sessions								
Logs								
Mgmt Via Wireless								
Software Activation Licenses License Usage Commands License Agent								
Tech Support								

Figure 3-14 License Capacity Reduced to 499 on HA-SKU Secondary WLC (GUI)

On the CLI, use the show ap uptime and show license capacity commands to verify the change in license count. (See Figure 3-15)

Figure 3-15 License Capacity Reduced to 499 on HA-SKU Secondary WLC (CLI)

(5500) >show ap	uptime			
AP Name	Ethernet MAC			Association Up Time
	fc:99:47:b0:f9:9)f 8 days, 04 h 10	5 m 10 s	0 days, 00 h 00 m 02 s
(5500) >show licens	e capacity			
Licensed Feature		Current Count	Remaini	
AP Count	500	1	499	

Ninety days after the first AP joins the HA-SKU secondary controller, warning messages, as shown below, begin to appear on the console of the controller.

```
(Cisco Controller) >
_____
Dear Administrator,
Your Licenses are not sufficient to be able to serve AP's that your are serving
as of now. It is Cisco's (magnanimous) policy to allow the Controllers in HA-Mode to serve APs without actually having AP Count Licese for 90 days.
But then, You seem to have already used it for 91 days, Which is Illegal.
Please treat this as a very important - and contact Cisco as early as possible
(Cisco Controller) >
Dear Administrator,
Your Licenses are not sufficient to be able to serve AP's that your are serving
as of now. It is Cisco's (magnanimous) policy to allow the Controllers in HA-Mode to serve APs without actually having AP Count Licese for 90 days.
But then, You seem to have already used it for 92 days, Which is Illegal.
Please treat this as a very important - and contact Cisco as early as possible
                                                                    350377
```



If the access points fall back to the primary controller within or after the 90 day period the timer will be reset.

Upgrade/Downgrade

Each of the controllers in the N+1 HA model needs to be upgraded or downgraded independently. However, when an AP fails over to a WLC running a version other than that on the primary, the corresponding image is downloaded to the AP. This adds to the failover time.

Limitations

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The AP SSO must be disabled to use the HA-SKU secondary as a backup for N primary controllers.

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