

NXC5500/2500

Version 4.20 Edition 2, 02/2015



Application Note

Dynamic Channel Selection

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Dynamic Channel Selection

Purpose

When numerous APs broadcast within a given area, it increases the possibility of heightened radio interference, especially if some or all of APs are broadcasting on the same radio channel. If the interference becomes too great, then the network administrator must check his AP configuration options, and manually change the channel to one that no other AP is using (or at least a channel that has a lower level of interference) in order to give the connected stations a minimum degree of interference. Dynamic channel selection frees the network administrator from this task by letting the AP do it automatically. The AP can scan the area and set its channel based on the least amount of interference that it detects.

Original vs. Enhanced DCS

	Original	Current
DCS configurations	Global settings	Per radio settings
11ac support	n/a	Support 80MHz algorithm
DCS NOW	Global invoke	Per AP, per AP-group.
		DCS have to be activated
5G manual	Support	n/a
Set last DCS channel	n/a	Support
		(For example, the channel
		is set to 1 by DCS. Then,
		disable DCS and change
		the channel to 6 manually.
		When enable DCS again
		the channel will be set be
		previous channel 1 which
		is selected by DCS.)

ZyXEL - NXC Application Notes

DCS assessment at	n/a	3 times
beginning		

Configuration

 Per radio from CONFIGURATION > Object > AP Profile > Radio Channel Selection is "Manual" by default.

Z	YXEL NXC2500				Welcome admin <u>Loqout</u>	?Help	Z About	甞 Site Map	CObject Reference	🖵 Console	CLI 🖾
1	CONFIGURATION	Radio	SSID								
	Licensing Wireless Controller BRManagement	Radio Si	ummary do 📝 Edit 🍵 R	emove 💡 Activate 💡 Inactivate 🔚 Object Reference							
200	 MON Mode 	#	Status	Profile Name 🔺	Fre	quency Ba	nd				
R	Auto Healing	1	9	Class_3th_grade_radio1	2.4	G					
	Network Captive Portal	2	@	Class_3th_grade_radio2	5G						
	+ RTLS	3	9	Disabled-2G	2.4	G					
	Firewall	4	P	Disabled-5G	5G						
	User/Group	5	@	default	2.4	G					
	AP Profile	6	@	default2	5G						
	MON Profile ZvMesh Profile	14 -	Page 1 c	f 1 Show 50 vitems					Display	ing 1 - 6 of 6	5

• 2.4 GHz General Settings

Edit Radio Profile Class_3tl	h_grade_radio1		? >
III Show Advanced Settings			
General Settings			
Activate			
Profile Name:	Class_3th_grade_ra	dic	
802.11 Band:	11b/g/n	~	
Channel Width:	20MHz	~	
Channel Selection:	O DCS	Manual 6	•
			OK Cancel

• Channels will be based on country code.

Edit Radio Profile Class_3th_g	grade_radio1			? 🗙
III Show Advanced Settings				
General Settings				
Activate				
Profile Name:	Class_3th_grade_radic			
802.11 Band:	11b/g/n	~		
Channel Width:	20MHz	~		
Channel Selection:	O DCS	Manual	3	
			1	
			2	
			3	
			4	
			5	
			7	
			8	
			9	
			10	
			11	

• Channel Selection: DCS: to have the AP search for available channels automatically in the 2.4 GHz band. The available channels vary depending on what you select in the "2.4 GHz Channel Deployment" field.

Edit Radio Profile Class_3th	_grade_radio1	?
Show Advanced Settings		
General Settings		
Activate		
Profile Name:	Class_3th_grade_radic	
802.11 Band:	11b/g/n 👻	
Channel Width:	20MHz 🗸	
Channel Selection:	DCS	*
DCS Time Interval:	720 (10~1440 minutes)	
Enable DCS Client Av	/are	
2.4 GHz Channel Selectio	i Method: auto	
2.4 GHz Channel Deploym	ent: Three-Channel Deployme 🎽	
		OK Cancel

• 2.4 GHz Channel Deployment:

"Three-Channel Deployment" uses 1, 6 and 11 channels.

"Four-Channel Deployment" uses 1, 4, 7 and 11 channels for FCC, and 1, 5, 9, 13 channels for ETSI.

Edit Radio Profile Class_3th_grad	e_radio1	? ×
III Show Advanced Settings		
General Settings		
V Activate		
Profile Name:	Class_3th_grade_radic	
802.11 Band:	11b/g/n	
Channel Width:	20MHz 👻	
Channel Selection:	O DCS O Manual 6 Y	
DCS Time Interval:	720 (10~1440 minutes)	
2.4 GHz Channel Selection Meth	od: auto 🗸	
2.4 GHz Channel Deployment:	Four-Channel Deployment 💙 (FCC: 1, 4, 7, 11; ETSI: 1, 5, 9, 13)	
	СК	Cancel

• 2.4 GHz Channel Selection Method: Choose "Manual" to select the channels that you want the AP to use.

	w Advanced Settings				
ene	ral Settings				
V	Activate				
Pro	file Name:		Class_3th_grade_ra	clic	
802	2.11 Band:		11b/g/n	~	
Cha	annel Width:		20MHz	~	
Ch	annel Selection:		@ DCS	Manual 6	
			0000	e mandar	
	DCS Time Interval:		720	(10~1440 minutes)	
-	Enable DCS Cile	nt Aware			
L	2.4 GHz Channel Sele	ction Met	hod: manual	~	
	Channel ID				
	Channel ID 1				
	Channel ID 1 2	Â			
	Channel ID 1 2 3				
	Channel ID 1 2 3 4				
	Channel ID 1 2 3 4 5				
	Channel ID 1 2 3 4 5 6				
	Channel ID 1 2 3 4 5 6 7				
	Channel ID 1 2 3 4 5 6 6 7 8				
	Channel ID 1 2 3 4 5 5 6 7 7 8 9				
	Channel ID 1 2 3 4 5 6 7 8 8 9	•			
	Channel ID 1 2 3 4 5 6 7 8 9 9	•			
	Channel ID 1 2 3 4 5 6 7 8 9 9				

• 5 GHz general settings

Show Advanced Settings					
General Settings					
Activate					
Profile Name:	Class_3th_grade_radic				
802.11 Band:	11a	*			
Channel Width:	20MHz	~			
Channel Selection:	O DCS	Manual	36	~	
			36 - indoor use only		
			40 - indoor use only		
			44 - indoor use only		
			48 - Indoor use only		
			149		
			153		
			161		
			101		

- Channel Selection: DCS
- 1. 5 GHz does not support "Manual" in "Channel Selection Method" field.

Edit Radio Profile Class_3th	_grade_radio2		? >
Show Advanced Settings			
General Settings			
V Activate			
Profile Name:	Class_3th_grade_	radic	
802.11 Band:	11ac	~	
Channel Width:	20MHz	~	
Channel Selection:	DCS	O Manual 36	~
DCS Time Interval:	720	(10~1440 minutes)	
Eco Time Interval.	720		
Enable 5 GHz DES Aw	are		
5 GHz Channel Selection M	lethod: auto	~	
			OK Cancel

2. Support 802.11ac 80 MHz

Show Advanced Settings		
eneral Settings		
Activate		
Profile Name:	Class 3th grade radio	
802 11 Band		
Chapped Midth	11h/a	
Channel Wilder:	113,9	
Channel Selection.	11b/g/n	Janual 36
DCS Time Interval:	11a/n	0~1440 minutes)
	11ac	o rato minutes)
Enable DCS Client Av	ware	
📝 Enable 5 GHz DFS Av	vare	
5 GHz Channel Selection	Method: auto	*
dit Radio Profile Class 3th	o grade radio?	
dit Radio Profile Class_3th	n_grade_radio2	
dit Radio Profile Class_3th Show Advanced Settings	n_grade_radio2	
dit Radio Profile Class_3th Show Advanced Settings eneral Settings	n_grade_radio2	
dit Radio Profile Class_3th Show Advanced Settings eneral Settings Z Activate	n_grade_radio2	
dit Radio Profile Class_3th Show Advanced Settings eneral Settings v Activate Profile Name:	n_grade_radio2 Class_3th_grade_radic	
dit Radio Profile Class_3th Show Advanced Settings eneral Settings Activate Profile Name: 802.11 Band:	n_grade_radio2 Class_3th_grade_radic 11ac	
dit Radio Profile Class_3th Show Advanced Settings eneral Settings v Activate Profile Name: 802.11 Band: Channel Width:	Class_3th_grade_radic	
dit Radio Profile Class_3th Show Advanced Settings eneral Settings Chativate Profile Name: 802.11 Band: Channel Width: Channel Selection:	Class_3th_grade_radic 11ac 20MHz 20MHz	famual 26 - indoor use only
dit Radio Profile Class_3th Show Advanced Settings eneral Settings v Activate Profile Name: 802.11 Band: Channel Width: Channel Selection:	Class_3th_grade_radic 11ac 20MHz 20/40MHz	fanual 36 - indoor use only
dit Radio Profile Class_3th Show Advanced Settings eneral Settings Activate Profile Name: 802.11 Band: Channel Width: Channel Selection: DCS Time Interval:	Class_3th_grade_radic 11ac 20MHz 20/40/80MHz	fanual 36 - indoor use only ▼ 0~1440 minutes)
dit Radio Profile Class_3th Show Advanced Settings eneral Settings Activate Profile Name: 802.11 Band: Channel Width: Channel Selection: DCS Time Interval: Enable DCS Client Av	Class_3th_grade_radic 11ac 20MHz 20/40/80MHz 20/40/80MHz	fanual 36 - indoor use only
dit Radio Profile Class_3th Show Advanced Settings eneral Settings Activate Profile Name: 802.11 Band: Channel Width: Channel Selection: DCS Time Interval: © Enable DCS Client Av © Enable 5 GHz DFS Av	Class_3th_grade_radic Class_3th_grade_radic 11ac 20MHz 20/40/80MHz 20/40/80MHz vare vare	fanual 36 - indoor use only
dit Radio Profile Class_3th Show Advanced Settings eneral Settings v Activate Profile Name: 802.11 Band: Channel Width: Channel Selection: DCS Time Interval: v Enable DCS Client Av v Enable 5 GHz DFS Av 5 GHz Channel Selection	Class_3th_grade_radic 11ac 20MHz 20/40/Hz 20/40/80MHz vare vare Method: auto	fanual 36 - indoor use only

- 3. "DCS Now": will invoke DCS procedure immediately, and change channel force if required regardless of whether the "Client Aware" is enable or not. You can select more than one AP or AP group.
- Per AP, go to CONFIGURATION > Wireless> AP Management > Mgnt. AP List.

ZyXEL NXC2500) Welcon	me admin <u>Locout</u> ? Help Z About 🛊 Site Map 📮 Object Reference 🖵 Console 👩 CLI
CONFIGURATION	Mgnt. AP List AP Policy AP Group	
Licensing Wireless Controller AP Management	Mgnt. AP List	
MON Mode Auto Healing Network	# IP Address IMAC Address Model R1 Mode / Profile 12/Mes R2 Mode / F 1 192.168.11.01 B0 B2 DC 66-77E B0 NWA5123-NI AP / Class_31b_grade_ra AP / Class_ 2 192.168.11.00 B0 B2 DC 66-77E C7 NWA5123-NI AP / Class_31b_grade_ra AP / Class_ 2 192.168.11.00 B0 B2 DC 66-77E C7 NWA5123-NI AP / Class_31b_grade_ra AP / Class_31b_grade_ra	Profile / ZyMesh Profile Group M Description _3th_grade_radio2/- Third_Grade 1 3-grade _3th_grade_radio2/- Third_Grade 1 1 3-grade
 Network Captive Portal RTLS Firewall Object User/Group AP Profile MON Profile ZyMesh Profile Address Service Schedule AM Server Auth. Method Certificate System Log & Report 	Apply Reset	Displaying 1-2 of 2

• Per AP Group, go to CONFIGURATION > Wireless> AP Management > AP Group.

Z	VXEL NXC2500			Welcome admin <u>Loqout</u>	?Help Z About	Ŧ Site Map	Cobject Reference	🖵 Console	🖾 CLI
			40.0						
	CONFIGURATION	Mgnt. AP List AP Policy	AP Group						_
-	Licensing Wireless	Group Setting							
	Controller	Default Group:	default						_
90	AP Management MON Mode								
民	 Auto Healing 	Group Summary							_
	Network	💿 Add 📝 Edit 🍵 Remove	OCS Now						
	Capilve Ponal RTLS	# Group Name		Member Count					
		1 default		0					1
	Object	2 Unclassified		0					
	AP Profile	3 Third_Grade		2					
	MON Profile	Group Summay Group Name Group Name Group Name Group Name Group Summay Group Name G	Display	ng 1 - 3 of 3					
	 Zymesn Profile Address 								
	Schedule Añá Server								
	 Auth. Method 								
	System Log & Report								
				Apply Reset					

Log

View the DCS logs via MONTIOR > Log > View AP Log.

1. Choose the AP that you want to query in "Select an AP" field and click on the "Query" button.

ZyXEL NXC250	Welcome admin Logout ? Help Z About	🛊 Site Map 🛛 🔁 Ot	oject Reference	🖵 Console 🔚
MONITOR	Vew Log			
System Status Wireless	III Show Pilter			
- Log	AP Selection			
	Select an AP: 3-grade V Query			
R.	Log Query Status: success			
	Lag You I have a success			
	Log Query Information			
	AP Information: b0:b2:dc:6e:7e:bb			
	Log File Status: Exist			
	Last Log Query Time: 2014-10-16 06:33:35			
	Logs			
Log Query Information AP Information: Log Query Information: Log File Status: Depley: Log Query Information: Dipley: Depley: Praint Log Now: Referent Category: Multipley: Vertical Status Construction: Construction:				
	🖂 Email Log Now 🛛 🖓 Refresh 🧹 Clear Log			Image: Second
	# Time P. Category Message	Source	Des	
	1 2014-10-16 06:02:02 i WLAN Dynamic Channel Selection Radio2 cannot find channel better than current channel 161		1	WL
	2 2014-10-16 06:02:02 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure			WL
	3 2014-10-16 06:00:47 i WLAN Dynamic Channel Selection Radio2 DCS change channel from 153 to 161. (No station connect.			WL
	4 2014-10-16 06:00:47 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure			WL
	5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS change channel from 36 to 153. (At first time.)			WL
	6 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure			WL
MONITOR	View Log View AP Log			
	Till Show Either			
- Log	AP Selection			
	Select an AP: 3-grade V Query			
	In Ouer Status: succes			
	Log Query Information			
	AP Information: b0:b2:dc:6e:7e:bb			
	Log File Status: Exist			
	Query AP: 3-grade			
	Last Log Overy Time: 2014-10-16 06:38:04			
	Last Log Query Time: 2014-10-16 06:38:04			
	Last Log Query Time: 2014-10-16 06:38:04			
	Last Log Query Time: 2014-10-16 06:38:04 CK Logs Display: All Logs			
	Last Log Query Time: 2014-10-16 06:38:04 CK Logs Display: All Logs CEPanal Log Nov 2018 Fresh / Clear Log			
	Last Log Query Time: 2014-10-16 06:38:04 CK Logs Display: All Logs Email Log Now: @Refresh @Clear Log # Time P Category # Time	Source	Dec	Note
	Last Log Query Time: 2014-10-16 06:38:04	Source	Des	Note
	Last Log Query Time: 2014-10-16 06:38:04 Logs Display: Al Logs Email Log Now @Refresh @Clear Log # Time P Category Message 1 2014-10-16 06:02:02 L. WLAN Dynamic Channel Selection Radio2 Cannot find channel better than current channel 181 2 2014-10-16 06:02:02 L. WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure	Source	Des	Note WL
	Last Log Query Time: 2014-10-16 06:38:04 Logs Display: Al Logs Email Log Now @Refresh @Cear Log # Time P. Category Message 1 2014-10-16 06:02:02 i WLAN Dynamic Channel Selection Radio2 Cannot find channel better than current channel 161 2 2014-10-16 06:00.02 I WLAN Dynamic Channel Selection Radio2 DCS change channel selection procedure 3 2014-10-60 60:00.47 I WLAN Dynamic Channel Selection Radio2 DCS change changel from 153 to 151 (No station connect)	Source	Des	Note WL WL
	Lest Log Query Time: 2014-10-16 06:38:04 Logs Display: Al Logs	Source	Des	Note WL WL
	Lest Log Query Time: 2014-10-16 06:38:04 Logs Display: Al Logs Permai Log Now @Refresh @Clear Log # Time P. Category Message 1 2014-10-16 06:02:02 i WLAN Dynamic Channel Selection Radio2 cannot find channel better than current channel 161 2 2014-10-16 06:00:02 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 3 2014-10-16 06:00:07 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 06:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selecton procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selecton procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selecton procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selecton procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selecton procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection procedure 5 2014-10-16 05:59:43 i WLAN Dynamic Channel Selection Radio2 DCS start channel selection Procedure 5 2014-10-16 05:59:43 i WLAN Dyn	Source	Des	Note WL WL WL WL
	Last Log Query Time: 2014-10-16 06:38:04	Source	Des	Note WL WL WL WL WL

2. Click on "Show Filter" to open filter field.

Z	YXEL NXC2500			_		Welcome admin <u>Logout</u>	?Help Z About	🛊 Site Map 🕻	Object Reference	🖵 Console CLI
	MONITOR System Status Wireless Log	View Log View AP I Show Filter AP Selection Select an AP:	.og 3-grade	×	Query					— Î
R		Log Query Status: Log Query Information AP Information: Log File Status: Last Log Query Time:	success b0:b2:dc:6e:7e:bb Exist 2014-10-16 06:38:0	14						_
		Logs Display:	All Logs	×						
		# Time 1 2014-10-16 06 2 2014-10-16 06 3 2014-10-16 06 4 2014-10-16 06 5 2014-10-16 06 6 2014-10-16 06 7 2014-10-16 06	Refresh Category 02:02 i WLAN Dy 00:02 i WLAN Dy 00:047 i WLAN Dy 00:047 i WLAN Dy 59:43 i WLAN Dy 559:43 i WLAN Dy 55:11 i CAPWAP	namic Chanr namic Chanr namic Chanr namic Chanr namic Chanr namic Chanr	nel Selection nel Selection nel Selection nel Selection nel Selection nel Selection	Message Radio2 cannot find channel better than current ch Radio2 DCS start channel selection procedure Radio2 DCS change channel from 153 to 161. (N Radio2 DCS start channel selection procedure Radio2 DCS start channel selection procedure Updated Configuration by a VILAN Controller Suc	annel 161 o station connect rst time.) cess. Partial Upda	Source 	Des	Note WL WL WL WL WL

3. Select "WLAN Dynamic Channel Selection" in the "Display" field and click on the "Search" button.

Z	YXEL NXC2500					Welcome admin Logo	ut ?Help Z About	Site Map	2 Object Reference 🖵 Console 💽 CLI
1	MONITOR	View Log View AP Log	and the second second						
	System Status	Hide Filter							
Ľ	 Wireless Log 	AP Selection							-
04126		Select an AP:	3-grade 💌	Query					
R.		Log Query Status:	success						
		Log Query Information							
		AP Information:	b0:b2:dc:6e:7e:bb						
		Log File Status:	Exist						
		Last Log Query Time:	2014-10-16 06:38:04						
		Logs							
		Display:	WLAN Dynamic Channel Sele 💌			Priority:	any	~	
		Source Address:				Destination Address:			
		Source Interface:	any 🗸			Destination Interface:	any	~	
		Service:	any 🗸			Keyword:			
		Protocol:	any 🗸						
		Search							
		🖂 Email Log Now 🍣 Re	efresh 🎻 Clear Log						
		# Time	P Category		Message			Source	Des Note

ZyXEL - NXC Application Notes

MITOR	View Log View AP L	Log					
System Status	Hide Filter						
Wireless	Source Address:			Destination Address:			
Log	Source Interface:	any	~	Destination Interface:	any	~	
	6 min			Kenned			
	Service:	any	*	Keywora:			
	Protocol:	any	*				
	Search						
	1 2014-10-16 06	3:02:02 I WLAN Dy	namic Channel Selection	Radio2 cannot find channel better than curr	rent channel 161		WL
	2 2014-10-16 06	8:02:02 I WLAN Dy	namic Channel Selection	Radio2 DCS start channel selection procen	dure		WL
	3 2014-10-16 06	3:00:47 I WLAN Dy	namic Channel Selection	Radio2 DCS change channel from 153 to 1	61. (No station connecte		WL
	4 2014-10-16 06	5:00:47 i WLAN Dy	namic Channel Selection	Radio2 DCS start channel selection procee	dure		WL
	5 2014-10-16 05	5:59:43 I WLAN Dy	namic Channel Selection	Radio2 DCS change channel from 36 to 15	i3. (At first time.)		WL
	6 2014-10-16 05	5:59:43 i WLAN Dy	namic Channel Selection	Radio2 DCS start channel selection proces	dure		WL
	17 2014-10-16 05	5:53:27 I WLAN Dy	namic Channel Selection	Radio1 cannot find channel better than curr	ent channel 1		WL
	18 2014-10-16 05	5:53:27 I WLAN Dy	namic Channel Selection	Radio1 DCS start channel selection proces	Jure		WL
	29 2014-10-16 05	5:52:03 i WLAN Dy	namic Channel Selection	Radio1 cannot find channel better than curr	ent channel 1		WL
	20 2014-10-16 0F	5:52:03 i WLAN DV	namic Channel Selection	Radio1 DCS start channel selection proces	dure		WL
	30 2014-10-10 00						