

# THE CHICKEN VS EGG IS OVER: MOVING YOUR PRODUCT TO CONFIGURATION VERSION 4

ERIC RYHERD  
STAFF FAE SILICON LABS

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Welcome to the Z-Wave Summit

## ABSTRACT

Configuration Command Class V4 makes it possible for your Z-Wave device to be fully supported out-of-the-box. No custom coding required, no waiting for software resources to be available at the hub vendor, no payments to the hub vendors. The problem at the moment is that few Hubs support Config CC V4 or even V2. They don't support it because there are few devices that support it. The device manufacturers stick with V1 because few Hubs support V4. Thus we're stuck in a classic Chicken vs. Egg problem. Z-Wave Plus V2 REQUIRES Configuration Command Class V4 support. Eric will discuss the benefits of Config CC V4 as well as some of the technical details. Config CC V4 puts details of each configuration parameter into the device itself making them available by simply interviewing the device. Min/Max and default values as well as many lines of text for a detailed description as well as a URL are all available from the device.



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## OUTLINE

- ▶ What is Configuration CC
- ▶ History of Configuration CC
- ▶ Technical details for Devices
- ▶ Technical details for Hubs
- ▶ Z-Wave Plus V2 Requirements
- ▶ Z-Wave Marketing Certification Requirements
- ▶ Conclusion
- ▶ Q&A - Ask questions anytime but may defer to later



## WHAT IS CONFIGURATION COMMAND CLASS?

- ▶ Parameters to enable features and settings
- ▶ 2/3 of Z-Wave Plus certified devices have Config CC
- ▶ Configuration Examples:
  - ▶ Timeout time for a motion sensor
  - ▶ Doorbell volume or tune
  - ▶ Temperature Adjustment (Factory set)
  - ▶ Dimming ramp rates (use Multilevel Switch V2)
  - ▶ Enable reports (use Assoc Groups)
  - ▶ Enable sensors (use Notification CC endpoints)
- ▶ Device MUST operate “normally” with defaults



As other command classes have matured many items that previously were Configuration Parameters are now part of the command class – IE: Dimming Duration for Multilevel Switch

## HISTORY OF CONFIGURATION CC

Version	Date	Changes
V1	200x	Initial version – Params MUST be described in Device Manual
V2	2008	Add BULK commands (64K params) MANDATORY
V3	2015	Linked list from one Param to next Add Config Name, Info, Properties commands Defines Size/Encoding/Min/Max/Default, Text description, URL
V4	2017	BULK is now OPTIONAL (support all or nothing) Parameters NOT reset on Exclusion – only Device Reset Add Configuration Default Reset command Add ReadOnly, Re-Inclusion and Advanced flags



## CONFIG CC FOR DEVICES

- ▶ CONFIGURATION\_PROPERTIES\_REPORT
  - ▶ Format, Size, Min, Max, Default, Next param #
- ▶ CONFIGURATION\_NAME\_REPORT
  - ▶ Descriptive name in UTF-8 English
- ▶ CONFIGURATION\_INFO\_REPORT
  - ▶ Multiple frames! UTF-8 English
    - ▶ ReportsToFollow decrements with each frame
    - ▶ Results in a burst of frames which if routing can create a storm
  - ▶ Long description of parameter details
  - ▶ Last line can have URL for even more text/diagrams



Three new commands. The first two are easy. The INFO report is a bit tricky as it generates a series of frames.

You could use Transport\_Service but that only guarantees the first 117 bytes and often these strings are 1K or even more.

Fortunately we have plenty of FLASH in the 500/700 series for fairly long strings.

## CONFIG CC FOR HUBS (CONTROLLERS)

- ▶ If device already has custom code – use it?
- ▶ If device supports V3 or later
  - ▶ Properties\_Get for Param 0 to find 1st valid Param
  - ▶ Foreach Param:
    - ▶ Fetch Properties – Format, Size, Min, Max, Default, Next Param
    - ▶ If V4 – properties include Advanced, Bulk, Read Only, reInclude
  - ▶ Name\_Get
  - ▶ Info\_Get (multiple frames)
  - ▶ Upon Inclusion – Send Default Reset
- ▶ If Version unknown or V1,V2
  - ▶ Display generic ability to Set/Get parameter
  - ▶ User has to refer to device manual
- ▶ Don't use BULK unless more than 256 params



Basic Algorithm to handle Config class.

Either fetch at inclusion time and store or fetch when needed.

Battery powered devices will be asleep so you can't fetch "live" but would want to provide all the info to the user so they can select a new value and queue it to be changed the next time the device wakes up and sends a WakeUpNotification.

## Z-WAVE PLUS V2 REQUIREMENTS

- ▶ Configuration Command Class Version 4
  - ▶ Support is **MANDATORY**
- ▶ Ends the chicken and egg debate
- ▶ For devices, its not hard
  - ▶ Add a few more commands
  - ▶ No ApplicationCommandHandler ☹️
- ▶ For Hubs, you should be heading there anyway
  - ▶ No more custom code – just interview device





# Z-WAVE MARKETING CERTIFICATION

- ▶ ALL Config Params MUST be entered
- ▶ Name
- ▶ Min/Max/Default
- ▶ Size, Flags
- ▶ Description
- ▶ Config XML extractor via (tool?) TBD

## Z-Wave Configuration Capabilities

Model: EZmultiPli (EZMultiPli)

Z-Wave Certification Number: ZC10.18015976

Parameter Number	Parameter Size	Parameter Name	Description			
1	1	OnTime	OnTime sets the number of minutes that the lights stay on when motion has not been detected. A value of 0 is a special mode where the lights are sent a command to turn them on whenever motion is detected. EZMultiPli will NOT turn the lights off in this mode. A motion detection event is sent at most once per minute.			
	Default Value	Minimum Value	Maximum Value	Read Only	Re-Inclusion	Advanced
	20	0	127	No	No	No
	From		To	Description		
	0		0	Only send an ON every time motion is detected		
	1		127	Minutes of No-Motion when an OFF is sent		
Parameter Number	Parameter Size	Parameter Name	Description			
2	1	OnLevel	OnLevel is the value sent by the Z-Wave BASIC_SET command to all Association Group 2 nodes when motion is detected. A value of 0 will turn the lights off (not recommended). A value between 1 and 99 will set the dim level to between 1% and 99% (99% is full on). A value of -1 will turn the light "on" which depends on the device but most will set the dim level to the last dim setting.			
	Default Value	Minimum Value	Maximum Value	Read Only	Re-Inclusion	Advanced
	99	-1	99	No	No	No
	From		To	Description		



Eric has a python program that extracts the data and produces an XML that Rick can parse easily.  
Will it be implemented in the CTT? PC Controller?

## CONCLUSION

1. The wait is over!
2. Support for Config CC V4 is MANDATORY
3. 2/3 of all Z-Wave Plus devices already have at least one Configuration Parameter
4. If your hub doesn't already support V3, GET GOING!
5. No hand-translated custom coding required
6. Just interview the device and display to the user
7. Use simple form for V1/V2 devices

## QUESTIONS?

Eric Ryherd (aka [DrZWave](#))  
Staff FAE – Eastern Region  
+1 (603) 930-8822  
[Eric.Ryherd@SiLabs.com](mailto:Eric.Ryherd@SiLabs.com)  
[DrZWave@SiLabs.com](mailto:DrZWave@SiLabs.com)  
[DrZWave.blog](http://DrZWave.blog)



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Fireside chat with Eric - questions and answers and a discussion with the entire group

## AUTHOR BIOGRAPHY

Eric Ryherd has been working with Z-Wave since 2003. Light switches, motion & temperature sensors, water valves and meters, hubs, window shades, remote controls are just a sample of the Z-Wave IoT devices developed by Eric. Eric recently joined Silicon Labs as a Staff FAE covering the Eastern time zone.

Read more by Eric at his blog – [DrZWave.blog](http://DrZWave.blog).

