

ChristmasExpo

DMX:

The Gateway from
Holiday Display to

Mega Display

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ChristmasExpo

DMX – Let the Quest Begin!!!

You already have an outstanding **Christmas** or **Halloween** display. It's all the rave in the 'hood. However, something is missing, you want to take your display to the next level, and **BOOM**, you slam into **DMX!** What is it? Can I use it? How do I integrate it? Isn't it expensive? What's all the hype anyway? You already know **AL**, **LOR**, **LSP** and possibly **DIY**, but *these 3 little letters* start to strike fear in your heart. Shake your lighting confidence. You get the cold sweats at night and have nightmares about that 3 headed monster, **D-M-X !!!!!** This session will slay that monster, make sleep more peaceful, and get you excited about your display again. OK, maybe this is not you, but there is a mystery about DMX you can't quite put your finger on. This session will peel the onion back, without the tears, and give you the information you need to determine whether this **option** is possible in your display.

Be forewarned, it's a very slippery slope.....



Who Uses?

CL?

Christmas Lights?

AL?

LSP?

LOR?

DIY?

DMX?!!!

What the @\$%&!*() is DMX!!!

Note to self – remember, FAMILY FRIENDLY!



DMX – Basics Agenda

- **What is it?**
- **Basic Information**
- **Today's Animated Displays**
- **Paradym Shift**
- **Visualization**
- **Implementaion**
- **Summary**
- **Resources**

DMX – What is it ??

- **DMX** = Digital Multiplexed Signals
 - Created to standardize theatrical lighting
- What do these all have in common?
 - Animated Lighting?
 - D-Light
 - Light-O-Rama?
 - DMX?
- No they are not Hardware, per se
- Yeah, they control lights - **BUT:**
- ***In Reality, they are ALL Lighting Protocols! (Languages)***
- ***HOWEVER! They are different in 2 major respects:***
 - AL, D-Lights, LOR are ***“On Demand”*** & ***Proprietary*** Protocols
 - Commands are sent to lights only when needed
 - Protocol only works within the Vendors Network (Software/Hardware)
 - DMX is a ***“Persistent”*** & ***World Wide Standard***
 - DMX is a constant data stream ***that goes not stop!***
 - ***512 data packets get sent 44 times a second***
 - Published, open to everyone, rigidly defined
- For the Christmas Light enthusiast, DMX is just another lighting ***option***



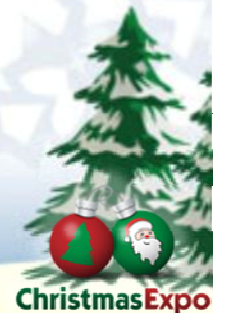
DMX – Basic Information

- DMX “Network” = **DMX Universe**
- DMX lights = **DMX Lights, Fixtures** or **Loads**
 - **Generally** one Universe allows **32 different/unique** fixtures
- **Channels**
 - Are **“In”** the Light/Fixture, and **Managed** by the Controller
 - On / Off / Intensity Value / Ramp
 - One DMX Universe has a maximum of **512** independent channels
 - Channel Range (0-255) - **0 (off)** to anything **greater than 0 = (on)**
- up to 255 (100%)
 - Fixture *functions* often happen within a “value range” ex. **Grn** = 38-47
 - Allows for multiple effects within a single channel (Intelligence)
- **One** DMX Controller/Dongle manages **One** DMX Universe of 512 DMX Channels
- **OK! NO MORE THEORY!**
 - I got 20 more minutes for “the light bulb to turn on”.
Someone start the clock



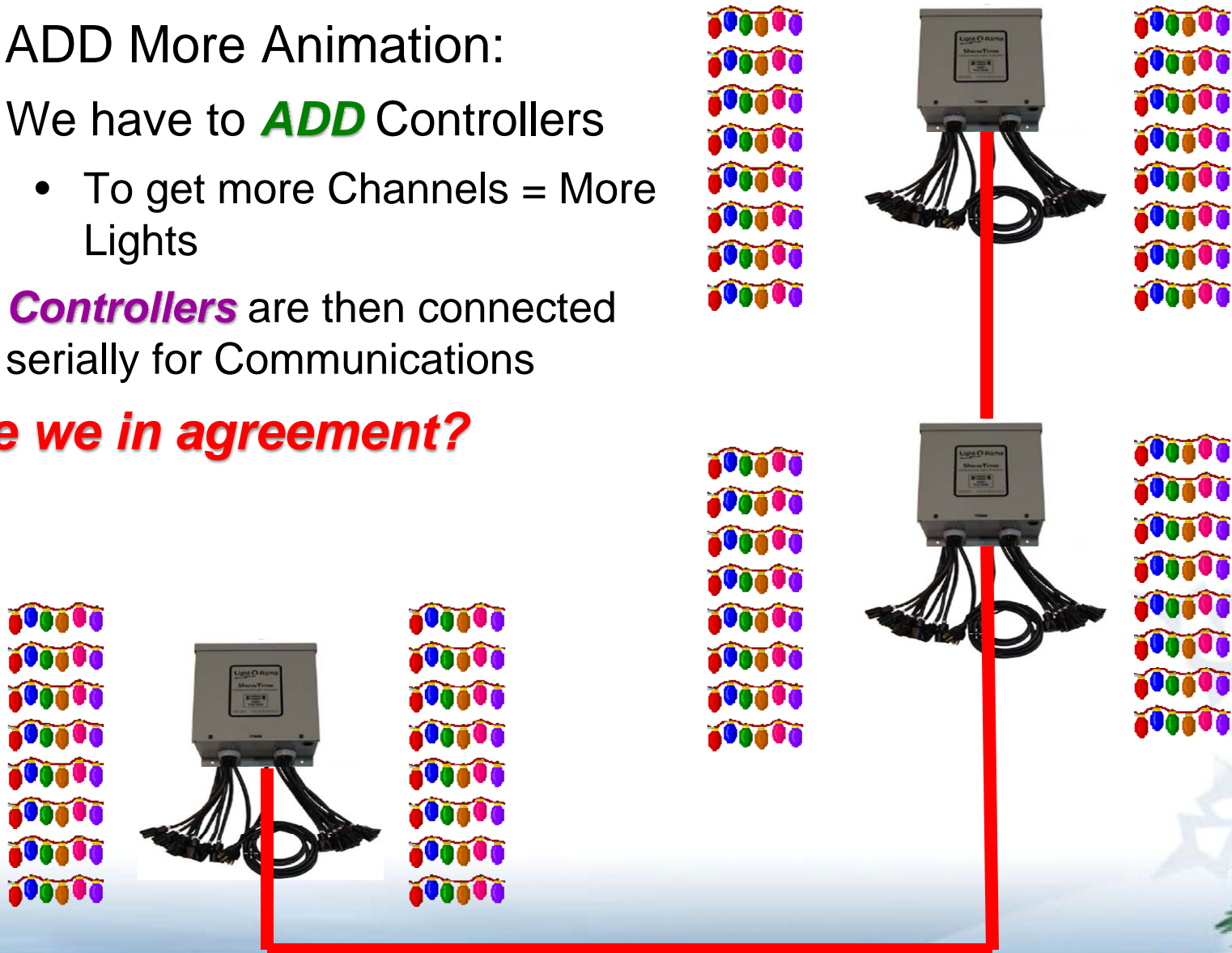
Today's Animated Displays

- Using AL, D-Lights, LOR
- **Controller** (single)
- 16 **Channels** (physical/fixed)
- Plug your **Lights** into a Channel so they go Blinky Flashy
 - You choose:
 - What lights gets plugged into what channel
 - Which gets mapped to:
 - A Lighting Sequence
 - **Controller:channel** relationship
 - Sequencing 101
- **Are we OK so Far?**



Today's Animated Displays

- To ADD More Animation:
 - We have to **ADD** Controllers
 - To get more Channels = More Lights
 - **Controllers** are then connected serially for Communications
- ***Are we in agreement?***



DMX – Paradigm Shift

- DMX requires a different way of thinking, with respect to the DMX Universe:
- **DMX Fixtures (Lights)**
 - Will have a designated set of **Channels**
 - Channels are **“IN”** the Light/Fixture
 - **Channels control functions such as R-G-B, movement, strobe etc....**
 - Managed by a DMX **Controller / Dongle** that propagates the DMX signal
 - You *STILL* Choose:
 - **Where the fixture/light function channel, gets “PLUGGED INTO” the DMX Universe (512), which gets mapped to a Lighting Sequence**
 - **Controller:channel** relationship
 - Sequencing 101



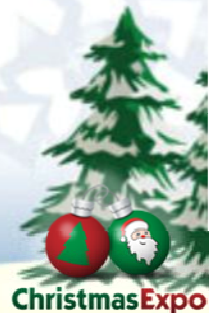
DMX – Paradigm Shift (2)

- Using DMX:
 - Once the “DMX Universe **Channel**” gets plugged into light/fixture. It will respond to DMX commands sent to it from the DMX Controller/Dongle
 - To ADD more animation:
 - **We Add More Lights (Channels)**
 - We **DON'T** add Controllers
 - **FIXTURES/LIGHTS** are connected serially for communication
 - If more than 512 channels are needed, another DMX Controller/Dongle is added for the next 512 channels
 - Referred to as a Parallel Universe
 - Did I lose anyone?

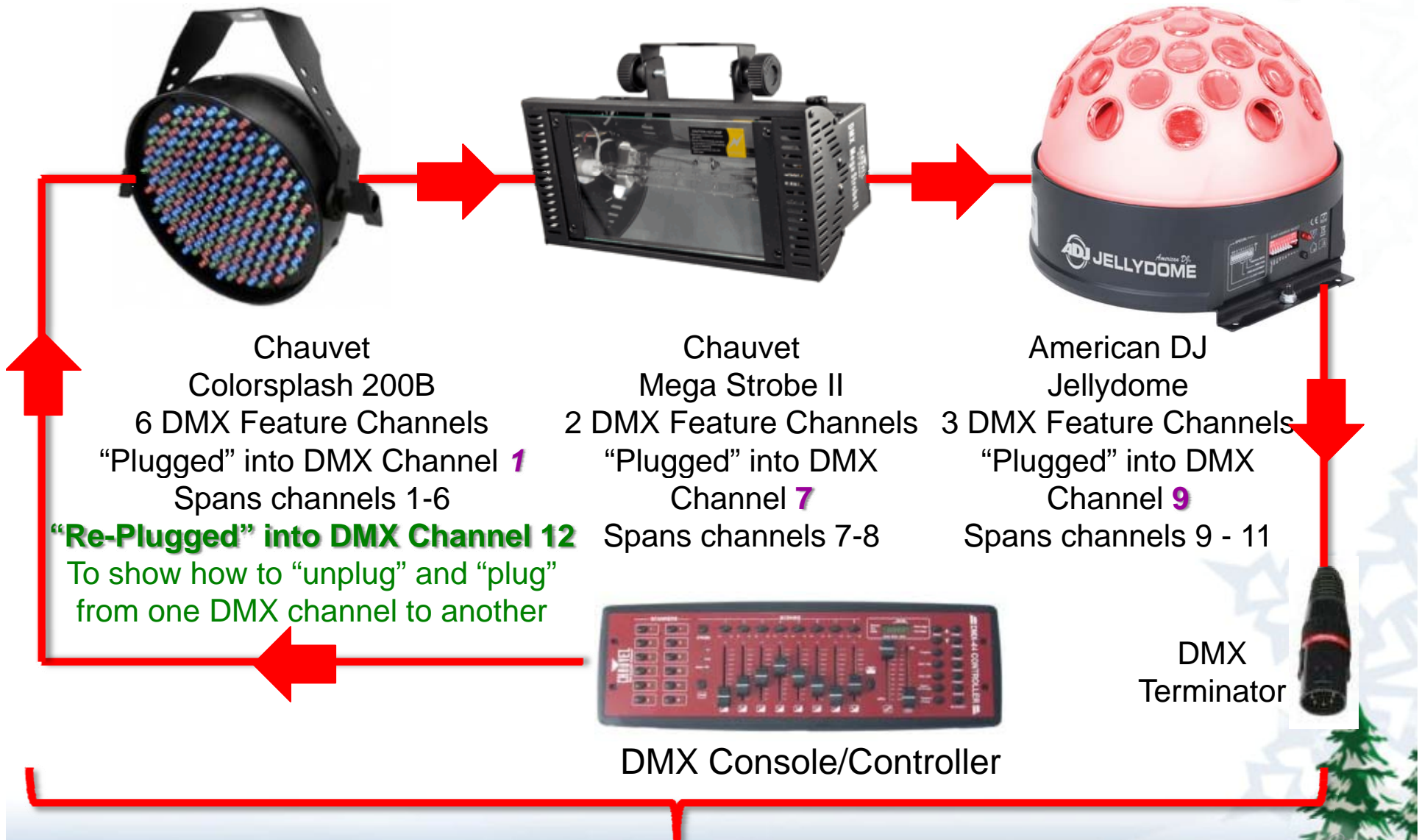


DMX – Visualization

- Let's see how DMX really works to tie it all together
 - Everyone, close your eyes,.....
 - No peeking.....
 - Imagine yourself at your favorite venue, watching your favorite play or band perform.
 - You look around, you see the band, you see the crowd, and because we are all light crazies, we naturally look to the sound/light board. Focus on the board.....
 - Now open your eyes
 - Live DMX Demo



DMX – Universe



512 DMX Universe Channels to “freely” allocate to 32 fixtures

DMX – Implementation

- Each unique DMX Fixture/light has it's own set of internal Channels that drives it's set of functions
 - Not All Fixture Channels may **NEED** to be used within your sequences (You may not want to use certain functions)
- The first & last channels of a fixture are important to note:
 - Channel 1 of the light/fixture, called the **Start** or **Base Address**, is what gets “plugged into” the DMX Universe Channel Map
 - This tells the light that if any commands come in the range of its channels, it needs to react to what it's told to do
 - The last Channel tells us **WHERE** the next fixture has the **potential** to be “plugged” in.
 - DMX fixtures Base Address can be assigned anywhere in the Universe
 - **ALL** DMX Fixture Channels have to be accounted for within your DMX Universe Channel Map **(512)**, whether they are used or not
- **A DMX Universe can be a STANDALONE network or CO-EXIST with, or within your existing vendors network**

DMX – Summary

- DMX is a **Standard Protocol**, Not Hardware
- Non Stop Data Stream (512 DMX channels / value between 0-255)
- **Lights** drive our decisions, not Controllers
- Channels are inside the DMX fixture/light and controls functions, they are not physical. They get mapped into the 512 channels of a DMX Universe.
- All fixture channels may not be needed in your lighting sequence. Use caution to ensure channels don't overlap within your Universe and sequence
- Just like AL, D-Lights, LOR it requires getting comfortable using the technology
- DMX provides us with more lighting **options**, and opens the “Gateway” to a **Mega Display**



DMX – Resources

- What we covered today is VERY BASIC DMX. More info is available on all the display forums or Internet:
- Very useful, suggested reference manual:
 - Recommended Practice for DMX512
 - <http://ww4.usitt.org/sightlines/v48/n09/stories/DMX.html>



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Thank You! For attending
Christmas Expo
and the DMX Gateway Session
Next session - DMX Practical
we will explore different DMX Fixture
Options

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downloaded from

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