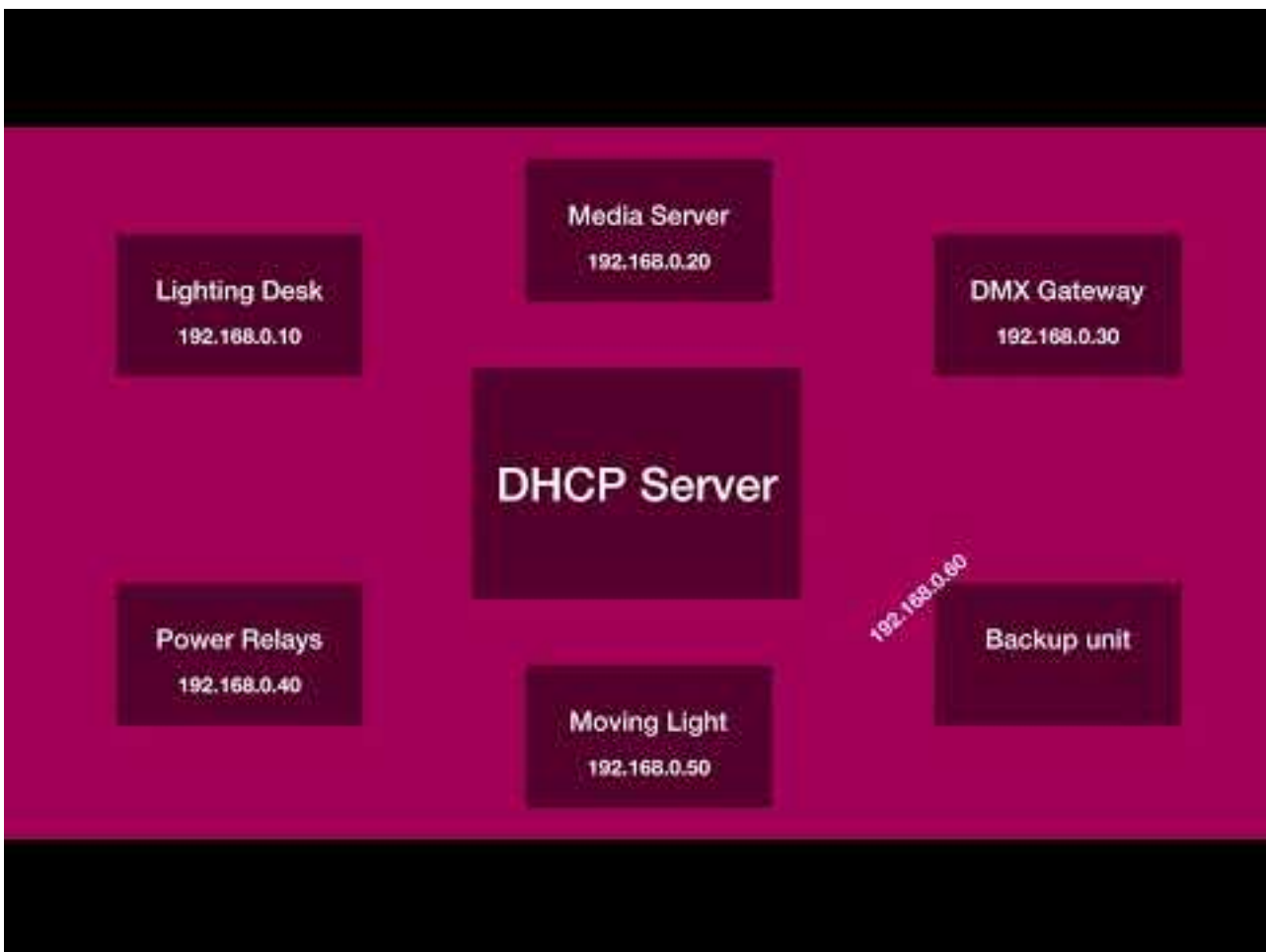


DHCP stands for Dynamic Host Configuration Protocol. It is a protocol used by devices and a DHCP server, to automatically assign connected devices an IP address and subnet, to ensure they can talk to other devices on the network. This is how when you connect your phone, tablet or laptop to a WiFi network, you don't need to manually configure any IP addresses - your device is given all of that information from the DHCP server which will be on the network.

Take a look at the quick video below for a description...



<https://youtu.be/bfCINejidFs>

DHCP Servers

To benefit from DHCP, you need a DHCP server. Some Ethernet Switches offer DHCP server capabilities, as do standard Wireless Routers.

If a device is configured to use DHCP and is connected to the network, it will send requests out asking to be assigned information. If a DHCP server is on the network, it then provides the device with all the necessary information.

DHCP servers will assign devices IP addresses within a defined IP range. This can often be configured in the DHCP

server's settings.

It is important that you ensure that there is only one DHCP server on a network. Otherwise they will be fighting over devices, and cause malfunctioning of the system. This is the reason ZerOS consoles do not have a DHCP server built in - you can ensure you build just one dedicated device into the network to act as a DHCP server, if required.

Not only do DHCP servers assign devices an IP address and subnet, they also assign devices with other information, such as a router IP, and DNS.

Another benefit of a DHCP Server is that it will also ensure it never allocates two devices the same IP address, always ensuring each device has its own unique address.

DHCP Servers will build up a list of devices they can see on the network, and then store this to their own internal memory. This means if you switch a DHCP server off and back on again, it will reassign the devices back to the IP addresses it had assigned them previously.

MAC Address Reservation

MAC addresses (Media Access Control addresses), is the hardware address of a NIC (Network Interface Controller). For example, a ZerOS console's Ethernet port NIC will have a MAC address, and your smart phone's Wi-Fi NIC will have a MAC Address. Typically, these cannot be changed, and are unique to the device.

When a DHCP server sees a MAC address on the network, it builds up a list of the IP addresses it has assigned to each MAC address. Most DHCP servers give the ability for MAC address reservation, meaning whenever the DHCP server sees that device, it always assigns it the same defined IP.

Leasing

Part of the DHCP protocol, is "leasing". This is the amount of time a DHCP server allocates a device an IP and subnet. Typically, this is automatically renewed by the DHCP server and the device remains on the same IP address it was previously, if the DHCP server sees the device is still online. The lease can also be requested to be renewed by the device.

Automatic Private IP Addressing (APIPA)

Sometimes, you may see a device on a network, with an IP of 169.254.x.x. If you do, this device has assigned itself a "Link Local" IP address, and means it is expecting to receive an IP address and subnet from a DHCP server, but hasn't.