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Dedicated QS-LO Quantum® Network Configuration

Overview

A dedicated Quantum® network is defined as a Quantum® processor(s) within the Light Management Hub and a Lutron® supplied Quantum® server / PC connected through IEEE 802.3 Ethernet standard wiring. The network switches only service the Quantum® equipment. No routing is capable on a Quantum® dedicated network and thus no router is used. This network, known as the Quantum® Local Area Network (Quantum® LAN), does not connect to a Building Management System. Connection to a Building Management System would fall under the "Network by others" specification (See QS-EO Ethernet Network Spec Submittal #369781b).

Description

The Quantum® LAN will be installed and supplied by the Electrical Contractor (EC). Network wiring will be supplied by the EC. All network switches will be installed by an EC and can be supplied either by the EC or directly through Lutron.

System Overview

This document outlines the guidelines and requirements for the infrastructure to support the Lutron Quantum® system.

The Quantum® Ethernet communications link follows the IEEE 802.3 Ethernet standard using a minimum cabling of Category 5 (CAT5) or better (CAT5e, CAT6, etc.) at the Quantum® processor and IEEE 802.3 Ethernet standard cabling between the Quantum® processors and the Quantum® server. This wiring must follow the standard IEEE 802.3 Ethernet wiring rules for distance and separation.

- All Wires from a Quantum® processor or Quantum® server / PC must connect to a Network switch.
  - This network switch can be the network switch located within the Quantum® QP2 enclosure or external to the Light Management Hub.
  - All network switches should be the "unmanaged" type and must allow UDP Multicast.
  - Unmanaged network switches may be purchased from Lutron.
- CAT5 or better maximum distance requirement: 328 ft (100 m)
  - If a cable run of longer than 328 ft (100 m) is required, additional switches should be used to extend the length.
- There should not be more than 6 "hops" from the processor to the server.
  - In a Quantum® system, a "hop" is defined as the Ethernet link passing through a device such as a switch. Keep in mind that there is a "hop" from the processor inside the Quantum® Light Management Hub to the first Ethernet switch.

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Dedicated Quantum® Network Configuration

System Start-Up

The network must be operational before the Lutron® field service engineer arrives on site for system start-up. The system start-up cannot be completed without reliable physical connectivity between the Quantum® processors and the Quantum® server/PC.

If start-up cannot be completed because the network is not installed or because the networking equipment required to ensure connectivity between Quantum® components is not operational and properly configured, the customer may be required to schedule an additional field service visit at an additional charge.

Site and Network Access

The Lutron® field service engineer and supporting personnel must have access to network equipment required to ensure communication between Lutron® components on the network.

Lack of network availability may require scheduling additional field service visits at an additional charge.

Network Configuration

The network configuration settings of the Lutron® equipment connected to the network IP addresses, subnet masks, and multicast addresses will be supplied by the field service engineer when on-site to commission the system. Field service will default the configuration to the following;

IP Adress Range	192.168.[Floor #].[Processor #]
Subnet Mask	255.255.0.0
Gateway Address	Unused
UDP Multicast Address Range	239.0.38.[Floor]

Network Equipment Requirements

All network equipment ports connected to Lutron® Quantum® processor(s) are configured to 10/100 MB/sec data speeds.

Network communications between Lutron® equipment must not rely on wireless technology. A wired IEEE 802.3 Ethernet network is required for the Quantum® system to function.

Remote Access

Remote access can be accomplished by using the additional Network Interface Card (NIC) on the Lutron® supplied server/PC. This second card can connect directly to the internet or to an institutional intranet for Remote Access.

Quantum® Server and Microsoft SQL Server® Requirements

The Lutron® supplied Quantum® server/PC hosts a Quantum® specific instance of Microsoft SQL Server®. The Quantum® instance of Microsoft SQL Server® has two functions: historical data collection for reporting and to serve as a host for server/client software. The Quantum® instance of Microsoft SQL Server® does not affect the normal functionality of the Quantum® lighting system. If communications between the Quantum® processor(s) and the server were suspended the lighting system and its components would function as normal. Recording of data collection and management software access would be suspended until the connection was restored.

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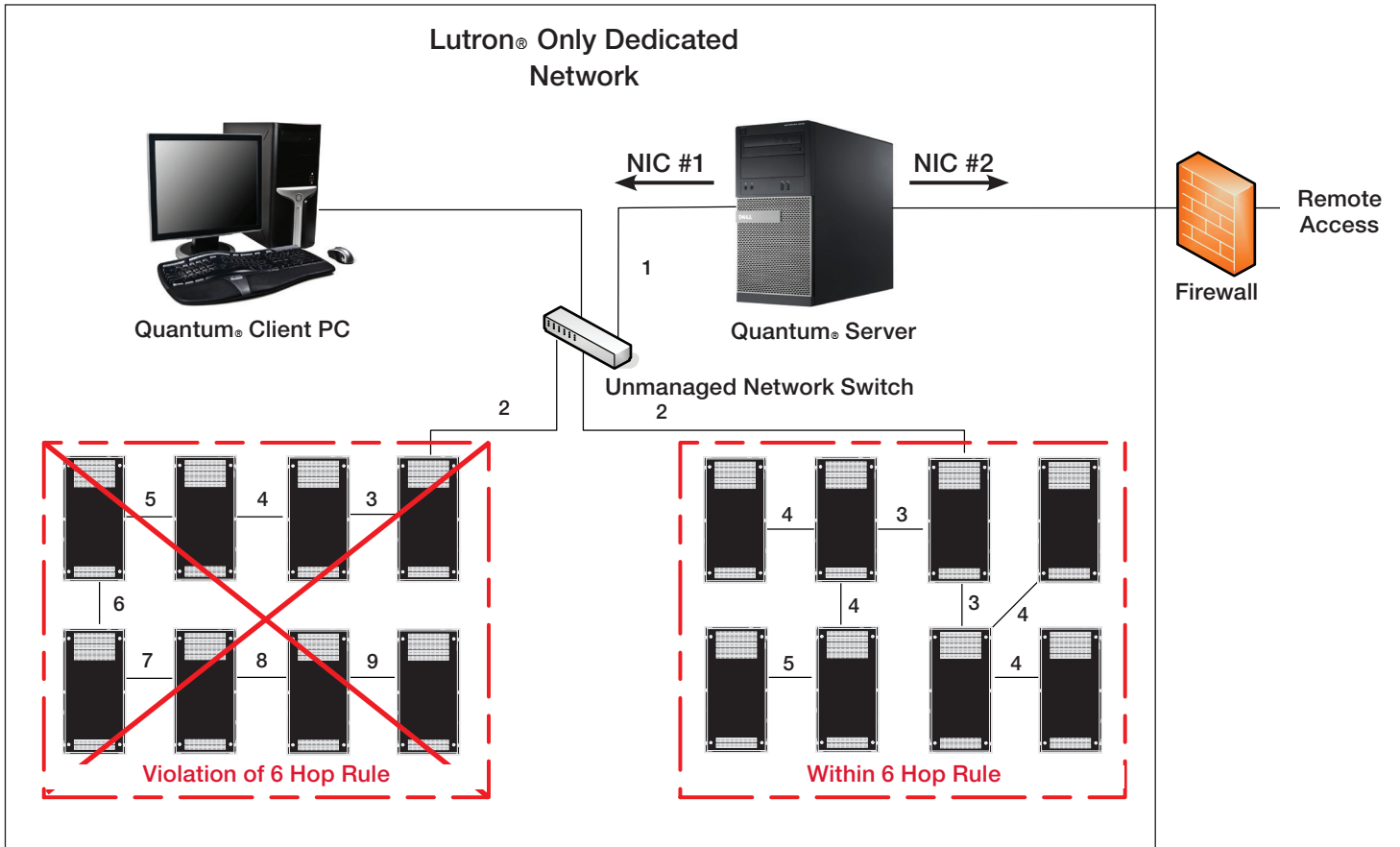# Quantum® Ethernet Network Configuration Guide

Diagram shows:

- The 6 Hop Rule

- Second NIC for remote access

- Using unmanaged network switches internal and external to the QP2 enclosure

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