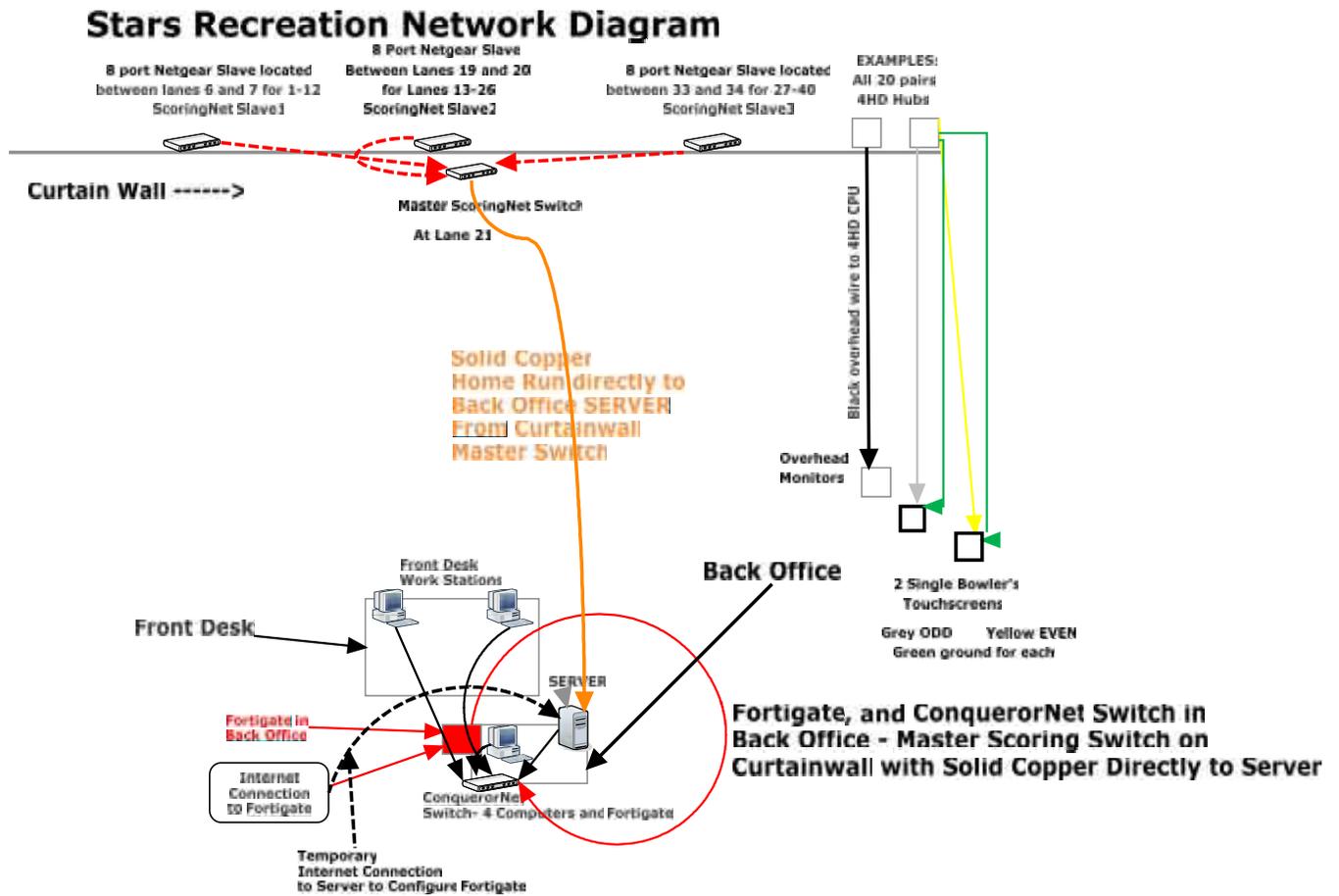


Star Recreation, Vacaville, CA

Remove Boss, Install BES-X Scoring

Day 0 – Monday, August 17, 2015 – We arrived very early (since the Center is open 24 hours) and unloaded tools. The Center has a complete Island Control Desk, so we located all conduit from the control desk- underground from work stations then eventually to ceiling, for the front desk work stations (2) and to the back office, and to the lanes. We fished pull-strings into the conduits for front desk ConquerorNet connections and for back office Solid Copper Home Run from Curtain Wall. We anticipate the Network to look like this:

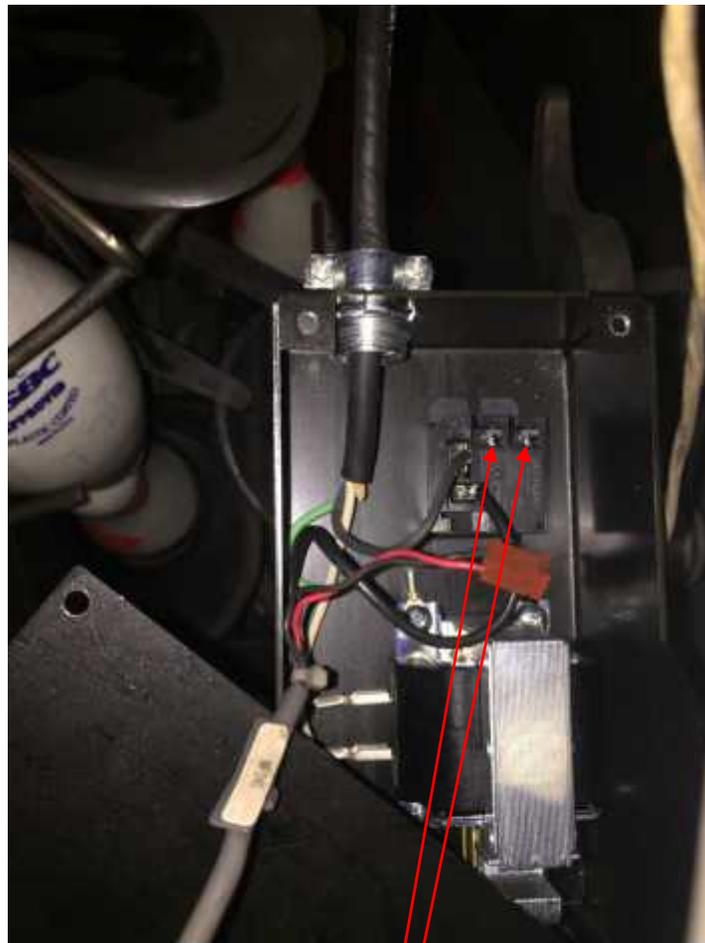


We waited for the truck to arrive with the Equipment for 7 hours. It finally arrived, and we unloaded. I sent network diagram proposal (above) to Mike Randesi for approval. We lost a full

day waiting for truck, but we will start early tomorrow and try to make-up some time. Daily Hours: 10 (me) + 27 (skilled) = 37. Job Hours: 10 + 27 = 37.

Day 1 – Tuesday, August 18, 2015 – We installed ALL Scoring Net Slaves (3) and Master (1) on Curtain Wall according to diagram above, stubbing-up each pair's network Cat 5 at all 20 locations across curtain wall, ready to plug and play. We ran Solid Copper home run from Scoring Master to back office and installed wall boxes and tested connection (fine). We installed all four computers – Server, Back Office, and two Control Desk Work Stations, and networked with one-another. All came up fine and were recognized. We noticed many missing items from the Packing List and called Richmond to report. Missing items are on the way, but impeding our progress.

The New Pin Solenoids that were supposed to be installed by the bowling center were NOT WIRED. I spoke with Martin Vera and he asked me to consult with Nicole Lewis regarding procedure before we wired these non-QAMF New Pin Solenoids.



There is no low voltage wire to the low voltage side of the Relay.

The High Voltage (208V) is not wired to the A-2 Electrical Boxes on any Lane.



It is just wire-tied out of harm's way waiting to be wired to A-2 Electrical Boxes. I will get with the Center – they are probably just waiting for further progress to proceed. These folks here are the FINEST of QAMF customers, and we will bend over backwards to help them and to do a great job for them.

We got Lanes 39-40 otherwise ready to fire-up (first pair) and test our installation process, then move across the house if all works, or adjust if something doesn't work properly. We ran wiring to, but did not secure the Bowler's Terminal Touchscreen Pedestals to the concrete in the settee area. The Boss Bowler's Terminals were set directly facing a settee table and staggered (odd lane closer to foul line, even lane farther away from foul line). If we place the new Touchscreens in the same manner, it will be impossible for the Touchscreen's Camera to see the person calling the front desk for help, or for a bowler to take a "selfie" photo. In my opinion, these new Touchscreens should be rotated 45 degrees (inward toward double-division centerline) to get proper functionality from the Touchscreens. We stopped work, and will consult with the Owner of the center to receive conformation, before we set the precedent for the entire center on such an important matter. Daily Hours: $10 + 27 = 37$. Job Hours: $20 + 54 = 74$.

Day 2 – We got with the center management and determined at what angle they wanted their Touchscreen pedestals mounted (they wanted the Touchscreen Pedestals mounted at a 45 degree angle to the Settee tables – see picture below – they turned out great), and discussed

the New pin Solenoid situation, and the fact that the (customer installed) monitors are still wired to the Boss system, needing a relay signal to turn on. They were very nice and helpful. The mechanic staff is finishing the New Pin Solenoid install – both low and high voltage, and we are supplying the low voltage wire (we have plenty), so they don't have to buy any wire. They are also finishing their Customer Installation of the Overhead Monitors to be always powered-up, so that BES-X serial cable can control them. They completed both of these processes on Lanes 35-40, and are now going to stay ahead of us on these two conversions. We finished our installation of Lanes 39-40 – Here is the procedure we used: Remove the old Boss wire and hardware, and install: 8 conductors to A-2 Electrical Boxes – 2 conductors each for Cycle, 2nd Ball, 24 VAC (for New Pin Solenoid), and Power-On (manager's control). These were brought-out and neatly tied, to the F-Box and 4HD Hub which were mounted in place of the old Boss Hardware. BCU for bumper control was also mounted on the empty curtain wall. We installed CPU's to mounting plates and installed on Monitor Frames, then installing HDMI cables and serial control cables to monitors. We removed Boss Cameras and installed Q-Vision. We removed old Boss underground wire, using it to pull in the Touchscreen wires (1 beige, 1 yellow, and two grounds. We ran LCOM to camera and brought up these 5 wires to the 4HD Hubs and connected – then tying all previously existing wires (bumper hoses, bumper light, foul, Ball Lift wires), plus the 5 new wires neatly and safely down even Pinsetter leg. We fished new touchscreen wires through settee conduit to new touchscreen locations and installed Touchscreens and Pedestals, connecting speakers and grounds. We wired F-Boxes with 24V with low voltage wire provided by house mechanic from New Pin Solenoid, Cycle, Foul from foul unit up front, 2nd Ball signal, and Power (manager's control), and wired BCU LCOM, LCOM from Camera, and LCOM from Fbox to Hub. We wired Bumper control from BCU to Bumper Control Board. We plugged-in the Master ScoringNet switch and Slave3 switch on drawing above, to communicate with the Server. We plugged in 4HD Hub for 39-40 and it came-up with CPU Serial Number. We configured 39 and 40 in Lane Setup with CPU serial number, pinspotter type, Monitor Type and configuration (2 up, 2 down), bowler's terminal type, enabling intercom. We reinitialized the pair and they came up after 45 minutes. We installed Pinsetter Parameters and sent, then adjusted Camera Ball detects and adjusted Camera Parameters and sent to Camera. We bowled checking Foul, second ball, MANY gutter balls, New Pin Solenoid function (strikes foul, and tenth frame fill ball), scoring accuracy, bumper control, and ball speed. We cleaned-up completely.

All fine except new pins are not being set after a foul even though the New Pin Solenoid works perfectly on strikes and in the 10th frame, so I know that it is a "setting" that must be changed. I will call Martin Vera to find where to locate the setting that must be changed to enable a new full rack if foul occurs on a first ball.



Daily hours: $8 + 24 = 32$. Job Hours: $28 + 78 = 106$.

Day 3 – Thursday, August 20, 2015 – I called Martin Vera, and he told me which setting needed changing, to allow Conqueror to manage Foul Signals. As I suspected, one setting in Pinsetter Parameters needed to be engaged (“Automatic Foul”) to allow proper Foul Cycle according to USBC rules for sanctioned play. I changed this setting and Foul Cycle worked fine on 39-40. Overnight Package came from Richmond with missing parts. We installed Fortigate and called Mike Randesi in Richmond to configure. He connected on TeamViewer and did his thing, and said all was fine and would be functional in the morning. We installed all the peripherals (web cams, headsets, and speakers) that were missing. THEN – (no big surprise), Conway (the original shipper of the equipment), delivered a box containing ALL the items that were missing – that we just received overnight replacements for! I will get RA and ship back. One box must have fallen off of one skid.

We removed Boss and installed BES-X on 35-38 according to the procedure outlined above. All good – no issues. All functions work perfectly. 6 Lanes up on BES-X system, 34 on Boss. Trainers here and training away!



Daily hours: $7 + 21 = 28$. Job Hours: $35 + 99 = 134$.

Day 4 – Friday, August 21, 2015 – We removed Boss and installed BES-X on 31-34. All came up fine and all functions worked fine. Daily hours: $7 + 21 = 28$. Job hours: $42 + 120 = 162$.

Day 5 – Saturday, August 22, 2015 - We removed Boss and installed BES-X on 27-30. All came up fine and all functions worked fine. Daily hours: $7 + 21 = 28$. Job Hours: $49 + 141 = 190$.

Day 6 – Monday, August 24, 2015 – We began work removing Boss and installing BES-X on Lanes 21-26. A box the size and shape of a 4 HD Hub actually contained a 4HD CPU, so we have 1 too many CPU and 1 too few Hubs. Another Hub - S/N 7100 - gave a 119 error on Boot-Up. Re-booted 3 times and same 119 Error. Changed Hub – Booted fine. Ordered two Hubs and R/A for one Hub S/N 7100, and R/A for CPU S/N 868 which was mistakenly send and counted as a 4HD Hub, sent in a 4HD Hub size box.



Lanes 21-26 came up fine and all functions were checked and worked fine. Half the center (Lanes 21-40) is installed and working.



Daily Hours: $8 + 21 = 29$. Job Hours: $57 + 162 = 219$.

Day 7 – Tuesday, August 25, 2015 - We removed Boss and installed BES-X on 15-20. All came up fine and all functions worked fine. Lanes 1-14 on old Boss and Lanes 15-40 are on new BES-X. Daily hours: 9 + 21 = 30. Job Hours: 66 + 183 = 249.

Day 8 – Wednesday, August 26, 2015 – Lanes 37-38 have had several problems since install: Touchscreens frozen, no intercom (shown as “busy”), won’t turn on Pinsetters after customers log-in, won’t turn off Pinsetters after lane closed-out. I swapped out the 4HD Hub and it worked all day today without problem. Ordered new Hub to replace S/N 7102 from 37-38.



Found another CPU in a Hub Box, so ordered two Hubs and R/A for Hub 7102 and extra CPU #830.



We removed Boss and installed BES-X on 9-14. Lanes 9-10 kept rebooting over and over. We changed the 4HD Hub and it came up fine. Ordered a 3rd Hub for this day, to replace Hub 7112 which Boots and Boots.



After Hub switch on 9-10 which was rebooting, all Lanes 9-14 came up fine and all functions worked fine. The cycle on Lane 10 didn't work at first, but it was a Bowling Center issue – a bad Time Delay Module. Mechanic replaced and all was fine. Right now, I need 3 Hubs. I have received 2 Hubs so far from previous issues. Of the 5 Hubs we needed replacements for so far, two were because CPU's were shipped mistakenly for Hubs, since these 2 CPU's WERE IN A HUB-SIZED BOX (so we have 2 CPU's S/N 830 and 868) to ship back. Three Hubs were bad. One (S/N 7100) wouldn't Boot-up, the second (S/N 7102) gave repeated problems over 4 days of play at the center (Touchscreens lock-up, No Pinspotter turn-on, No Pinspotter turn-off, and "busy" error on Intercom), and the latest (S/N 7112) kept Rebooting over, and over again. We tried the "bad" Hubs on working pairs, and they AGAIN didn't work, so we switched back to the working Hub, and they came up fine. Lanes 1-8 are on Boss, and Lanes 9-40 are working fine on BES-X, but I need the 3 Hubs I ordered today to finish. I think that 2 Hubs were sent today for delivery tomorrow, and the 3rd Hub will ship Thursday for delivery here on Friday... so we can finish Friday if we get 2 Hubs tomorrow and 1 on Friday. Daily Hours: 9 + 21 = 30. Job Hours: 75 + 204 = 279.

Day 9 – Thursday, August 27, 2015 - We removed Boss and installed BES-X on 3-8. All came up fine and all functions worked fine. We removed all Boss from 1 and 2 also. Then we removed all Boss equipment and old wire from Front Desk and from Back Office, and did final wire-tie of all

new BES-X equipment, except for the Server in the Back Office. They bought new computer desks (2) for Server and Back Office computers, but only assembled the one for Back Office. We will do final install of Server in the morning when second desk is built. All animations are Synchronized and Uploaded for 3-40. Daily Hours: $9 + 21 = 30$. Job Hours: $84 + 225 = 309$.

Day 10 – Friday, August 28, 2015 – We came in and finished Lanes 1-2 and got sign-off. Sent out R/A items. We did final positioning/wire tie of Server on Computer Desk they built last night. Everything working well. IGD still not configured by Italy, but should be configured shortly. Daily hours: $5 + 15 = 20$. Job hours: $89 + 240 = 329$.

8.2 Man Hours per lane.