SYNERGETICS

Proposal for

BancorpSouth Arena & Conference Center

Wireless Network RFP

2020-034CO

Due: October 9, 2020

Extreme networks

October 9, 2020

BancorpSouth Arena & Conference Center

Traci Dillard

PO Box 1485/38802

71 East Troy Street

Tupelo, MS 38804

RE: BCSARENA WIFI RFP (2020-034CO)

Dear Evaluation Team,

On behalf of Synergetics, Inc., it is our pleasure to present the enclosed response to BancorpSouth Arena & Conference Center's (BCS Arena & Conference Center)'s Wireless Network RFP for your new high-density Wi-Fi solution.

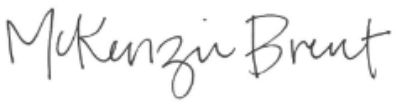
Synergetics DCS is a Mississippi based company that has been in business for over 28 years providing products and services for K-12 school districts, commercial, and government accounts in the States of Alabama, Mississippi, Arkansas and Florida. During that time, Synergetics has been chosen and completed technology projects for school districts, library systems, commercial, and government accounts for projects and services totaling more than $240 million.

We are providing an Extreme Networks solution that meets the requirements of your RFP. Synergetics and Extreme Networks have been partnered for nearly a decade. Extreme Networks delivers high performance, safe, simple, connected in-venue experiences. Extreme pushes the boundaries of technology in sports and public venues by investing in a venue specific technology team to understand the unique needs of a venue. Hundreds of teams, leagues, and venues, including the NFL and MLB, trust Extreme's end-to-end networking solutions and rely on their top-rated services and support to accelerate the digital transformation of sports and public venues and deliver an enhanced and safe fan experience.

By partnering with Synergetics and Extreme, BCS Arena & Conference Center will receive the highest quality, purpose-built Wi-Fi 6 network solution for sports and public venues, the best customer care in the industry, and an ease of doing business that will best position BCS Arena & Conference Center to effortlessly advance your fan and guest experience.

We appreciate the time invested in review of this response and look forward to a long, successful partnership between BCS Arena & Conference Center, Synergetics, and Extreme. Should any questions arise as a result of our submission, please feel free to contact me at either (662)364-3622 or Mbrent@synergeticsdcs.com.

Sincerely,



McKenzie Brent

Sales Account Manager

Synergetics, Inc.

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Executive Summary

More than ever before, today's sports & public venues must be ready to meet the dramatically evolving business challenges and customer expectations. Whether it's in an enclosed arena, open-air stadium, or conference center, secure and reliable venue Wi-Fi connectivity is now a guest expectation and an integral part of any quality venue experience. Further to that, the new normal resulting from COVID-19 brings heightened operational, safety, and IT demands for venues across the globe. As venues adapt for the future, innovative and reliable technology that will help fans and guests feel safe attending live events is paramount to success. Strong connectivity is a prerequisite for advancing in-venue digital transformation; a necessity for providing a fan and guest experience that is more safe, immersive, and operationally efficient.

We are excited to share how Extreme's purpose-built, trusted, high-density Wi-Fi 6 solution will meet all of the BCS Arena & Conference Center's expectations allowing for an enhanced experience for your guests. We have taken great care to create the enclosed network design and project plan that will bring seamless fan and guest engagement to the BCS Arena & Conference Center. We are eager to develop a strategic partnership with your organization. Our ultimate goal is to provide the BCS Arena & Conference Center with a robust, state-of-the-art solution that will surpass BCS Arena & Conference Center's expectations, and those of your guests. We are excited to present the enclosed proposal which details the benefits of our purpose-built sports & public venues technology, our in-depth experience with high-density venues, and our value-added capabilities.

Extreme's proven design and service methodology, combined with our dedicated vertical focus, has resulted in an NFL-leading solution. With over half of the NFL venues now utilizing Extreme technology, the Extreme solution is the fastest growing in pro sports. We are deeply invested in partnering with BCS Arena & Conference Center to offer the best, smartest, high-density connectivity solution, providing a meaningful, personalized, world-class experience for your fans and guests. Extreme's proven solutions will enable BCS Arena & Conference Center to accelerate your digital transformation, deliver a quality fan and guest experience that aligns with your goals, support your technology needs, and maintain your venues aesthetics.

The following provides a summary of our key differentiators as it relates to the high-density sports & public venues market.

Dedicated Sports & Entertainment Business Unit

As a leader in the sports & entertainment industry, Extreme is the only networking manufacturer with a dedicated venue-focused business unit. Through Extreme's vast experience in this industry, Extreme has found that each successful high-density Wi-Fi solution and team partnership requires a personalized approach. In 2012, during the completion of the first Extreme-lead venue installation with the New England Patriots, the organization established a dedicated Sports & Entertainment Business Unit to be exclusively focused on venue solutions including sales, marketing, technology, engineering, product management, and executive sponsorship to facilitate a hyper-focused approach for each unique venue. Extreme's dedicated Sports & Entertainment Business Unit has an average tenure of two decades at the company. The focus of Extreme's dedicated business unit allows Extreme to provide an unmatched understanding of venue-specific success factors.

Unlike other technology manufacturers who rely largely on systems integrators, Extreme's Business Unit is involved in every aspect of venue design, deployment, and support. The company goes to extreme lengths to support their customers and help ensure their success on game day and beyond. In fact, though Extreme's technology is exemplary, most customers cite Extreme's manufacturer-led hands-on approach to design and support as the prime differentiator of partnering with them. A list of references has been provided in our proposal, and we encourage you to speak with Extremes customers directly.

Extreme has led the design, implementation and support for over 40 venues including the NCAA, NBA, NHL, MLB, MLS and the NFL. Extreme has earned the designation of the Official Wi-Fi Solutions Provider of the NFL and the Official Wi-Fi Analytics Provider of the NFL. For the past six consecutive years, Extreme has also been the Official Wi-Fi Analytics Provider of the Super Bowl. Through real world experience, Extreme has developed the expertise to handle the most demanding venue challenges. Their hospitality experience spans convention centers, theaters, hotels, casinos, vacation destinations, and outdoor venues including Wynn Resorts, Resorts World Las Vegas, Eldorado Resorts, and Bell Centre.

Proven, Purpose-Built and Future Proof Technologies

Extreme's solutions are purpose-built to work within the unique physical characteristics of arenas/stadiums and other large public venues. As the Wi-Fi industry shifts its focus to the newest industry standard, "Wi-Fi 6" (IEEE 802.11ax), Extreme is leading the charge. Extreme was first to market to launch the industry's first and only venue-ready Wi-Fi 6 portfolio, built off seven years of learned lessons

within venues. This product family has been specifically engineered from the chip-set to the outer-shell with venues in mind. It is the only such product in the industry built for venues and will ensure the longevity of the BCS Arena & Conference Center's investment. This Extreme solution was designed to provide suitable network bandwidth for fans, game-day operations, public safety, and sponsor activation, while at the same time minimizing deployment impact on the building and venue operations staff.

Wi-Fi 6 marks the 4th evolution of venue design best practices at Extreme and coincides with availability of Wi-Fi 6 consumer mobile devices hitting the marketplace. Extreme's Wi-Fi 6 offering is the only complete Wi-Fi portfolio that will ensure your venue is not caught having to do a premature Access Point refresh to keep up with consumer devices. The solution is designed to provide unrivaled connectivity in the most dense, challenging environments — meeting all the Wi-Fi demands of the BCS Arena & Conference Center.

Extreme is the Official Wi-Fi Solutions Provider of the NFL, delivering high-density Wi-Fi or Wi-Fi analytics solutions to 25 NFL teams, and during the past seven Super Bowls. Extreme's solutions are deployed in professional sports venues around the world, and at more than 17,000 schools and 4,500 college campuses worldwide, powering digital education initiatives and enabling competitive esports programs. Extreme's proven techniques and experience will ensure project success for the BCS Arena & Conference Center.

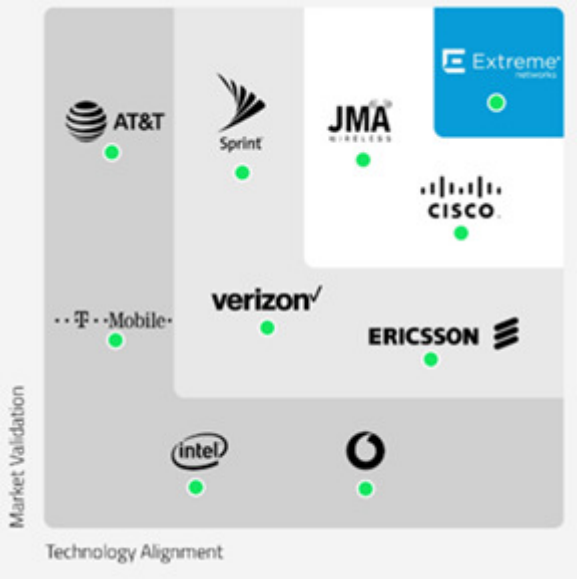
Extreme a "Game Changer" and Gartner MQ Leader

Extreme's superior technology has been consistently validated by third-party analysts including Sports Innovation Lab Power Play Index and Gartner.

"Game Changer" in Sports Innovation Lab Power Play Index

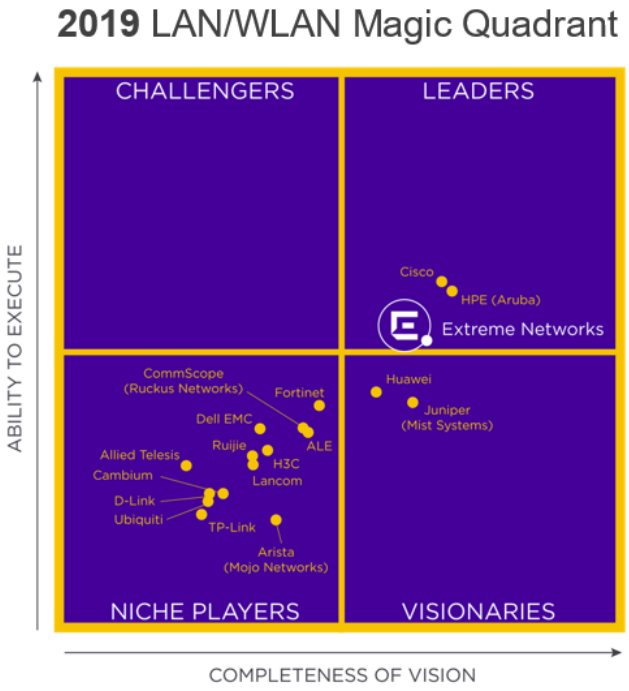
Extreme was ranked as the ONLY "Game Changer" in the inaugural Sports Innovation Lab Power Play Index for 'Connecting' sports venue and their fans, which charts the top 10 technology providers that offer network connectivity solutions. The new market assessment is built from evaluating market data from January 2019 to Dec. 2019. The research identifies technology companies that are best positioned to deliver connectivity for fans and network solutions for stadiums/arenas and entertainment venues. Extreme was ranked as the only Game Changer in the index.

The Power Play Index ranks companies in two categories: technology alignment and market validation. Technology alignment measures the "breadth and depth" of each company's solutions related to network technologies including 5G, DAS systems, Wi-Fi networks, and cellular networks. Market validation is determined by what leagues, venues, people, and partners each company is working with to deploy their technology. Extreme was identified as the highest-ranking company for each measure. Sports Innovation Lab focused specifically on the fan behavior "Connect" for this Power Play Index. Connective technology is required to ensure fans safely experience live sporting events in stadiums and venues. Cashless payments, touchless security and entry, digital signage, remote concession orders, and other features that will allow fans to feel safe returning to stadiums all require strong, stable networks to function.



Gartner Magic Quadrant Leader

Extreme was named a **Leader in the 2019 Gartner Magic Quadrant for Wired and Wireless LAN Access Infrastructure** for the second consecutive year. This trusted analyst report by Gartner evaluates a variety of enterprise LAN vendors. Gartner positions vendors in their respective quadrant based on their ability to execute and their completeness of vision. According to Gartner, "A vendor in the Leaders quadrant will have demonstrated an ability to fulfill a broad variety of customer requirements through the breadth of its access layer product family. Leaders will have the ability to shape the market and provide complete and differentiating access layer applications, as well as global service and support. Leaders should have demonstrated the ability to maintain strong relationships with their channels and customers and have no obvious gaps in their portfolios."



Prior to being named a Leader in the Gartner Magic Quadrant for Wired and Wireless LAN Access Infrastructure for the second consecutive year in 2019, Extreme was recognized in this report for three consecutive years.

We welcome you to download Gartner's report to see why Extreme has been positioned as a Leader.

2019 Gartner Peer Insights Customers' Choice

Extreme was named a "**2019 Gartner Peer Insights Customers' Choice"** for **Wired & Wireless LAN Networking** as well as for **Data Center** Networking. The Gartner Peer Insights Customers' Choice distinction is based on feedback and ratings from end-user professionals who have experience purchasing, implementing and/or using the product or service. Gartner maintains rigorous criteria for the Peer Insights Customer Choice distinction. Vendors that are named demonstrate not only high ratings, but review coverage across industry verticals, company sizes and deployment regions.

Conclusion

Together, Synergetics and Extreme bring the industry's best tools, talent, and technology – with an unshakable commitment to helping the BCS Arena & Conference Center succeed in today's trying times. Extreme's proven venue technology and methodology – combined with our extensive experience with similar implementations, together with our best-in-class service – will deliver the very best Wi-Fi experience for fan and guest connectivity and other vital applications. We now welcome you to further review our proposal, which further details the strength and capabilities of our recommended solution.

Section 1: Statement of Qualifications and Experience

The purpose of this section is to evaluate the RFP recipient's credentials, capabilities and relevant experience against the requirements stipulated in this document.

1.1 Company Background

This section shall include background information about the RFP recipient, overview of its organization structure and shareholding status, description of its financial performance for the past 2-3 years, and other relevant information, as applicable.

Response:

Synergetics is the leading information technology services and consulting firm in the Southeastern US, providing technology solutions for education, government, healthcare, financial, manufacturing and business services industries.

Since 1992, we have worked with each of our customers to ensure every solution we design not only works for your current needs, but also gives you the ability to shape your technology as your organization grows and changes. For over 28 years, Synergetics has partnered with leading technology companies and manufacturers, providing customres cutting edge technology, extensive resources, and competitive pricing.

Synergetics is a full-service IT Design, Consulting, and Integration company dedicated to Customer Service. Synergetics provides technology solutions by building strong relationships with our customers and partners. Each project is evaluated for the customer's technology needs; we provide technology assessments, pre-project design and engineering services, project management, technology demonstrations, and technology consulting.

On the following page, please find an infographic demonstrating some of Synergetics' core capabilities:

Network Solutions

IT Sales & Services

Network Maintenance

Unified Communications: VoIP Phone, Intercom, and Paging Systems

Security Solutions: IP Security Cameras, Digital Recorders, CCTV and Access Control

Structured Cabling

Professional Development & Technology Training

Interactive Classroom Solutions

Additional detail on each of these capabilities is found below:

Network Solutions - Network Assessments, Health Checks, Network Architectural Design, Deployment and Management, Servers, Switches, Network Security Hardware, Wireless Networking

IT Sales & Services -Computers, Printers, Scanners, Business Software, Desktop Software (Microsoft Office 365, Adobe), Security/Cybersecurity Software (Email Filtering, Anti-Spy), Backup/ Archive/Storage Software, Computer Components and Accessories

Network Maintenance –Managed Services (network support and management, remote network monitoring), Network Repair Service, Service Contracts (customized to your needed service level)

Unified Communications: VoIP Phone, Intercom, and Paging Systems – Design, Engineering, Installation and Continued Support for complete unified communication solutions. Mass Notification and Alert System Integration, Integration with Analog Systems

Security Solutions: IP Security Cameras, Digital Recorders, CCTV and Access Control – Consulting, Assessment, Deployment and Training for seamless integration of IP security solutions

Structured Cabling – Regions only in-house highly certified structured cabling installation team, installing: Category 5 Enhanced, Category 6, Category 6 Augmented, High Pair Count Copper or Fiber Optic Cabling

Professional Development & Technology Training – Technology Facilitator Services, Full and Half Day Professional Development Courses (CEUs or SEMI credits for full day and multi-day training courses)

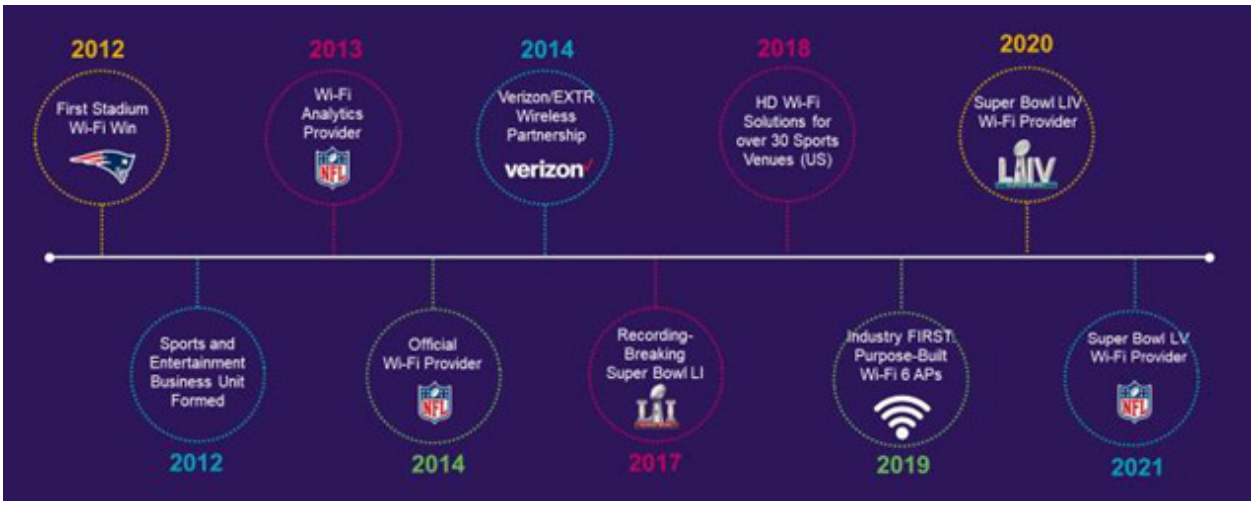
Interactive Classroom Solutions – Touchscreen Displays, Interactive Projectors, Virtual Reality Goggles, Chromebook and Tablet Storage and Charging Carts

Extreme Networks

Extreme is a technology innovator committed to making networking effortless – advancing how we live, work, and share. Founded in 1996, Extreme has close to 25 years of experience in the networking industry with a specialization in designing and supporting purpose-built high-density networking solutions for sports & public venues. With a culture of agility and innovation – from building the very first Gigabit Ethernet switch to being the first in the market to launch the industry's first and only stadium-ready Wi-Fi 6 portfolio – Extreme has a history of anticipating the evolving client needs . Headquartered in San Jose, California, Extreme is a financially strong corporation with approximately 2,500 employees worldwide and backed by 9,000+ technology partners who share their vision.

Over 50,000 customers globally trust Extreme's end-to-end, cloud-driven networking solutions and rely on their top-rated services and support to accelerate digital transformation efforts. Extreme's customers include over half of the Fortune 50, but they continue to keep the qualities of a small company by remaining nimble and responsive to remain customer-focused. Extreme delivers innovative, cutting-edge technology and award-winning support to organizations including some of the world's leading names in sports & public venues, hospitality, education, retail, healthcare, service providers, government, and manufacturing.

Sports & Entertainment Business Unit Milestones



1.2 Deployment Experience in Arenas, Stadiums, Large Sports and/or Event Venues

This section shall include details of any design and deployment experience at any arenas, stadiums, large sports and/or event venues in the U.S. and other countries. Previous experience is highly desirable.

Reponse:

Sports and entertainment venues around the globe have consistently turned to Extreme to provide connectivity solutions that improve operations and guest experience. Extreme is the Official Wi-Fi Solutions Provider of the NFL, delivering high-density Wi-Fi or Wi-Fi Analytics solutions to 25 NFL teams, and during the past seven Super Bowls. Extreme's solutions are deployed in professional sports stadiums around the world, and at more than 17,000 schools and 4,500 college campuses worldwide, powering many competitive esports programs. Extreme was also the first to deliver Wi-Fi 6 solutions across the NFL, MLS, and university stadiums, with customers including the NFL's Tennessee Titans, Seattle Seahawks, and Green Bay Packers; BBVA Stadium, home to Major League Soccer's Houston Dynamo and the National Women's Soccer League's Houston Dash; West Texas A&M University's Buffalo Stadium, Carnegie Stadium and Pavilion and The Arena at Leeds Beckett University and Orioles Park at Camden Yards. Additionally, Extreme's customers also include some of the largest hospitality venues in the world including convention centers, theaters, hotels, casinos, vacation destinations, and outdoor venues such as Wynn Resorts, Resorts World Las Vegas, Eldorado Resorts, and Bell Centre.

1.3 Staff Experience

This section shall include details regarding the related experience of the manufacturer and vendor team that is responsible for the design and implementation of the recommended solution.

Response:

Synergetics has done many implementations of full Extreme switches and wireless throughout many school districts and government agencies in Mississippi and Alabama. Our team of network engineers have the latest certifications and training in Extreme products. We work with Extreme sales managers and engineers on a close basis to ensure projects are completed correctly and to the customers expectations. We pride ourselves on the fact that all of our senior network engineers have been on staff for as long as we've partnered with Extreme Networks.

Extreme pushes the boundaries of technology in large public venues as the only networking manufacturer with a dedicated sports & public venue-focused business unit. This focus provides an unmatched understanding of venue-specific success

factors, and is demonstrated by hardware that is built specifically for the venue. Extreme's dedicated Sports & Entertainment Business Unit has an average tenure of two decades at the company. Unlike other vendor, Extreme's Business Unit rolls up their sleeves and gets involved in every aspect of venue design, deployment, a proven formula that has resulted in high customer satisfaction and the fastest growing solution in pro sports and some of the largest hospitality venues in the world calling themselves customers for life.

1.4 Other

Any other relevant information about the company and/or its capabilities and qualifications may also be provided:

Response:

Synergetics has been active in the E-rate program in the Southeastern US since the inception of the program though the Telecommunications Act of 1996. Synergetics has completed nearly $100 million of successful E-rate projects in support of public schools and libraries in the Southeastern US. The table below show Synergetics activity in the E-rate program since the first round of funding in 1998.

Year	Requests	Pre-Discount	Requested	Committed	SLD Disbursements
2020	312	$11,924,855.79	$9,780,422.47	$878.285.32	$0.00
2019	180	$8,825,095.06	$7,110,853.80	$2,742,740.74	$480,801.96
2018	72	$1,533,634.39	$1,244,557.33	$852,561.29	$709,810.97
2017	112	$3,541,671.07	$2,800,132.14	$1,717,240.23	$1,641,775.59
2016	142	$4,027,259.24	$3,267,297.95	$3,043,649.60	$2,925,761.67
2015	144	$6,605,601.30	$5,484,270.08	$5,289,711.83	$4,985,056.11
2014	53	$8,426,775.23	$7,565,120.14	$0.00	$0.00
2013	73	$3,945,937.73	$3,530,343.23	$0.00	$0.00
2012	57	$4,422,708.38	$3,888,148.88	$2,782,826.67	$2,426,843.81
2011	77	$4,183,254.63	$3,649,323.17	$2,249,429.45	$1,969,597.93
2010	85	$4,439,741.40	$3,955,002.48	$3,582,374.30	$3,279,992.28
2009	89	$2,460,650.23	$2,192,259.06	$1,878,529.84	$1,695,584.10
2008	172	$3,762,537.81	$3,331,702.67	$2,758,323.59	$2,568,938.68
2007	144	$3,243,307.17	$2,834,005.59	$2,125,570.64	$1,962,776.83
2006	110	$1,761,837.42	$1,547,270.21	$1,276,201.15	$1,106,626.18
2005	140	$1,883,534.34	$1,631,411.55	$1,442,949.63	$872,049.81
2004	404	$5,178,771.61	$4,520,064.75	$2,901,521.79	$1,644,260.50
2003	463	$7,159,477.30	$6,346,057.83	$5,368,085.29	$3,511,066.20
2002	329	$3,806,115.38	$3,369,891.82	$2,945,171.46	$2,001,452.66
2001	256	$4,508,134.56	$3,827,159.08	$2,466,096.12	$1,641,438.44
2000	162	$2,451,242.70	$2,077,389.63	$1,402,914.38	$1,368,701.16
1999	157	$1,077,913.40	$910,906.56	$906,618.06	$896,258.53
1998	117	$811,248.83	$720,152.84	$720,152.84	$677,134.72
	3,580	**$99,981,304.97**	**$85,583,743.26**	**$49,330,954.22**	**$38,365,928.13**

Extreme Networks Sport and Entertainment was proud to recently announce Down to the Wire™, as an industry-first customer user group. Down to the Wire is a customer-lead user group where customers share ideas and lessons learned on the successes and failures on stadium technology implementation. We invite you to join at: https://www.extremenetworks.com/down-to-the-wire/.

Section 2: Product and Services Portfolio

The purpose of this section is to obtain information about Wi-Fi product and service offerings relevant to high-density arena deployments.

2.1 Product Description

This section shall include a brief list of the suite of products that are currently offered by the recommended manufacturer and supported by the vendor. Please limit this to no more than two pages.

Response:

One benefit to Extreme's venue-focus, is knowing you've invested in a prescriptive technology formula that promises success in your venue. While Extreme has a diverse technology portfolio for our diverse customer base, each venue runs on a consistent set of stadium products to drive consistent results across all our stadium customers. Following provides a brief overview of the overall Extreme Product Portfolio suited for our venue customers.

ExtremeSwitching™

- **Universal Hardware Platforms:** Extreme's newest switching line offers the most flexible switch offering available in the market. The universal hardware platforms come with a dual-persona capability allowing user choice of the switch operating system (OS). Either the ExtremeXOS® or VOSS persona can be enabled. With universal hardware, customers benefit from the ability to purchase a single hardware platform that can be leveraged across multiple use cases, such as stackable edge or fabric to the edge using the same hardware.
- **Stackable Switches:** Extreme offers a full range of stackable edge switch such the complete line of EXOS switches which are built on the ExtremeXOS modular operating system and includes next-generation Virtual Port Extenders.

ExtremeRouting™

- **Routers:** Extreme's Ethernet core and edge routers boost scalability and agility enabling an increase in programmatic control and traffic visibility. Their highly reliable and secure modular chassis, fixed form factor edge routers, and cloud-managed small to mid-enterprise SDWAN solutions meet the needs of every size organization.

ExtremeWireless™

- **Access Points:** Whether on-premise or cloud-managed Extreme offers a comprehensive portfolio of Wi-Fi 6 (802.11ax) access point options that support flexibility of deployment (indoor, outdoor, wall-plate, etc.).
- **Wireless Appliances:** Flexible options are available for hardware and virtual wireless appliances, as well as private cloud services complemented with simplified licensing and multiple choices for deployment to support both campus and distributed environments.
- **Wireless Security:** Extreme AirDefense simplifies the protection monitoring and compliance of the WLAN. The solution accurately detects wireless vulnerabilities and unusual network activity with a context-aware multidimensional detection engine to minimal false positive alarms.

ExtremeApplications™

- **Management and Visibility:** Extreme Management Center provides centralized visibility and control with of 360-degree view of the entire end to end network - for advanced single pane of glass management.
- **Security and Identity Control:** ExtremeControl delivers a set of management software tools that allow you to deploy and enforce granular role-based policies across the wired, wireless and data center network. As well as customize onboarding of guests and IoT devices easy and secure with predefined templates for non-IT personnel.
- **Analytics and Performance Management:** ExtremeAnalytics provides visibility into application use across the network, empowering IT to boost organizational efficiency, improve user experience and engagement, optimize application performance, and protect against malicious or unapproved system use.

More details can be found in the Extreme Product Catalog.

2.2 Professional Services Description

This section shall include details regarding the manufacturer/vendor professional services offerings for Wi-Fi design, deployment, optimization, network management, and future upgrade capabilities. Please include a sample project timeline.

Response:

With over 40 high-density venues deployments completed, Extreme has a dedicated team within our global Professional Services team that is focused on unique implementation scenario of venue Wi-Fi. This team has curated a prescriptive process over the last eight years to focus on venue connectivity, and the members of that team have defined roles within each project. These roles were crafted, and are continually refined, to focus on critical success factors of each venue

project. When running the job descriptions in parallel, they are also designed to act as a system of checks and balances for common mistakes on venue projects. Below are the job descriptions for Extreme's Network Engineer, RF Engineer, and Project Manager.

Network Engineer

The Network Engineer role is critical to the success of the Extreme methodology. The Network Engineer's main role will be to ensure that the wired/software/backend infrastructure and network integration meets the required technical specifications of an Extreme Infrastructure deployment as well as all documented customer infrastructure requirements. The engineer will work closely with the Cabling and Construction Coordinator for proper network switch placement and the RF Engineer for wireless integration throughout the project. The engineer is responsible for all design, configuration, testing/verification and support of the Extreme wired/software/backend infrastructure solution and integration. This resource will report directly to the Extreme Project Manager as part of the Stadium implementation team and to the Extreme Professional Services Partner Manager for all non-implementation requirements.

Overall Project Responsibilities:

- Available throughout the duration of the installation as well as all live tuning exercises until system acceptance. System acceptance shall occur when the system has been installed to manufacturer and industry standards, all post-installation punch list items have been addressed to Owner's satisfaction and optimization testing has been completed.
- Coordinate with the Extreme Project Manager and RF Engineer throughout the entire project to ensure successful completion of all project requirements in relation to the wired/software/backend infrastructure implementation.
- Required to participate in all weekly status calls.
- Required to participate in all other scheduled and emergency meetings pertaining to the wired/software/backend infrastructure implementation.
- Regular interaction with the cabling contractor regarding wired switch locations & service.
- Knowledge transfer detailing installed solution to stadium IT team.

RF Engineer

The RF Engineer role is critical to the success of the Extreme methodology. The RF Engineer's main role will be to ensure that the Wi-Fi delivery meets the required technical specifications of an Extreme Wi-Fi deployment as well as all documented customer Wi-Fi requirements. The engineer will work closely with the Cabling and Construction Coordinator for proper access point/antenna placements and the Network Engineer for network integration throughout the project. The engineer is responsible for all design, configuration, testing/verification and support of the Extreme wireless solution. This resource will report directly to the Extreme Project Manager as part of the Venue implementation team and to the Extreme Professional Services Partner Manager for all non-implementation requirements.

Overall Project Responsibilities:

- Available for the duration of the installation, either onsite or remotely, as well as at all live tuning exercises until system acceptance. System acceptance shall occur when the system has been installed to manufacturer and industry standards, all post-installation punch list items have been addressed to Owner's satisfaction and optimization testing has been completed.
- Coordinate with the Extreme Project Manager and Network Engineer throughout the entire project to ensure successful completion of all project requirements in relation to the Wi-Fi implementation.
- Required to participate in all weekly status calls.
- Required to participate in all other scheduled and emergency meetings pertaining to the Wi-Fi implementation.
- Daily interaction with the cabling contractor regarding access point locations & service

2.3 Design and Dimensioning

This section shall include details regarding manufacturer/vendor credentials and past experience performing design and dimensioning exercise to facilitate high-density Wi-Fi deployment in sports venues, along with any suitable examples.

Response:

Synergetics has an RCDD on staff to plan and design the best layout for current and future needs of the arena. Our on-staff network engineers have the certifications and experience in large scale deployments and implementations. We also pride ourselves in the fact that all of our senior network engineers have been on staff since we first partnered with Extreme Networks.

Extreme combines experience and expertise in perfecting access point placement, design, and dimensioning for high-density Wi-Fi environments. As the Official Wi-Fi Provider of the NFL and the Official Analytics Provider of the NFL, Extreme's expertise and experience is trusted at the highest level. Super Bowl 54 in Miami's Hard Rock Stadium, an Extreme solution, this year recorded the most connected event in history.

When it comes to design, Extreme's engineers have precisely determined how many access points are required per section depending on a variety of factors. For BancorpSouth Arena, an overhead design will be utilized to precisely service fans using directional antennas placed above. Each access point is specifically placed and configured to service a given location in the arena providing consistent connection and user experience in each section. These same design principles for overhead design can be seen at venues such as PNC Arena, University of Pittsburgh's Peterson Event Center, as well as BlueCross Arena in Rochester, NY.

2.4 Optimization and Commercial Integration

Manufacturer/Vendor shall describe its capabilities and past experience for system optimization and performance acceptance to facilitate seamless integration to the commercial network. Thorough experience from large-scale Wi-Fi deployments in sports venues shall be considered a critical capability of the RFP recipient.

Response:

Synergetics' senior network engineers with will alongside of the Extreme Networks' senior network engineers to ensure the completed project meets and exceeds the expectations of the customer.

With Extreme's experience in NFL, MLB, NHL, NBA, and NCAA venues, Extreme's experience in large-scale and high-density deployments are extensive. For some venues, commercial integration means integration of Point of Sale and Ticketing Systems, while for others it allows them to register guests to the network for their users' identity. Many customer also leave the network open to prioritize ease of use and promote customer use. Prior to installation, a tenured Venue Wi-Fi Architect will work with BancorpSouth Arena & Conference Center to understand precisely the commercial needs for the venue. During the validation phase, Extreme engineers will configure, test, and tune each access point to precisely service the coverage area. Once all devices are mounted, Extreme has a two-part validation phase in which the RF environment is tested while the venue is empty and then compared to the results from testing while the arena is at capacity. After refining channel and

power settings, the venue is prepared to service every attendee with consistent user experience and reliability.

2.5 Maintenance Service and Event Support

Manufacturer/Vendor shall highlight their credentials and capabilities for ensuring fault-free, smooth maintenance of the deployed Wi-Fi network along with relevant examples.

Response:

Along with the services described in Section 2.2, Extreme has carefully refined the process for events support role called Game Day Support Engineer. This service is generally provided for the first two events to validate and tune the system during a live event with guests in the building. After validation, we can continue to provide these services onsite or remotely as a service for as many events as is desired. Extreme has provided this service package at hundreds of events including the last six Super Bowls. While this service package can certainly be customized, the typical responsibility for the Game Day Support Engineer are below:

- Prep game day staff, customer and Head Wi-Fi Coach on communication plans for each event
- Manage communications and escalations of network issues throughout each event
- Ensure game day reporting standards are met
- Debrief game day staff, customer and Head Wi-Fi Coach on the results of the game
- Document any issues that were identified during the game and report to the Project Manager
- Distribute post-game day summary documentation to the customer, game day support team and Extreme team. Including but not limited to OneView report summary, issues encountered, event attendance and summary of Wi-Fi Coach feedback.

Section 3: Technical Requirements

The purpose of this section is to obtain detailed technical information on your products and solution. The recommended solution shall be designed specifically to the requirements and needs of the arena as detailed in Part II Design Requirements. BancorpSouth Arena & Conference Center is interested in a high-density Wi-Fi 6 solution and requests pricing for the complete solution to be provided in Section 7. For each of the requirements below please respond with Comply or Does Not Comply and provide a supporting narrative response. If more than one product is being proposed, where applicable, please address the requirements below for each product quoted. BancorpSouth Arena & Conference Center will consider any vendor not responding to each requirement for all products quoted to be non-responsive.

3.1 High-Density Wi-Fi Solution

- Solution shall provide adequate Wi-Fi coverage and capacity to all users in all zones with the installation of private and public SSIDs, as stipulated in Part II Design Requirements.

  Response: Comply. Our high-density design proposal provides connectivity throughout the venue including all seating sections and other major traffic areas with seamless roaming and secure onboarding. Venue-experienced design engineers combined with the purpose-built, flexible Wi-Fi technologies will meet the design requirements of BancorpSouth Arena & Conference Center.

- Please provide an overview of the architecture of the proposed Wi-Fi solution.

  Response: Comply. The proposed Extreme Wi-Fi solution is purpose-built to work within the unique physical characteristics of arenas and other large public venues. The Extreme Campus Controller is a powerful orchestration platform, utilizing a field-proven architecture with the latest technology, the controllers embedded operating system supports application containerization technology enabling the expansion of capabilities by simply installing add-on container applications. This is coupled with Extreme's 802.11ax (Wi-Fi 6) Access Points (APs) delivering next generation mobility across your arena and conference center. The solution is ideally suited to handle the increased device density of today's venues while delivering a consistent experience to all users and devices. Powered by Extreme's WiNG 7 operating system, this legendary architecture places the intelligence at the edge where it unlocks the true capabilities and performance of 802.11ax, without bottlenecks and limits. Extreme's Wi-Fi 6 access points adapt seamlessly to the diverse needs of wireless users and IoT devices and are backwards compatible with all 802.11a/b/g/n/ac devices. ExtremeWireless APs work seamlessly with

Extreme's access switching functions to fully automate the AP management providing Zero Touch provisioning to an Extreme Campus Controller. The solution also offers integration with Extreme Management Center for single pane of glass visibility and monitoring.

The ExtremeWireless system architecture is the most advanced and flexible solution on the market today. While, there are many compelling cloud offerings in the marketplace, including Extreme XIQ, none are proven scale for the local processing required for success in a venue. ExtremeWireless includes centralized intelligent wireless controllers and intelligent semi-autonomous APs. Extreme Campus Controllers will be centrally located with Extreme APs distributed throughout the network. Extreme Campus Controllers are designed to handle the high-density user/device environments of large public venues. They deliver seamless roaming with flexible hybrid traffic forwarding (centralized and distributed) and a high-availability architecture to ensure dependability and fault tolerance. The proposed solution includes redundant controllers for with automatic failover for high availability. Extreme Campus Controllers will be configured as "availability pairs" allowing both access point and client statistics to be available of both side of the high availability configuration. The system operates in a load-sharing model which provide backup for all of the access points in the network. The solution also simultaneously supports multiple topology modes including the ability tunnel traffic to the Extreme Campus Controller (Bridged@Controller) or locally switch traffic at the AP (Bridged@AP). Network administrators can select how traffic will be handled so that the WLAN infrastructure can adapt to business requirements and applications.

- Please detail key features and uniqueness of the solution along with competitive advantages over solutions from other vendors.

  Response: Comply. As a leader in the sports & public venues industry, Extreme delivers secure, quality, connected in-venue experiences utilizing their purpose-built IT networking solutions and proven deploy methodologies for high-density venues. Key features of the proposed Extreme solution include:

  - **Proven, Purpose-Built and Future Proof Technologies** – Extreme's solutions are purpose-built to work within the unique physical characteristics of arenas and other large public venues. As evidence of Extreme's pioneering approach to the venue market, Extreme was first to market to launch the industry's first and only stadium-ready Wi-Fi 6

portfolio, built off seven years of learned lessons within venues. This product family has been specifically engineered from the chipset to the outer shell with venues in mind.

- **Strong Deep Packet Inspection (DPI) Capabilities** – ExtremeWireless APs support a flow-based architecture enabling deep packet inspection to be performed at the AP. This provides embedded visibility and control for thousands of applications, all without impacting AP traffic processing or sacrificing performance.

- **Centralized Infrastructure Management and Analytics** – A unique advantage of the Extreme technology is the ability to deploy meaningful policies across the entire network based on the person's or device's role within the venue (example - Media, Fan, POS). Centralized control and a 360-degree view across all users, devices, locations, apps, and wired/wireless networks ensures differentiated device provisioning, automated user onboarding, and seamless network provisioning.

Extreme's technology is exemplary, most customers cite Extreme's manufacturer-led hands-on approach to design and support as the prime differentiator of partnering with them.

3.2 Features and Minimum Capabilities

- Indoor and outdoor rated Access Points shall be Wi-Fi 6 (802.11ax) supporting 4x4 MU-MIMO and 4 spatial streams.

  Response: Comply. All proposed Extreme Access Points support the latest Wi-Fi 6 (802.11ax) technology, supporting 4x4 MU-MIMO and 4 spatial streams per radio. Because many parts of the arena bowl are often subject to pressure washing, Extreme has proposed IP67 (water and dust resistant) Access Points (AP560) where appropriate, to ensure system longevity.

- Access Points shall be equipped with dual radios. Support for software configurable radios is a highly-desirable feature, please describe the radio capabilities of the proposed access points.

  Response: Comply. The proposed AP510 and AP560 models are dual radio and can be configured to operate in several modes: Traditional dual radio 2.4GHz and 5GHz radio; 2.4GHz/5GHz sensor Radio 1 and 5GHz on Radio 2; and dual 5GHz radio, enabling network managers flexibility to provide the highest level of client performance based on your specific user environment.

- Access Point must support integrated Bluetooth radio for integration with IoT and guest engagement platforms.

  Response: Comply. The proposed AP510 and AP560 models support integrated Bluetooth radio for guest engagement and analytics or supporting IoT connectivity with Thread™.

- Access Points must support WPA3 upgradeability to ensure maximum security protection.

  Response: Comply. All proposed Extreme Access Points support the latest Wi-Fi Alliance WPA3 security standard delivering robust protections for users and IoT devices.

- Access Points shall support both internal and external antennas, with external antennas being used for aesthetic reasons (e.g., to hide the AP) or when a directional antenna is a necessity from a coverage/capacity perspective. Please describe the antenna options for the proposed access points.

  Response: Comply. Extreme has a robust portfolio of enterprise class 802.11ax access points offering indoor and outdoor models with both internal and external antenna options to meet diverse deployment needs. The following access points are proposed, and all include internal antennas:

  - Indoor **AP510i** includes an integrated omni directional antenna array with eight Wi-Fi internal antennas and one BLE internal antenna:
    - (4) Integrated dual band, 2.4-2.5 GHz and 5.1-5.8 GHz omnidirectional antennas
    - (4) Integrated single band, 5.1-5.8 GHz omnidirectional antennas
    - (1) Integrated single band, 2.4-2.5 GHz omnidirectional antennas for BLE
  - Outdoor **AP560h** includes two software selectable internal antennas (30 and 70 degree directional antennas); this unique design enables a single mounting point and the ability to tune the signal beam width remotely

- Outdoor Access Points must have a minimum protection rating of IP67.

  Response: Comply. The proposed AP560h outdoor APs have an IP67 rating to handle installations in harsh environments.

- Outdoor Access Points must operate in a temperature range of -40° F to + 131° F.

  Response: Comply. The proposed AP560h outdoor APs supported operating temperature range is -40° F to + 131° F.

- Access Points must provide application-layer visibility and policy enforcement with no impact on Wi-Fi performance. Please describe the capability of the solution to support this requirement and detail any additional components required.

  Response: Comply. The Extreme solution support extensive QoS and role-based policy capabilities that include application (Layer 7) rules. An application rule leverages the AP's DPI engine to detect the underlying application to which a frame or flow belongs. The rule then applies access control and quality of service actions to all the traffic associated with the application, not just traffic destined for specific IP addresses or ports. The control actions regulate both access control and traffic engineering (rate limit, marking, and prioritization) for applications and groups. Use case examples include:

  - Identifying critical applications and assigning a higher priority and CoS value
  - Blocking restricted web content
  - Blocking or limiting peer-to-peer protocols to preserve bandwidth and flows for other applications
  - Limiting bandwidth usage by non-business related traffic

  The application policy rules are deployed on the APs for enforcement right where the traffic enters the network.

- Wireless Appliances must support flexible deployment options supporting both a centralized or distributed architecture.

  Response: Comply. The system architecture of the ExtremeWireless solution supports centralized and distributed data forwarding with the ability to simultaneously supports multiple topology modes including the ability tunnel traffic to the Extreme Campus Controller (Bridged@Controller) or locally switch traffic at the AP (Bridged@AP). This adaptable architecture allows you to use the combination of traffic engineering that best meets the specific needs of your applications.

- Wireless Appliances must support high-availability. Please describe how this is accomplished and describe the cost for any extra licenses required for high availability.

  Response: Comply. The proposed solution includes two E2120 controllers (aka: appliances) which support a High Availability feature to maintain service availability in the event of an outage of the controller or the link from the controller. The controllers are configured as "availability pairs" allowing both access point and client statistics to be available on both sides of the High Availability configuration. The system operates in a load-sharing model which provides backup for all access points in the network. In session availability mode (Figure 1), the wireless access points connect to both the primary and secondary controller. While the connectivity to the primary controller is via the “active” tunnel, the connectivity to the secondary controller is via the “backup” tunnel.

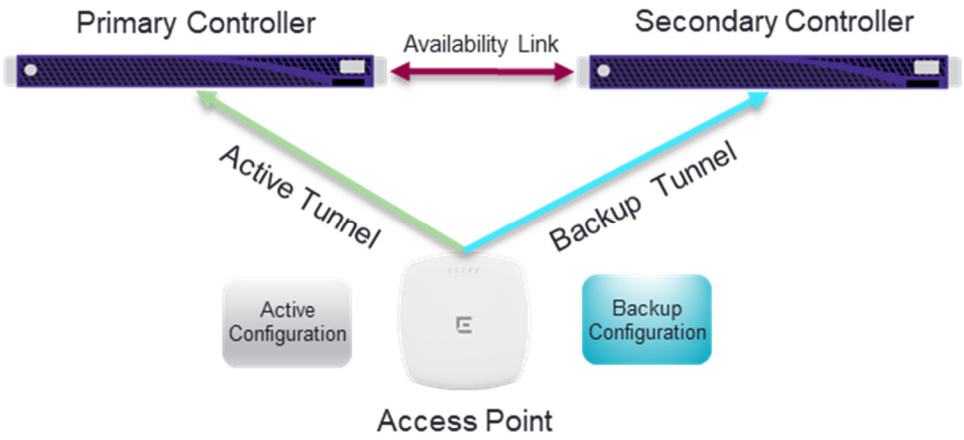


Figure 1 - Session Availability Mode

The following is the traffic flow of the topology illustrated in Figure 1:

- The access point establishes the active tunnel to connect to the primary controller.
- The controller sends the configuration to the access point. This configuration also contains the port information of the backup controller.
- On the basis of the backup controller port information, the access point connects to the backup controller via the backup tunnel.
- After the connection is established via the backup tunnel, the backup controller sends the backup configuration to the wireless access point.

- The access point receives the backup configuration and stores it in its memory to use it for failing over to the backup controller. During this entire time, the access point is connected to the primary controller via the active tunnel.

In session availability mode, the APs connect to both the primary and backup Extreme Campus Controller. While the connectivity to the primary Extreme Campus Controller is via the active tunnel, the connectivity to the backup Extreme Campus Controller is via the backup tunnel. The backup Extreme Campus Controller does not have to detect its link failure with the primary Extreme Campus Controller for the session availability to kick in. If the AP loses five consecutive polls to the primary Extreme Campus Controller either due to the Extreme Campus Controller outage or to connectivity failure, it fails over to the backup Extreme Campus Controller maintaining the user session.

Access Points can be split between each of the paired controllers, balancing the load between the two Controller while providing fail-over redundancy. The secondary controller is able to take over the full load enabling user sessions to continue uninterrupted. Importantly, Extreme's wireless solution does not require licenses to utilize the failover access point functionality so no additional licenses are required.

- Wi-Fi network shall be capable of loading balancing / band steering.

  Response: Comply. Load balancing across clusters is performed at the AP level. High-availability can be configured for active-active, which evenly distributes AP loads across both controllers. Support is also provided for Client Balancing to distribute client traffic evenly between APs in the same device group. The APs within each group will manage the user traffic within that group.

  Band Steering is supported and is intended to relieve congestion by encouraging dual-band client devices to use the higher capacity 5 GHz band. For Band Steering to work effectively, you will need to design the network for both 5 GHz and 2.4 GHz coverage. For networks where coverage quality differs between bands, we would recommend disabling Band Steering. Band Steering requires that the same SSID be present on both 2.4 GHz and 5 GHz radios.

- Wi-Fi network shall be capable of supporting VLAN Pooling to combine pre-existing small subnets into larger ones.

  Response: Comply. VLAN Pooling is supported using VLAN Groups on the controller pair.

- Wi-Fi network shall be capable of supporting Proxy ARP.

  Response: Comply. Proxy ARP is a supported feature of the access point and is configurable.

- Wi-Fi network shall support IEEE 802.11r and 802.11k.

  Response: Comply.

- Wi-Fi network shall be equipped with suitable IDF switches and MDF LAN switches/routers to support the Wi-Fi network.
- **Response:** Comply. Leveraging a proven best practice design, we have recommended switches from the ExtremeXOS families of switches to meet the needs of the IDF and MDF LAN switches that will support the Wi-Fi network. The Extreme 5520-48W switches are proposed for the IDF; each switch provides 48x 10/100/1000Base-TX 802.3at (90W) PoE ports, 2x QSFP28 ports that can be used for stacking or Ethernet front panel ports*, and 1x VIM slot that can be populated with a variety of optional modules. Each IDF switch will be populated with 2x 10Gb SFP+ transceivers to connect to the MDF. Two Extreme **X590-24x-1q-2c** switches are proposed for the MDF; each switch provides 24x 1/10GbE SFP+ ports, 1x 10/40GbE QSFP+ (available in stack mode only), and 2x QSFP28 ports that can be configured to run at 10Gbps, 25Gbps, 40Gbps, 50Gbps, or 100Gbps data rates.

  ** Ethernet front panel QSFP28 data rate options per port with channelization are 4x 10Gb SFP+, 4x 25Gb SFP28, 1x 40Gb QSFP+, or 2x 50Gb.*

- Network shall be capable of implementing authentication and role-based policy features providing granular control over what a user/device has access to (e.g., fans, ticket scanners, media).

  Response: Comply. The proposed Extreme solution is differentiated by a patented policy framework enabling unified network-wide application policy control and provisioning. Leveraging Extreme's role-based policy embedded within the proposed access points and switches users/devices can

be authenticated (via IEEE 802.1X, MAC address, or web authentication) and then assigned a pre-defined operational role that enables very granular control over what that user/device has access to. Roles provide four key policy features: traffic containment, traffic filtering, traffic security, and traffic prioritization.

Primary benefits of using Extreme's role-based policy in your network are provisioning and control of network resources, security, and centralized operational efficiency. Extreme's role-based policy provides for the provisioning and control of network resources by creating policy roles that allow you to determine network provisioning and control at the appropriate network layer, for a given user or device. Support for role-based policy provisioning and control at the edge of the network ensures that network traffic for key business or revenue generating purposes is prioritized over general use traffic and aids in meeting compliance obligations. Importantly, administrators can easily transition from basic VLAN and complex ACL deployments to Extreme's role-based policy framework in a seamless fashion, without the need to make changes to your RADIUS infrastructure

- Role-based policy capabilities must enable dynamic assignment of policy rules on a per user/device/application basis, not just to a specific SSID or VLAN.

  Response: Comply. With Extreme's role-based policy each defined role is granted individualized access to specific network services and applications. These access privileges are not tied to a specific VLAN or SSID, they are associated with the user/device, and will remain associated with users/devices as they move throughout the network. The proposed ExtremeXOS switches support a Layer 7 policy feature which allows you to associate an application signature to a policy profile. ExtremeWireless adds Layer 7 visibility and control for over 3,000 applications, which is made possible through the flow-based architecture of the ExtremeWireless Access Points which allows them to perform deep packet inspection (DPI) without impacting AP traffic processing. This capability allows you to identify what applications are passing through the APs and then set controls to provide preference for critical business applications, and rate limit or deny non-revenue generating applications. Traffic can also be classified based on Layer 2/3/4 attributes which include: Source/Destination MAC address, IPv4 Source/Destination IP address, Source/Destination Layer 4 port, IPv4 Source/Destination socket (IP address + port), IP type, ICMP packet type & code, TOS/DSCP marking, 802.1p priority and Ethertype.

- Network shall be capable of tracking the usage patterns and gathering analytics related to consumer/fan behavior and application usage to aid the arena marketing team.

  Response: Comply. The Extreme solution utilizes the network devices deployed in the infrastructure for gathering intelligence as part of overall analytics. All recommended Extreme switches support the Application Telemetry feature, providing valuable analytic information without the need for standalone sensors or collectors. Application Telemetry leverages the switches embedded sFlow support and ACL based mirroring to feed information to the ExtremeAnalytics Engine for analysis, providing granular end-to-end insights to the applications traversing the network. The recommended Extreme APs leverage Extreme's flow-based architecture enabling deep packet inspection (DPI) to be performed at the AP for granular Layer 7 application visibility and control. The embedded DPI engine in the APs can detect and identify thousands of applications in real time and report the information to ExtremeAnalytics. Leveraging embedded capabilities of the proposed Extreme infrastructure enables BCS IT to obtain contextual data about your applications at unprecedented scalability and without performance degradation. ExtremeAnalytics combines these flow-based details with a rich set of application fingerprint techniques to detect and measure on-premise applications (SAP, SOA traffic, Exchange, SQL, etc.), public cloud applications (Salesforce, Google, email, YouTube, P2P, file sharing, etc.), and social media applications (Facebook, Twitter, etc.). ExtremeAnalytics can identify more than 2,300 applications and includes more than 10,000 behavioral detection-based fingerprints to ensure that even applications that attempt to conceal themselves, such as P2P, are detected appropriately. A real-time dashboard gives you a view of all applications across locations and your entire wired and wireless network.

- Please provide Mean Time between Failures (MTBF) for individual network elements.

  Response: Comply. Extreme publishes MTBF values online for all of their products; this information is provided below and is also accessible at: https://www.extremenetworks.com/support/mean-time-between-failures/.

Product	**MTBF** (calculated @25°C)
AP510i	322,164 hours
AP560h	313,544 hours

E2120	50,859 hours
5520-48W	TBD
X590-24x-1q-2c	435,074 hours

- Access points should offer flexible mounting options (example under seat mounting).

  Response: Comply. Extreme offers flexible mounting options for all of their access points. The outdoor AP560 series delivers flexible deployment options—from under-seat-mounted, to pole-mounted, to APs with software selectable antennas—to ensure an exceptional mobile experience throughout the entire stadium. The proposed AP560h features an integrated 30/70-degree software definable antenna, this allows for a single mounting point and tuning the signal beam width without needing to re-deploy ladders and lifts. This all-in-one unit has a distinct deployment advantage over competitive solutions in that no external cables are required to attach separate antennas. Various outdoor mounting brackets are available to support multiple mounting methods; the proposed solution includes the articulating mounting bracket (Part # MBO-ART02). The indoor AP510 comes with a Main Mounting Bracket (Part # 37201) that can be used to mount the AP on flat surfaces (e.g. dry/wood wall or a solid flat ceiling) or a suspended/drop ceiling with a flat t-bar and no ceiling tile protrusion. Various optional mounting brackets are also available to support alternative mounting methods including to a beam, junction box, or protruded ceiling with varying width t-bars.

Section 4: Design Methodology

The purpose of this section is to obtain information about your design methodology relevant to high-density arena deployments to meet our current and future needs. Please include specific details regarding the following subjects:

4.1 AP Placement Philosophy

This section shall include details on manufactures/vendors recommendations for the placement of APs.

Response: In the high-density seating bowl, proper placement and directionality of antennas is paramount to successfully balancing the coverage and capacity requirements of the venue. In areas visible by patrons, we strongly consider architectural surroundings and blending with the physical environment. The directional antennas required are comparable in shape and size to many DAS antennas on the market. We commit to work with BancorpSouth Arena to ensure the most appealing placement without sacrificing Wi-Fi delivery.

Using the information supplied by the RFP and vendor walkthrough, we determined the viability of overhead mounting locations. The distance to the overhead mounting locations was calculated at range of maximum of approximately 50 feet from the coverage areas. Mounting real estate is often a premium and this opportunity presents a viable and more affordable method to cover portions of the seating bowl space with purposeful directional antenna.

4.2 Roaming Behavior

This section shall include details on manufacturers/vendors methodology for roaming.

Response: Our high-density design proposal provides connectivity throughout the venue including all seating sections and other major traffic areas with seamless roaming.

4.3 Delivery Methodology

This section shall include details on manufacturers/vendors methodology and approach to delivering a solution for BancorpSouth Arena and Conference Center.

Response: Our process is a repeatable one that we typical use when approaching any arena project. These steps can be summarized as follows:

- Preliminary Site Assessment
  - ✓ Site walk
  - ✓ Photographs
  - ✓ Floor plan review
  - ✓ Identify AP mounting point “opportunities”

- Statement of Work development
  - ✓ Extended facility survey for Wi-Fi validation
  - ✓ Final AP mounting points determined
  - ✓ Cable paths finalized
  - ✓ IDF closets and equipment infrastructure
  - ✓ Backend Wi-Fi services and environment detailed

- Statement of Work Acceptance
  - ✓ Responsibilities and Services detail
  - ✓ Project Deliverables
  - ✓ Acceptance Criteria

Using this approach ensures complete delivery of our goals of providing a high-density Wi-Fi system to all users at BancorpSouth Arena and Conference Center.

4.4 Physical Arena Survey

This section shall include details on manufacturers/vendors recommendation and approach to performing a physical arena survey.

Response: As detailed in the section 4.3, Extreme strongly encourages a design survey to finalize coverage and penetration parameters for the intended wireless equipment. Furthermore, during post-installation testing and validation, additional site survey work is required to properly tune the access point positioning and radio power parameters.

4.5 Other Relevant Information

This section shall include any additional information you feel is relevant for us to understand your design methodology.

Response: Architecting a solution to meet the needs of BancorpSouth Arena and Conference Center requires careful consideration of the property's current needs and future events. Through our experience in delivering Wi-Fi networks in high-density venues, we have learned that it is simply not enough to blanket the airspace with a Wi-Fi signal. Success requires careful consideration of the physical structure, knowledge of typical capacity and application use in each area of the venue, and desired service delivery. Those local variables are then aligned to the framework of today's 802.11 radio signaling and Wi-Fi propagation standards. Our goal is to exceed service delivery expectations, while keeping in perspective that a great user experience is the ultimate testament to a successful high-density Wi-Fi deployment in an arena. Achieving these goals requiring advanced services and application delivery is tantamount to designing and building a solid foundation. These principles have been applied to the very design solution presented herein.

Section 5: Design

The purpose of this section is to obtain information about your recommended design with clear details on how the solution is relevant to our high-density arena deployment. Please include specific details regarding the following subjects:

5.1 Design Overview

This section shall include a description of recommended solution. Please provide necessary technical information regarding each network element as well as ancillary products necessary for end-to-end Wi-Fi network deployment in BancorpSouth Arena & Conference Center. This section shall include the recommended products clearly highlighting their features and capabilities, as well as use cases (i.e., suitable deployment scenarios).

Response: The recommended solution and preliminary high-density 802.11ax wireless design for BancorpSouth Arena & Conference Center has been developed based on a proven manufacturer-lead design methodology. Our recommended solution incorporates a fault tolerant, highly resilient network to service the high-density Wi-Fi. The applications, service delivery, network monitoring, and reporting is provided through a single management interface, with a single database, using the Extreme Management Center application suite. The recommended solution has been successfully deployed in multiple venues similar in the size and scale of BancorpSouth Arena & Conference Center.

Wireless System

Extreme Campus Controller (XCC)

Two E2120 XCC appliances will be used to provide WLAN management and support for the access points. Each E2120 appliance can support 2,000 access points in standard mode (4,000 access points in fail-over mode) and 16,000 clients (32,000 clients in fail-over mode). The E2120 has 2 x SFP+ ports (capable of 1/10Gbps) and 2 x 1 Gbps ports. Each appliance is equipped with redundant internal power supplies.

Overhead Wi-Fi 6 Access Points

The AP560h access point is proposed for all overhead catwalk and rigging areas. The AP560h is part of the 560 series platform, leveraging the latest Wi-Fi 6 technology. The AP560h streamlines the deployment process with an integrated 30/70 degree software definable antenna. This means a single mounting point and tuning the signal beam width without needing to re-deploy ladders and lifts.

Indoor Wi-Fi 6 Access Points

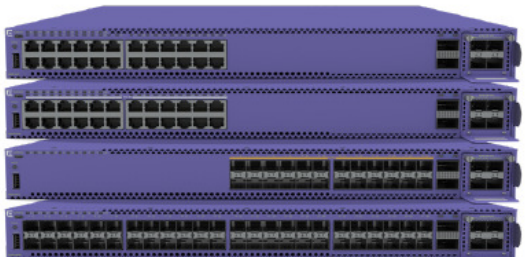
The AP510i is proposed for all other areas, such as back of house, offices, conference and services level areas. The AP510i was the basis for the AP560 development and shares the Wi-Fi 6 performance characteristic in an indoor form factor. The AP510i comes with an integrated omni directional antenna array. Similarly, as with the 560 series, the AP510 series also includes a Bluetooth Low Energy (BLE).

Core (MDF)

The core network switches consist of two **X590** switches to service the IDF closets and ancillary spaces with redundant 10 Gigabit Ethernet (GbE) uplinks. Each switch comes with 24 line-rate 10Gbps SFP+ ports and two QSFP28 ports.

The X590 core will be interconnected via dual 100Gbps inter-switch links using direct attach cables. Each switch will be configured with hot swappable redundant power supplies and fans. The switches will be configured with Multi-Switch Link Aggregation (MLAG) and Virtual Redundant Routing Protocol (VRRP) to provide link and Layer 3 redundancy. MLAGs improve network resiliency, in part by routing network traffic around bottlenecks, reducing the risks of a single point of failure, and allowing load balancing across multiple switches. All switches run a common operating system, ExtremeXOS, insuring ease of use. Each side of the MLAG will be configured with a virtual chassis to allow future port expansion if needed.

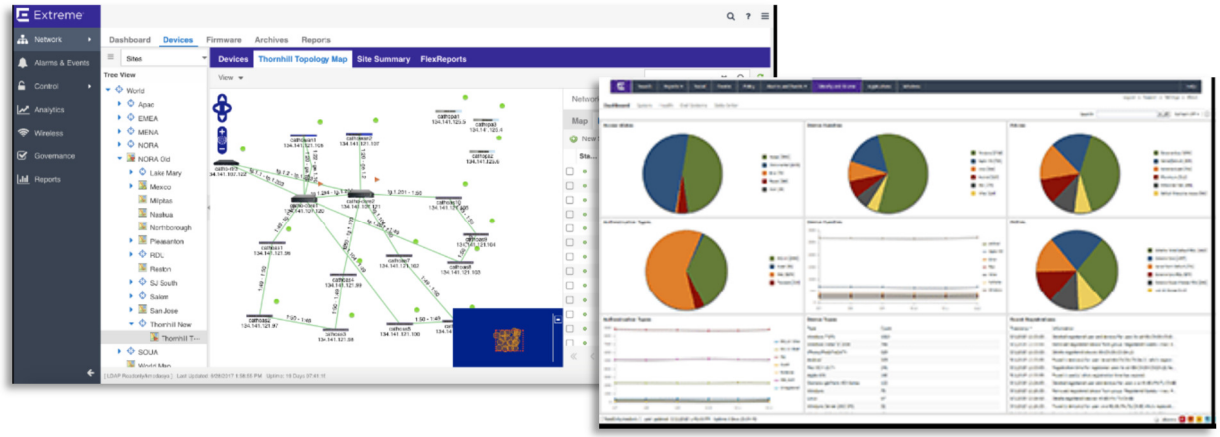
IDFs



All IDF closets will be dual homed between physical cores using Layer 2 Link Aggregation protocols (LACP) delivering a simple fault tolerant design. The IDF closets are designed using the Extreme **5520-48W** switches are proposed for the IDF; each switch provides 48x 10/100/1000Base-TX 802.3at (90W) PoE ports, 2x QSFP28 ports that can be used for stacking or Ethernet front panel ports (data rate options per port with channelization are 4x 10Gb SFP+, 4x 25Gb SFP28, 1x 40Gb QSFP+, or 2x 50Gb), and 1x VIM slot that can be populated with a variety of optional modules. Each IDF switch will be populated with 2x 10Gb SFP+ transceivers to connect to the core.

Network Management

The network will be managed and monitored using the Extreme Management Center software suite. Extreme Management Center uses a combination of SNMP polling and CLI scripts to provide detailed reporting on the state of the network. Both wired and wireless networks are monitored using the same application and share a common global database. Extreme Management Center will be configured to automatically backup all LAN switch and WLAN configurations and is a central repository for firmware distribution. End systems (wired or wireless) can be located and pertinent connectivity statistics can be viewed. For example, if the client is connected via a wireless connection the end systems RSSI, current access point and connected operating system can be viewed.



5.2 Access Point Placement and Antenna Positioning

This section shall include details on manufacturers/vendors recommendation of the placement of access points to ensure capacity and coverage. Also detail any recommendation for antenna positioning.

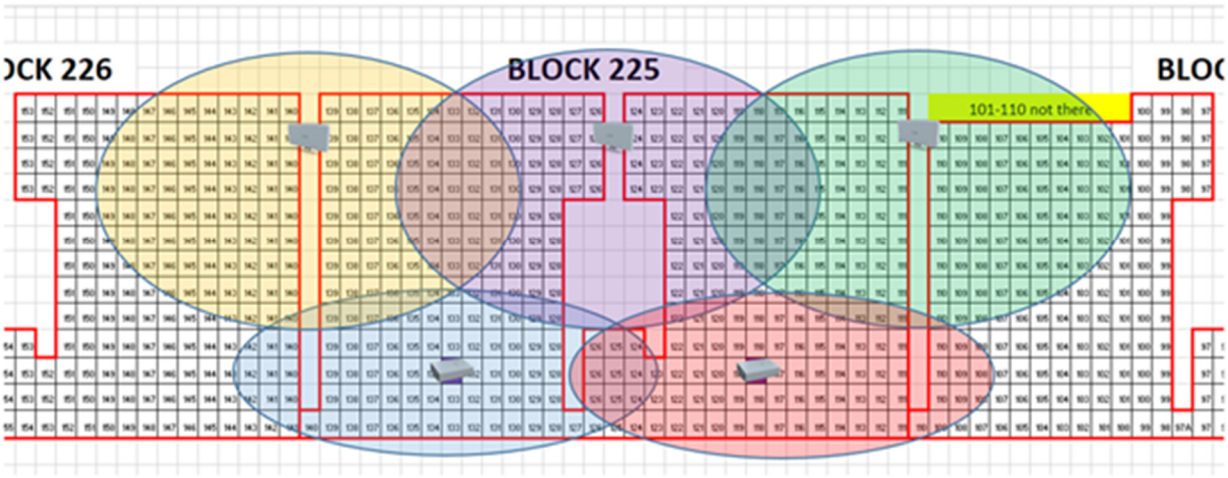
Response: Placement of access points requires a multi-step process of accessibility, best practices and validation. Extreme's proposal is designed to support high-density seating sections and support for density on the arena floor for concerts. Highly directional access points will be mounted on the I-beam structure directly below the ceiling and overhead from the fans. Conduit housing cabling will provide data and power to the access points and will terminate to a network closet (IDF) nearby. Each access point will be angled toward a seating section and coverage area below and specifically designed to cover a given number of seats ensuring that each fan has a consistent user experience.

5.3 Wi-Fi Capacity

This section shall include manufacturers/vendors recommendation on Wi-Fi Capacity for the proposed solution.

Response: The distance or reach for a client to communicate to an access point radio is between 50-75ft; limited by the power output of the handheld device. The effective operational distance is further impacted by environmental noise, CCI, client capacity, and FSPL (Free Space Path Loss).

Using an intentional coverage model, overhead directional antenna will be used to deliver a high-density capacity model as opposed to a traditional coverage model. To accomplish this, directional antenna, set to 30 or 70 degrees, will be provisioned to deliver Wi-Fi coverage to finite seating areas.



5.4 Wi-Fi Inventory by Level

This section shall include details on the recommended solution and antennas for each Area/Level of the arena.

Response: Recommended AP for each area of the arena are detailed in the table below.

Design Inventory by Level							
Location	Description	AP510i Indoor Internal	AP560i IP67 Omni	AP560h IP67 30/70		Total Access Points	
Arena Bowl	*Complete Arena Seating including Floor*			45		=	45
Concourse	*Indoor concourse spaces*	25				=	25
Conference Area	*Indoor conference areas*	40				=	40
Stage Area	*Stage and back of house coverage*	29				=	29
Upper Lobby	*Lobby Entrances*	8				=	8
						=	
Spares		2	2	2		=	8
Totals:		104	2	47		=	155

5.5 Advanced Functionality and Key Differentiators

This section shall include details on the advanced functionality and key differentiators of the recommended solution.

Response: As a leader in the sports & public venues industry, Extreme delivers secure, quality, connected in-venue experiences utilizing their purpose-built IT networking solutions and proven deploy methodologies for high-density venues. Key features of the proposed Extreme solution include:

- **Proven, Purpose-Built and Future Proof Technologies** – Extreme's solutions are purpose-built to work within the unique physical characteristics of arenas and other large public venues. As evidence of Extreme's pioneering approach to the venue market, Extreme was first to market to launch the industry's first and only stadium-ready Wi-Fi 6 portfolio, built off seven years of learned lessons within venues. This product family has been specifically engineered from the chipset to the outer shell with venues in mind.

- **Strong Deep Packet Inspection (DPI) Capabilities** – ExtremeWireless APs support a flow-based architecture enabling deep packet inspection to be performed at the AP. This provides embedded visibility and control for thousands of applications, all without impacting AP traffic processing or sacrificing performance.

- **Centralized Infrastructure Management and Analytics** – A unique advantage of the Extreme technology is the ability to deploy meaningful policies across the entire network based on the person's or device's role within the venue (example - Media, Fan, POS). Centralized control and a 360-degree view across all users, devices, locations, apps, and wired/wireless networks ensures differentiated device provisioning, automated user onboarding, and seamless network provisioning.

Furthermore, Extreme is the only networking manufacturer with a dedicated venue-focused business unit which is involved in every aspect of venue design, deployment, and support. In fact, though Extreme's technology is exemplary, most customers cite Extreme's manufacturer-led hands-on approach to design and support as the prime differentiator of partnering with them.

5.6 Other Relevant Information

This section shall include any additional information you feel is relevant.

Response: As part of the focus on Sports and Entertainment, Extreme Networks maintains a Partner ecosystem of strategic technology providers affiliated with venues. These relationships help ensure the current venue design standards stay compatible with major stadium providers for ticketing, point of sale, venue marketing and management organizations. It also includes technology integration with leading mobile application developers and captive portal providers that complement the High-Density Wi-Fi Network. Extreme's experience in Sports and Entertainment has assisted venue's by introducing relationships to accelerate their digital transformation and mobile adoption rates for guests and conference center attendees.

Section 6: References

The purpose of this section is to obtain information about your past experience in deploying high density Wi-Fi solutions. Provide customer reference information for at least five customers; these should be customers of a similar industry to BancorpSouth Arena & Conference Center, at whose site the vendor has installed a similar solution (similar in size, scope, or technology). Please provide Contact Name, Company Name, Physical Address, Contact Phone Number, and Contact E-mail Address (if available).

Response:

Extreme has a proven track record in sports organization venues, providing the best high-density Wi-Fi solutions, along with intelligent Wi-Fi analytics technology based on the ExtremeAnalytics platform. Extreme is the *Official Wi-Fi Solutions Provider of the NFL* as well as the *Official Wi-Fi Analytics Provider of the NFL*. Extreme has also delivered wired and Wi-Fi connectivity or Wi-Fi analytics solutions to 24 NFL stadiums, including the past six Super Bowl venues.

The following organizations would be glad to speak to you regarding their Extreme solution.

Customer	Contact Information
Fred Kirsch, New England Patriots VP Digital Content	(508) 384-4380 FredK@patriots.com
Russ Hudson, Tennessee Titans Director Information Technology	(615) 565-4051 RHudson@Titans.nfl.com
Chip Suttles, Seattle Seahawks Vice President Technology	(425) 203-8009 ChipS@seahawks.com
Jake Kiser, Cincinnati Bengals Senior Director of Technology	(513) 455-8336 Jake.Kiser@Bengals.NFL.Net
Roy Sommerhof, Baltimore Ravens VP of Stadium Operations	(410) 986-5220 Roy.Sommerhof@ravens.nfl.net
Kenny Ansel, Green Bay Packers	(920) 569-7372

Director of Information Technology	AnselK@packers.com
***New Contact TBD*, Buffalo Bills, Buffalo Sabres & BlueCross Arena**	TBD
Glenn Johnson, Carolina Hurricanes VP of Information Technology	(919) 467-7825 glennj@carolinahurricanes.com
James Hammond, Carolina Panthers Director of Information Technology	(704) 358-7483 James.Hammond@Panthers.NFL.com
Michael Webb, Jacksonville Jaguars Director of Information Technology	(904) 633-6000 ext.6532 webbm@nfl.jaguars.com
Jeff Schmitz, Houston Texans Senior Director of Information Technology	(832) 667-2000 jschmitz@houstontexans.com
Sam Hart, Tampa Bay Buccaneers Director of IT	(813) 870-2700 x1342 shart@buccaneers.nfl.com
Seth Graham, Pittsburgh Panthers Assistant Athletic Director for Information Technology	(412) 648-8246 sgraham@athletics.pitt.edu
Joe Curbelo, Miami Dolphins Director of Technology Services	(305) 943-6586 JCurbelo@dolphins.com
Matt Vincent, University of Florida Athletic Assoc. Director of Information Technology	(352) 692-6114 MattV@gators.ufl.edu
Bob Hartland, Baylor Bears Director of IT	(254) 710-1011 bob_hartland@baylor.edu

We also encourage you to read about additional **Extreme Sports and Public Venues Case Studies** found in the All Resources section of:

https://www.extremenetworks.com/resources/?industries%5B%5D=58&types%5B%5D=case_study.

Section 7: Pricing

City of Tupelo - Bancorp South Arena & Conference Center				
QTY	Part #	DESCRIPTION	UNIT PRICE	EXT. PRICE
		Wireless Controller		
2	30138	ExtremeCloud Appliance E2120 – expandable to 2,000 APs	$ 12,537.44	$ 25,074.88
2	30527	1100W Redundant Power Supply for E3120	$ 188.05	$ 376.10
4	5601313-U1	USA, Cord, NEMA 5-15, C13 (Cable)	$ 10.61	$ 42.44
2	30323	ExtremeCloud Appliance - Physical appliance Activation Key	$ 0.71	$ 1.41
1	XCC-ORC-P-100	Permanent license for 100 APs	$ 4,573.17	$ 4,573.17
2	XCC-ORC-P-25	XCC 25 Dev Adoption Perm License	$ 1,143.29	$ 2,286.59
4	10GB-C03-SFPP	SFP+ Pluggable Copper Cable 3M	$ 64.02	$ 256.10
		Management		
1	NMS-ADV-25	XMC Advanced 250 Device/ 250 AP's	$ 9,144.51	$ 9,144.51
		Access Points and AP Drops		
47	AP560H-FCC	Access Point With Intergrated External Directional Antenna	$ 1,398.29	$ 65,719.76
45	EIO-03-SP	Cable protection cover	$ 37.32	$ 1,679.27
45	MBO-ART02	Articulating bracket	$ 83.05	$ 3,737.20
104	AP510I-FCC	Dual Radio 80 2.11ax/ ac/ abgn, 4x4:4 MIMO Indoor 11ax access point . Internal Antenna	$ 568.54	$ 59,127.80
147	C-CAT6SINGLAPDROP	Single Cat 6 Access Point Network Drop	$ 65.00	$ 9,555.00
10	PS-ESU-1	EXTREME SERVICE UNITS, SINGLE	$ 2,537.05	$ 25,370.52
		Network Switches		
2	16790	ExtremeSwitching X590 base unit with 24 1Gb/10 Gb SFP+ ports, 1 10Gb/40Gb QSFP+ port, 2 10Gb/25Gb/40Gb/50Gb/100Gb capable QSFP28 port s, 2 unpopulated power supplies slot s, 4 unpopulated fan module slot s	$ 4,577.20	$ 9,154.39
8	17115	Fan module, Front to Back airflow	$ 111.59	$ 892.68
4	10960	770W AC power supply, Front-to-Back airflow	$ 265.61	$ 1,062.44
2	16795	ExtremeSwitching X590 ExtremeXOS Core license upgrade from Advanced Edge	$ 948.29	$ 1,896.59
4	10099	Power Cord	$ 10.61	$ 42.44
2	10411	100Gb, QSFP28-QSFP28 Direct attach passive copper cable, 1m	$ 132.44	$ 264.88
8	10302	10Gb, 10GBASE-LR, 10km	$ 812.20	$ 6,497.56
4	5520-48W	48 x 10/100/1000BASE-T 802.3bt 90W PoE ports, includes 2 x Stacking/QSFP28 ports, 3 fan modules, 1 VIM slot	$ 3,181.10	$ 12,724.39
4	10941	1100W AC PSU FB	$ 471.95	$ 1,887.80
4	10099	Power Cord, 13A, USA, NEMA	$ 10.61	$ 42.44
8	10302	10Gb, 10GBASE-LR, 10km	$ 812.20	$ 6,497.56
		Fiber		
375	C-W3006NG-01	Superior Essex 6 Strand OM3 MM Fiber I/O Rated	$ 0.65	$ 242.31
2	C-RS1-QTR	Superior Module 12/24 Port Wall Mount LIU	$ 146.00	$ 292.00
2	C-APL-QTR-DL50L	Quiktron Q-Series 12-Strand, LC Duplex, PB Insert, MM Aqua LC Panel	$ 32.00	$ 64.00
12	C-LCS-OM4-UPC-09	ilsentech OM3 LC Connectors	$ 45.00	$ 540.00
2	C-LC-LC-1M-OM3-FIBERPATCH	1 Meter 10G LC/LC Duplex 50/125 Multimode Fiber Optic Patch Cable	$ 21.00	$ 42.00
0	C-MISCFIBERMATERIALS	Miscellaneous Fiber Materials for Pole Installations	$ 25.00	$ -
2	10301	Extreme SR SFP module	$ 475.61	$ 951.22
		TOTAL OF PARTS		$ 250,039.43
1	SERV-NETWORK05	Configuration of Switches and Wireless	$ 3,380.00	$ 3,380.00
1	SERV-CABLING04	Installation of Network Cabling and Access Points	$ 19,175.00	$ 19,175.00
1	SERV-MAINTENANCE01	24 Days of Support	$ 19,200.00	$ 19,200.00
		TOTAL OF LABOR		$ 41,755.00
		GRAND TOTAL		$ 291,794.43

Location	Quantity	Part Number	Description
WLAN Controller			
	2	30138	ExtremeCloud Appliance E2120 – expandable to 2,000 APs
	2	30527	1100W Redundant Power Supply for E3120
	4	5601313-U1	Power Cord
	2	30323	ExtremeCloud Appliance - Physical appliance Activation Key
	1	XCC-ORC-P-100	Permanent license for 100 APs
	2	XCC-ORC-P-25	XCC 25 Dev Adoption Perm License
	4	10GB-C03-SFPP	SFP+ Pluggable Copper Cable 3M
Management			
	1	NMS-ADV-25	XMC Advanced 250 Device/ 250 AP's
Core Switch	2	16790	ExtremeSwitching X590 base unit with 24 1Gb/10 Gb SFP+ ports, 1 10Gb/40Gb QSFP+ port, 2 10Gb/25Gb/40Gb/50Gb/100Gb capable QSFP28 port s, 2 unpopulated power supplies slot s, 4 unpopulated fan module slots
	8	17115	Fan module, Front to Back airflow
	4	10960	770W AC power supply, Front-to-Back airflow
	2	16795	ExtremeSwitching X590 ExtremeXOS Core license upgrade from Advanced Edge
	4	10099	Power Cord
	2	10411	100Gb, QSFP28-QSFP28 Direct attach passive copper cable, 1m

	8	10302	10Gb, 10GBASE-LR, 10km
IDF Closets			
	4	5520-48W	48 x 10/100/1000BASE-T 802.3bt 90W PoE ports, includes 2 x Stacking/QSFP28 ports, 3 fan modules, 1 VIM slot
	4	10941	1100W AC PSU FB
	4	10099	Power Cord
	8	10302	10Gb, 10GBASE-LR, 10km
Arena Bowl			
	45	AP560h-FCC	Access Point with Integrated External Directional Antenna
	45	EIO-03-SP	Cable Protection Cover
	45	MBO-ART02	Articulating Bracket
Concourse			
	25	AP510i-FCC	Dual Radio 80 2.11ax/ ac/ abgn, 4x4:4 MIMO Indoor 11ax access point . Internal Antenna
Conference Area			
	40	AP510i-FCC	Dual Radio 80 2.11ax/ ac/ abgn, 4x4:4 MIMO Indoor 11ax access point . Internal Antenna
Stage Area			
	29	AP510i-FCC	Dual Radio 80 2.11ax/ ac/ abgn, 4x4:4 MIMO Indoor 11ax access point . Internal Antenna
Upper Lobby	8	AP510i-FCC	Dual Radio 80 2.11ax/ ac/ abgn, 4x4:4 MIMO Indoor 11ax access point . Internal Antenna

Appendix A – Data Sheets

Please see the following URLs for Data Sheets on the proposed Extreme solutions.

ExtremeWireless AP 510i/e: https://cloud.kapostcontent.net/pub/7a4866d1-4159-4610-99c1-b950e85317a1/ap510-data-sheet?kui=98OlHzxI2sMxLtQR0ZjUaQ

ExtremeWireless AP560: https://cloud.kapostcontent.net/pub/cac96f32-5940-4975-b4dd-8cf625bd0a65/ap560-datasheet?kui=71tWW8LDUE7nEyOEQsnHmw

ExtremeWireless Appliances: https://www.extremenetworks.com/product/wireless-controllers/

ExtremeSwitching X590: https://cloud.kapostcontent.net/pub/fc6ef563-bdd7-439f-8c92-cc7f0fed8db5/x590-data-sheet

ExtremeSwitching 5520: https://www.extremenetworks.com/product/5520-series/

Extreme Management Center:
https://www.extremenetworks.com/product/extreme-management-center/

Appendix B – Heat Maps

Please see separate attachment.