SMART INDUSTRIAL PARK

CHATTANOOGA, TN

PeachCorp

"Where business meets innovation"

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1. EXECUTIVE SUMMARY

As indicated in the proposal, Peach Corporation has located and acquired an existing, operational industrial park in Chattanooga, TN. Evaluating the new site's eight buildings and their existing technology is required to incorporate the site into the existing internal PeachCorp network. Furthermore, it is desired by PeachCorp to utilize each building in the most efficient manner possible to best suit tenants. The proposed project will involve the following tasks to bring the new site into compliance as directed by PeachCorp:

- An initial timeline of ***100 days***, identifying six significant milestones including the installation of major network components
- An initial budget of ***$1,654,000*** for equipment, labor, and salaries for project completion & Year 1
- Detailed IP addressing outline, subnet codes and summarized IP routes as specified by PeachCorp standard practices
- Installation of fiber cabling connecting the entire campus with redundant links to ensure stable connectivity
- Complete list and specifications of network equipment utilized to connect to the PeachCorp WAN
- Implementation of wireless network meeting the required 802.11ac standard.
- Implementation of VOIP telephone network with failover emergency phone system.
- Diagram of network architecture
- Documented backup and disaster recovery plan

In addition to meeting all PeachCorp requirements, our proposal includes the implementation of a separate ultra-high-speed 10 Gbps Internet connection to lay the foundation for one of the most powerful networks in the country. Implementation of the network is in direct correlation with the goals of the city of Chattanooga to remain on the cutting edge of technology and attract only the most innovative companies in the area. With this significant infrastructure upgrade, PeachCorp can genuinely market the Chattanooga site as their first "Smart Industrial Park." Our team will offer the fastest speeds in both our wireless and wired networks without ever compromising security or stability. Current tenants will experience *zero downtime* during the transition and will never have to worry about compatibility of pre-existing systems. Furthermore, all internal PeachCorp operations will be separated from our tenant Internet traffic to increase security. This separate connection to the WAN will provide privacy and redundancy by serving as a backup connection to the Internet in case of an outage. By utilizing multiple ISPs, our team ensures the best regarding service and reliability. Along with the blazing 10-Gig network, PeachCorp-Chattanooga tenants will be furnished the following **additional services**:

- Amazon Web Services and Microsoft Azure
- Microsoft Dynamics and Salesforce
- Microsoft Office 365 services including, Exchange email services, Office apps, OneDrive, and Skype for Business
- Local partnership with University of Tennessee-Chattanooga
- IoT and mobile device management and support
- Network managed accounts and services
- Secure segmentation of network resources and operations

- State of the art conference and training rooms
- IT support staff
- 48-hour workspace setup option

An essential component of our plan is the implementation of the cloud and cloud services. Cloud services allow for flexibility in the workplace. Tenants will have the option to store documents securely along with the ability to access anywhere. Our assistance with onboarding new and existing tenants will provide tenants the expert knowledge and resources to improve their business. Our team is proposing hiring two new employees with the skills to manage and configure cloud services of AWS, Azure, or Google. They will also act as a guide and technical liaison for our clients as they begin to utilize hosted services.

Upfront costs will consist of $1,654,000 in terms of equipment, materials, labor and additional staffing. Annual maintenance contracts and certifications are expected to be approximately $15,000. Annual support expenses are projected at $534,000. Revenue projections for the first two years will require running in deficit but cover most initial labor costs. Year 2 revenues are projected to cover 50% of the equipment costs allowing for profits in Years 3 and 4. *Our projected break even point is Year 5*, which is typical amongst many types of investments.

After determining average real-estate costs in the Chattanooga area, it was calculated that PeachCorp could lease the property, in its current, unimproved state, and expect to earn revenue of appx. $881,600 per annum. This projection is calculated by multiplying the current property value per square foot ($5.51) by the total square footage of leasable space (appx. 160,000 square feet). With our improvements, PeachCorp can earn an annual increase of revenue for our existing properties of $402,000.

Our Mission

When a client considers moving their business to the Chattanooga site, they will know that the technology our team provides them is state of the art. Our team will be providing Internet speeds that will far surpass their expectations. Existing tenants and those in the future will be granted individual network login accounts for all their personnel. These accounts allow our tenants to use our cutting-edge wireless anywhere they go on campus and from any device. It will also allow for tenants to securely sign-in to workstations which are provided and managed by our IT staff. Ultimately, making the idea of a near effortless customer experience a reality.

They will feel confident that our staff can meet their service needs both on-site and in the cloud. When they arrive at the Chattanooga campus, our tenants will have Skype for Business at their disposal for teleconferencing, on-the-go. Our clients will not be burdened with managing their own email and file storage. Our team will be providing Microsoft Business suite email through Exchange and 1 TB of file storage space through OneDrive. Our staff will configure their domains, manage their accounts, and assist with training to use these platforms from anywhere in the world, anywhere they go. These additional services will certainly provide us an advantage over competitors in the Chattanooga area.

2. BUSINESS CASE

Market

As of Sept. 28, the U.S. investment in data centers has already achieved a record $18.2 B in 2017. According to Jones Lang LaSalle IP, Inc. a Global Data Center Solutions team boasting overseeing 92 million square feet of facilities, “Data Center Real Estate Investment Trust REITs are forecasting a return on investment in the 10-15% range, impressive compared with other types of funds which are performing in the single digits.” Amazon, leading the market by some estimates as much as 70%, is primarily housed in Loudoun, Va. Their technology real estate market strategy is to have 100% of new construction and capacity already conscripted prior to their contractor, Ragingwire breaking ground.

Contrast Google, a recent newcomer to the foot race that is data center REIT, in the last two years has committed to building not one, but two major data centers. At a cost of $600 million dollars apiece. One in Douglas County, Ga. Another in Clarksville, TN. At last reports, they appear to be dragging their feet in building out. Recent bankruptcy, Phoenix Fiber of Tennessee, blamed on Google foot-dragging. Investors Guide Seeking Alpha reports “Data center REITs are higher than 12%, though leasing concerns linger.” CenturyLink and Level 3 both divesting and working with Digital Realty for colocation strategies.

If PeachCorp should be fortunate enough to find prospective customers which like the Amazon customers are willing to sign on the line to purchase full capacity of any size data center build out, your IT Solutions team stands ready and eager to assist in technology design strategy while PeachCorp Realty handles zoning, infrastructure, property acquisition, and when necessary construction.

Chattanooga Commercial Industrial Real Estate Market assessment. At present in addition to the approximately 160,000 square feet of non-technology enabled properties now owned by PeachCorp, there are 1.4 million square feet of available commercial industrial real estate of Flex-Space (balloon constructed buildings). The standard 36 months, calculated fair market real estate lease rate ranges from $3.50- $11.00 PSF. With the average mean at $5.51 PSF. The existing Chattanooga Chamber of Commerce INCubator, a future business partner, lease 127,000 sq. ft. of commercial industrial technology enabled real estate, rates are currently $6-$10 PSF.

Proposal

Our team herein proposes an upfront investment in capital equipment and labor of approximately $1.6M. ($653,557 in technology equipment assets, and $975,223 in initial labor), or $9 PSF for improvements to future-proof the existing facility. After PeachCorp has advanced this existing industrial park into a Smart Technology Industrial Park our new marketed PSF rate of $8 PSF, places us squarely in the Chattanooga Smart Technology Commercial Industrial Real estate market, on par with our Chattanooga Chamber of Commerce INCubator partner, and within the 75% percentile of the existing unimproved industrial commercial real estate market in Chattanooga.

Return

As the current documented rate, $5.51 the square foot rate PeachCorp could expected from acquisition and operations of their 160,000-square foot property, in its current unimproved state. Projected revenues from the unimproved Chattanooga properties should be forecast at approximately, $877,636.95 per annum. With our improvements, PeachCorp reaps an annual increase of revenue for our existing properties of $402,000 per annum. Additional properties leasing revenue can be generated by applying these same solutions. 1.4 million sq. ft. of unimproved industrial real estate properties within the Chattanooga area. With preceding customer contracts lease, technology enable, sublease at a profit.

3. SYSTEM OVERVIEW

3.1 PROBLEM STATEMENT

First impressions of the newly acquired Chattanooga facility would be that it is “dated”, by the nature of an unsupported PBX, no wireless facilities, older Cat 5 and DeviceNet cabling. Our priority would be to complete what appears to be a fragmented incomplete network, bringing this facility into compliance with TIA and PeachCorp standards, utilizing future-proof components with which to lay the infrastructure for a 21st Century Smart Park.

Our existing tenants should be invited to a discussion about a technologically enabled future for this site. Soliciting any plans or ideas they may have about leveraging new technologies for their business benefits. The Building 7 tenant comes to mind. As they have requested “state of the art” cabling, and lots of it, it can be anticipated that this customer is willing to have the discussion of future expansion plans now. And they would appear willing and able to pay for accommodations. The very prototype for our future customer tenants.

3.2 STATEMENT OF OPPORTUNITY

An organization that has at the heart of its mission, an enabler for business startup and expansion, with “cutting-edge smart city/industrial park technology” needs to build an awareness of what is possible. And the right technical approach to business deployment, development, scaling, updating and maintaining. Thus, building a framework which will keep the organization flexible, expandable and relevant in leading edge business tools.

Mobile workers

Many organizations with are seeking to adopt information and communication technologies (ICT) to efficiently manage their mobile workers, meet new demands and counter the increasing cost-pressure. Today’s business managers are managing teams globally. The concept of cloud computing may facilitate a more flexible and economic alternative for those organizations. Cloud computing, is widely recognized as a paradigm shift in information and communications technology ICT services.

Mobile workforce management has progressed from the early days of Vehicle Routing Programs VRP. VRP quickly became cloud based distributed Customer Relationship Management CRM tools, Salesforce, Prosperworks, Base, more. Which begot Enterprise

Resource Planning ERP tools on cloud distributions, SAP ERP, Oracle, NetSuite, and Microsoft. Since 2012 cloud-based design CBD to cloud based manufacture CBM, have included software as a service (SaaS), platform as a service (PaaS), and hardware as a service (HaaS).

Therefore, in any long-term planning, PeachCorp IT Solutions department must provision for infrastructure as a service (IaaS). Microsoft Azure, Google Cloud and Amazon Web Services, are currently leading the enterprise cloud platform market, and have been since 2010.

A Smart Industrial Park would assist small and medium enterprises SME in offsetting the related investments and operational costs of such systems which often represent a considerable barrier for many organizations. Enabling flexibility in business process (customer, supplier and enterprise) paradigm shifts in design, manufacture and business management by offering computing ICT resources. Offering computing resources that complement mobile technologies by means of elastic storage and processing capabilities. Furthermore, cloud computing uniquely addresses specific business demands, flexible pricing schemes, elasticity and scalability as well as ubiquitous and interoperable access. The first layer of our solution is our 10Gbps network and Internet connection. By utilizing the city of Chattanooga's 10 Gigabit internet service, Our team can offer something many other locations cannot.

3.3 CAMPUS LAYOUT

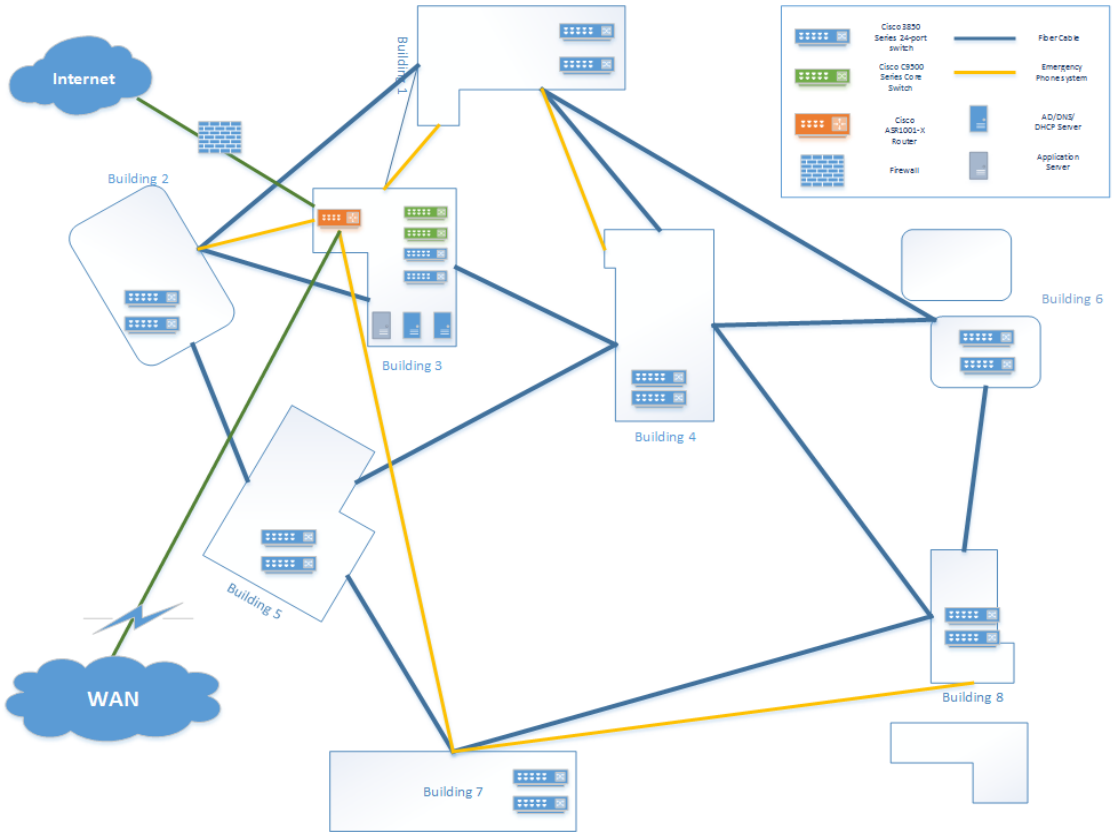


Figure 1- Network Cable & Equipment Layout

3.4 FIBER/CABLE

General

This cabling phase of the project provides for the installation of a category 6 class A (CAT 6A) structured cabling system at the Peach Corporation Chattanooga Tennessee Campus. The primary media is a CAT 6A, 4-pair, 23 American wire gauge (AWG) which is 0.51 millimeter or a measured 0.020 inches, unshielded and shielded twisted-pair, fire safety plenum-rated. The CAT 6A system will be used in conjunction with a newly installed 12-strand optical fiber backbone cable between telecommunication rooms (TR). A TR will be in each building's center. Appropriate testing will be conducted all cabling, copper and fiber, to ensure functionality and durability of lines, connectors and connection points.

Patch Panels and Equipment Racks

Category 6A patch panels will be wired following TIA-568-C.0 and TIA-568-C.1 standards. Patch panels will be provided in each TR. Patch panels will be mounted on size-appropriate relay racks in each TR along with the assigned switches and appropriate wire management panels. The patch panels will be provided in either 48 or 24-port sizes.

Equipment racks will be installed as part of this project. At least one of the racks will be established in each of the TRs, which are in each building's center. Some areas may already have suitable equipment racks existing. Existing racks that can be utilized will not be replaced.

All racks will be equipped wire management systems to ensure a clean installation of patch cords between various components on the equipment rack.

The racks will be securely bolted to the floor, and a ladder rack will be provided for additional support and routing of cables. The equipment will then be mounted on the racks. Each rack will be grounded to its telecommunications main grounding busbar (TMGB) or telecommunications grounding busbar (TGB) with a 6 AWG [4.1 mm (0.16 in)], stranded, green insulated wire.

Optical Fiber Backbone Cable

An armored, 12, Single-mode (OS2) Loose Tube, Gel-Free optical fiber cable will be installed between each building. The fiber backbone is expected to be warranted for 15 years from completion of the installation.

Optical Fiber Connecting Hardware

Lucent connector (LC) type optical fiber connectors will be used to terminate the fiber optic strands.

Data Patch Cords

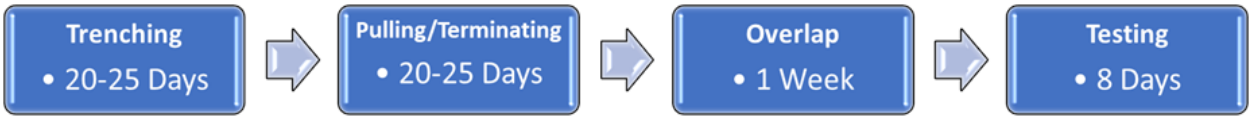
A category 6A data patch cord will be provided for each equipment interconnection. Data patch cords will be installed in length required to provide proper wire management between components installed on the relay racks. Duplex 1 meter and 3 meter (10 ft.) optical fiber jumpers will be provided to allow connection of all installed switches.

Firestopping

Horizontal penetration maybe be made to facilitate installation of copper cables and optical fiber cables. Each penetration will be made, and then the fire rating will be restored using approved materials and methods required by code.

Schedule

Our team anticipates this project will take approximately *60 days* to complete. The schedule is contingent upon the absence of unforeseen delays during installation. Our team plans to perform the work with minimum impact on the staff by working during the hours most advantageous to both Peach Corp and existing tenants. To remain on schedule and under budget all changes and scheduling conflicts must be addressed to the project manager before any schedule changes are approved.



Supplies and Equipment

During the build out phase Peach Corp will be required to provide fiber optic cabling to establish a mesh type architecture backbone. This cabling will be installed into the ground with the use of direct burying methodology. The armored fiber optic cable will be installed into a trench on top of a bed of sand at 1-1.2-meter (3ft.) depth. The supplied trench will be made possible with the use of Ditch Witch RT-45 ride-on trencher.

Project Delays and Damages to Installed Physical Plant

Delays and or damages caused by install contracted technicians, existing tenants, their employees or, agents, assignees, contractors, subcontractors, or any other person(s) not directly employed by Peach Corp will result in proportional delays in the completion of the project. Damage will be repaired or replaced at funding's option. All cost associated with the said repairs or replacement work will be passed along to funding on a cost-plus basis. Any delays caused by the said work will result in a proportional delay in the completion of the project.

3.5 WAN/LAN

Our Team recommend utilizing .38S Group as the primary WAN provider in order to take advantage of a minimum 50 Mbps corporate link. At $1.95 per Mbs each day, if we are pushing network traffic beyond 50 Mbps then ARS becomes the more expensive option. For our Internet connection, our team wishes to jump onto the EPB's Giganet offering of 10 Gbps service. Our bandwidth estimates for the first few years predict not reaching above 1 Gbps. However, as SaaS and PaaS services continue to grow, we will certainly reach over 3 Gbps needs within 8 years.

Cisco ASR 1001-X is our router choice for the new site. It comes with 2 10-GE ports with pay as you go throughput for 2.5, 5, 10, and 20 Gbps. Network modules for QSFP add 40 Gbps connections. This router supports Cisco Software Defined Networking for future configuration changes.

Connectivity between buildings will be made possible using stackable switches in each building that support a virtual backplane. 3850 24xu Cisco switches provide 24 multigigabit ethernet ports. These have wireless controllers built-in, saving some minor costs on the purchase of those controllers. Our team will need 18 of these for supporting 24 network drops plus access points and uplinks to core located in building 3. Utilizing network module cards, our team can complete 40 Gbps uplinks to other buildings.

Remote Work VPN

In order to save costs for VPN licensing, our team recommend using Microsoft RRAS VPN Server or a Linux based OpenVPN server. These options may not have a pretty interface and client, but they will provide appropriate services to clients without license costs and support costs. There is a slight overhead for employee support and configuration but Peachcorp can charge for VPN access as an added feature.

Server and VM Count

Our team estimates utilizing around 20 on-premise servers and the rest utilizing cloud infrastructure. Some examples of these servers includes one Domain Controller and backup with DNS, DHCP, NTP, VPN, one local file server, 2x security servers, 4 management VMs. Our hardware choice is a Dell Poweredge 730xd with built-in RAID/SAN. It has a 12-core 2.2 ghz processor, 128GB RAM, with 5x 400 GB SSDs set to RAID 6 for drive failure redundancy. This provides 1.1 TB space. Using primarily Windows servers, Microsoft's data de-duplication (available in Server 2012 R2) can be implemented to save on a significant amount of storage space. Our team recommends purchasing two of these servers for redundancy and high availability using Hyper-V Replica.

SDN (Software-Defined Networks) will drive network controls of the future and go hand-in-hand with IoT. Our team is deploying only switches and routers that support SDN, but will worry about configuration and policies later. Depending on expertise and training of network administrators, SDN type infrastructure may not be deployed for several years.

All current employees and tenants will be issued Active Directory user accounts. All created accounts will be forced to change password on first login. Only one local domain is necessary, but each tenant's computers and user accounts should be distributed into a dedicated OU. This allows for us to manage each client's computer and account needs easily through Group policy. Passwords shall be set to maximum Microsoft complexity and set to expire every 90 days. The past 4 passwords may not be reused each time a user changes it. All computers are to be set with a 15-minute idle screen lock timer. For security best practices, users will not be configured as local administrators on their computers until a request is made by that user's supervisor to do so.

Chattanooga Site										
		Building 1	Building 2	Building 3	Building 4	Building 5	Building 6	Building 7	Building 8	VLAN ID
LAN	Data - Wired	10.4.16.0 /24	10.4.32.0 /24	10.4.48.0 /24	10.4.64.0 /24	10.4.80.0 /24	10.4.96.0 /24	10.4.112.0 /24	10.4.128.0 /24	100
	Wireless	10.4.17.0 /24	10.4.33.0 /24	10.4.49.0 /24	10.4.65.0 /24	10.4.81.0 /24	10.4.97.0 /24	10.4.113.0 /24	10.4.129.0 /24	200
	Voice	10.4.18.0 /24	10.4.34.0 /24	10.4.50.0 /24	10.4.66.0 /24	10.4.82.0 /24	10.4.98.0 /24	10.4.114.0 /24	10.4.130.0 /24	300
	Video	10.4.19.0 /24	10.4.35.0 /24	10.4.51.0 /24	10.4.67.0 /24	10.4.83.0 /24	10.4.99.0 /24	10.4.115.0 /24	10.4.131.0 /24	400
	R&D	10.4.20.0 /24	10.4.36.0 /24	10.4.52.0 /24	10.4.68.0 /24	10.4.84.0 /24	10.4.100.0 /24	10.4.116.0 /24	10.4.132.0 /24	500
	Bus. Mgmt - PCI	10.4.21.0 /24	10.4.37.0 /24	10.4.53.0 /24	10.4.69.0 /24	10.4.85.0 /24	10.4.101.0 /24	10.4.117.0 /24	10.4.133.0 /24	600
	Network Admin.	10.4.31.0 /24	10.4.47.0 /24	10.4.63.0 /24	10.4.79.0 /24	10.4.95.0 /24	10.4.111.0 /24	10.4.127.0 /24	10.4.143.0 /24	700
	IoT	10.4.1.0/24 - 10.4.15.0 /24								800
	HVAC	10.4.144.1 /28								900
WAN	Chattanooga - CE	10.4.255.254 /30								
	Chattanooga - PE	10.4.255.253 /30								

Figure 2 - Internal IP addressing scheme/VLAN assignment

In order to comply with PeachCorp's existing internal IP addressing scheme our team has assigned the above subnets to our campus. Each building utilizes its own subnet to maintain separation among tenants while still allowing for easy management by the PeachCorp network team. As requested wired, wireless, voice, video, R & D, business and network administration traffic is assigned a specific subnet in regards to building and traffic type. Each building/traffic designated subnet offers support for up to 253 total devices. To maintain ease of control, each subnet referring to traffic type is grouped into VLANs. For example, all wired data traffic across each building is assigned to VLAN 100. Although this traffic utilizes different subnets in accordance to the building code, the VLAN assignment eases the task of network management. All network management will be performed by our PeachCorp network team.

In addition to the required seven traffic designations, our team has also implemented an additional two. Internet of Things (IoT) and Building Operations are assigned to VLANs 800 and 900 respectively. To truly offer services of the future, our team feels it is important to allow connectivity for all devices. IoT devices present so many opportunities for companies wanting to advance their business services. With those opportunities, comes additional responsibilities and risks for a company network. At PeachCorp's Chattanooga site, our team takes ownership of those responsibilities and risks so our tenants don't have too. First, our team segregates all IoT traffic to its own set of subnets and VLAN. Furthermore, additional security measures and monitoring services will be placed on this VLAN to ensure the network is never compromised. With a total of 3,795 addresses available just for IoT devices, clients won't have to worry about lack of availability. The IoT VLAN is designed to serve all non-conforming wired/wireless devices but also serves as premium wireless guest access.

The Building Operations VLAN will contain all Facilities management devices and controllers. HVAC, lighting systems, fire alarms, and other essential systems will be contained here. All internal traffic will travel from our CE router's WAN port across a secured VPN WAN link to our Provider Edge router who will be responsible for connecting to the MPLS Layer 3 VPN PeachCorp internal network. External Internet traffic will be routed out our connection provided by the Chattanooga EPB.

3.6 WIRELESS

Cisco's press release in 2016 predicted that by 2020 there will be 3.4 connected devices per person. Our team has made estimates based on the current known users at the Chattanooga site and our team is anticipating at least 415 concurrent wireless devices over the next 3 years. This assumes an average of 5 connected devices per person. Today's smart cities and state of the art technology campuses will have sensors and IoT everywhere. This includes network connected water meters, electric meters, thermostats, lighting systems, doors, displays, etc.

Devices breakdown for wireless *(Assume 5 devices per user for wireless)*

Total number of current users = 83

Total anticipated concurrent wireless devices = 415

In order to meet the demand of the rising IoT infrastructure pressing against today's networks, hardware capable of handling 802.11ac Wave 2 must be deployed providing wireless gigabit speeds. Our team has chosen the Cisco Aironet 2800 Access Points as the first wireless investment to accomplish these needs. They have Dual XOR radios, meaning that you can disable a/b/g wireless technologies later on to increase throughput and use both radios as 5ghz. This will allow you to extend the feasible use of those APs over a longer period of time. For outdoor coverage, 12 of the Cisco Aironet 1572EAC APs can cover 500,000 sq feet of the campus if strategically positioned.

Building size estimates

Using map ruler in ft. 103.25 ft per notch. Estimated 2,500 meters coverage per AP. 50x50

Total # of indoor APs = 35

Outdoor APs = 12 to cover entire square footage of campus

The wireless infrastructure will be managed from our choice of Cisco switches located within each building. This avoids the need to have a single point of failure wireless controller for all access points.

Based on initial needs and requirements, our team is proposing 3 wireless SSIDs that will be broadcast. The "*Chatt-wireless"* SSID will be the primary wireless connection utilized by PeachCorp employees and tenant's This network will be secured with 802.1x authentication via WPA2 Enterprise credentials. A second SSID will be setup for guest Internet access named *"Chatt-guest*" using an open network that forwards devices to our guest sign-in landing page. The final SSID *"Chatt-IoT"* will be hidden and utilize WPA2 PSK for authentication. This is to provide a wireless network for all additional wireless devices that do not support 802.1x authentication and are not tied to a specific user accounts.

3.7 TELECOMMUNICATIONS

Chattanooga will follow PeachCorp VoIP infrastructure, SIP over MPLS. The transition from frame-relay CAS/RBS to MPLS will result in cheaper rates, especially long-distance and improved QoS quality of service. Chattanooga will use our high capacity VPN WAN data router ASR 4000 with an additional card for VoIP, subnet coded 0010 for VoIP traffic.

Alternate considered

This router was selected as opposed to the standalone VoIP router ISR 1000 considered. This Chattanooga data network router, with additional card, will act as the site CE (Customer Edge) gateway router to Memphis's PE (Premise Edge) router. All DID direct inward dialing extensions 6XXX will be added to the Memphis Publisher, a copy then installed as a subscriber to the Chattanooga router. Duplicate DID per user will provide call-forwarding for customers away from their desks.

Security

This card includes SBC Session Border Controller SIP anti DDoS security features.The selection of this class of router provides future-proofing by provisioning for SD-Wan Software Defined Wide Area Network, which not only benefits the data network, but upon the PeachCorp network achieving 5G-10G bandwidth VoIP activities can transition to SD-WAN as well.

Disaster planning

Chattanooga will discard the non-supported PBX, but retain the PRI interface to local PSTN, and leave most of the existing system of phones for SRST survivability, in case of Internet failure, the existing old analog phone system will operate. In direct compliance with Existing Peach Corp Network section Item- 1) MPLS Layer 3 VPN WAN connection, 2)subnet coding standardization and, 6b) Core Network Services.

Bandwidth that our VOIP phone service requires depends on the number of concurrent calls you want to make. The table below shows the minimum bandwidth required to make calls as well as recommended speeds for optimal performance.

Number of Concurrent Calls	Minimum Bandwidth Speed Requirement	Recommended Speed
1	100 Kbps Up and Down	3 MBps Up and Down
3	300 Kbps Up and Down	3 MBps Up and Down
5	500 Kbps Up and Down	5 MBps Up and Down
10	1 MBps Up and Down	5-10 MBps Up and Down

Table 1 - Number of concurrent calls, bandwidth speed requirement and recommended speed

Chattanooga currently uses CAS/RBS over T1, 24 channels, hardwired. Therefore, our max concurrent usage could be projected as 24 concurrent calls. 100 Kbps per Up and Down. Chattanooga VoIP Bandwidth anticipated 2400 Kbps = 2.4MBps Up and Down.

Mobile Business Phones

Future-Proofing in addition to VoIP being prepared to go SD-WAN, there exist futuristic features available today. These “softphone” features include mobile VoIP Skype-like tools such as S4B and Cisco Jabber. The same Cisco Jabber which we provision for our customers workstations, is available in beta-release app for both iOS and Android.

Once the dust settles from our Chattanooga Technology upgrade, the IT staff will be tasked to investigate the future feature functionality of two-lining our customers personal cell phones, that they may have a mobile business line and personal line without the need to carry two phones.

3.8 SECURITY/EMERGENCY

Network Security

General expectations for network security services have increased. Network security assessment prior to attaching to Peach Corporation infrastructure will include a security sweep of the entire network and components for any pre-existing viruses or logic bombs. When sufficiently secure, an assessment of our assumptions and initial plans, will be compared to existing reality, for identification of any obstructions/modifications to initial plans.

For this proposal the IT staff should be using some form of 2-factor for console access to network management devices and servers. IT staff should access resources for administrative tasks through a “jumper box” virtual machine. Isolate all console access to switches, routers, firewalls, and servers (RDP and SSH) so that only the subnet of these virtual machines can reach them on these ports. Providing 2-factor authentication for as many solutions as possible. Users should be required to 2-factor while accessing remote VPN. Duo provides cheap and versatile 2-factor options for a variety of scenarios. Peachcorp could even offer licenses to tenants as a selling point.

PCI compliance should be accounted within the cafeteria, assuming they will take credit cards. The solution here should be to separate these network services as much as possible to reduce scope and keep PCI standards away from the rest of the network. Our team should recommend a fully compliant EMV card reader solution with point-to-point encryption and tokenization. This will help reduce costs and scope for obtaining PCI compliance. Furthermore, VLAN isolation for all transactions will segment traffic to increase security.

Threat intelligence data feeds should be subscribed. The future of security is intelligence through sharing and feeds FireEye, Mcafee, Cisco Talos.

Existing site security plan consists of 22 cameras’ in three buildings. Assuming one camera on each corner, four corners, leaves 3 cameras per building for internal deployment. This is a fairly unbalanced application of commercial general liability precautions.

Commercial general liability protection should be adequately addressed, for PeachCorp, our tenant customers, and visitors. Also, as a demonstration to any potential Data Center colocation customers, that PeachCorp is a serious real estate management group. An additional 35 cameras should be allocated. One camera for each corner of each building and three deployed inside each building, for consistency in application of commercial general liability

protection. These can be a mix of hardwired and wireless. Even at 0.9Mbs per camera, times the now 57 cameras (~57 Mbs) on the Macon 150Mbs WAN link this should not be a transmission problem. Suggested linking those cameras to a storage server in Macon for monitoring, should that strategy prove sound. This will be revisited in year two, until then cameras will remain on site server, with an interface to our ***Peach Pass app***. This server has a mirror in Memphis. Rationale, surveillance and cellphone interface could have utilized commercially available solution. Network security issues, on this site and more importantly the PeachCorp network, requires at least for the interim, we will control access to the API's.

Theft

The existing strategy leaves 5 buildings unprotected. Building 3 contains networking equipment and connections, the eyes and ears of a site. Building 4 contains a warehouse a typical target for theft. Building 7 functions for manufacturing with 60 shielded drops for virtual PLC operations, and an applications server, without which they would not function.

Emergency

Remote monitoring should still incorporate on-site security presence. Security officers act as the eyes and ears of a corporation, noting and responding to suspicious activity. Security officers play a crucial role in safely evacuating tenants. Guards are expected to address theft, accidents and medical situations by reaching out to first responders, and assisting tenants and visitors. In addition to potential workplace accidents and incidents in all buildings, building 5 being a cafeteria presents hazards in the form of fire and personal injury. And, building 8 holds R&D for a local college annex, a soft domestic target.

Physical Security

Tenant expectations for security services have increased. Tenants are more aware of safety and security issues at the workplace and expect building owners to maintain the presence of a professional and reliable security workforce.

Radio Frequency Identification RFID

The new IP door control readers are more than just readers, they also include all the intelligence that was in the central door panels. The readers connect directly to the network and use PoE, Power over Ethernet, for power. Assuming 16 doors, 16 door access controllers and one RFID Card encoder.

Peach Pass App

The RFID system is IP based, the Peach Pass app can be used to gain or restrict entry into and within the site buildings. As the camera system is also IP based, the Peach Pass App can allow our tenants to view camera surveillance of the buildings and surrounding property. An added level of comfort and security as they arrive and leave the parking areas. Further applications of the Peach Pass App will have access to site services; printing, faxing, scanning, and even vending. Billing charges recorded and tallied for review.

3.9 RESOURCES/PERSONNEL

Staffing

The current tenant population is supported by 4 network administrators managing connectivity between buildings and the internet. Clients manage their own accounts, no centralized account authority, and several generic accounts in use. This staffing recommendation will allow the site to operate able to scale these areas up while maintaining effective productivity.

With the growth and expansion of the Chattanooga site the key on-site staffing requirements have also expanded to meet the new and current needs of the project. For this site to run efficiently there must be at minimum 6 IT/Telecommunications staff members. First, is the requirement of *two Help Desk Support staff* for existing and new clients and PeachCorp. Two full time Help Desk Support staff will allow for adequate monitoring and assisting of issues with the current client volume. *Three Networking/Systems* support engineers will be required to manage the network and the servers. With the current tenant population there will also be the need for one staff member dedication to Microsoft Business management for tenants. They will assist with onboarding, to the cloud existing tenants, as well as new tenants.

Expectations for network security, recent events have highlighted the need for physical security. in addition to the existing, and now enhanced, camera surveillance our team has added RFID and Peach Pass access control. There will be on-boarding, training and ongoing developments to be addressed. For security, *2 security guards* have been budgeted. In addition to these areas they are the face the potential customer sees first. In addition, in an emergency, the point of contract for first responders.

Key IT Staffing Roles	Core Job Requirements
Help Desk Support (2)	Provide technical assistance & support for all tenant inquires and problems with core computer hardware, software, and systems
Networking/Systems Support (3)	Manage networks and servers on site
Microsoft Business Support (1)	Onboarding tenants to the Cloud
Project Manager (1)	Oversee technology upgrades and on-going technology operations.
Security Guards	Provide access assistance, RFID, and PeachPass support, Emergency & First Responder coordination.

Table 2 - IT staffing roles and job requirements

3.10 TRAINING PLAN

Training

As PeachCorp owns these leased buildings and it can be anticipated that with the addition of newer technologies on-site, training will be required. Therefore, PeachCorp as landlord will reserve space in each building for a classroom which when not in use as a classroom may be used by PeachCorp or their tenants, as conference rooms. Additionally,

turning the cafeteria into a flexible partitioned banquet hall type facility can potentially facilitate mobility training. Our team will be providing rotational training and enterprise launching platforms and support (technology, training and facilitating) via a pool of business laptops and smartphones for small business lend/lease/loan/purchase which are cloud-enabled and can be supported remotely by PeachCorp.. Our “smart” conference rooms can support trainings of any size and can be utilized by tenants for their own demonstration needs as well. While utilizing the best available cloud service provider, providing training on-site, customers will feel more engaged and, in control of their business.

Our network system has been designed to be run by a team of 6 for the current tenant volume and network workload. While each area has their focus, there are minor requirements of cross training to ensure that the system continues to operate even if a key staff member be sick, on vacation, or quit without notice. The four current employees on site are being absorbed into PeachCorp’s IT Staff and new staff brought it in fill out remaining 2 roles. This initial group of six employees will be given intensive training as the new system is being implemented. At this time, they will not only be given training on their focus areas, but will also receive cross training in all IT areas. Any new or additional staff brought on by PeachCorp will be given initial training from their start date that includes 4-6 weeks training for their core roles and an additional week per each additional area they will be required to complete for cross-training. Any major changes to core network systems or software/hardware will be accompanied by 2-3 days training on-site and an additional distance training for follow up questions and discussion of issues that might arise after implementation.

4. MARKET DIFFERENTIATION

Global Mindset

PeachCorp and its customers/tenants operate in a “global” economy, the mindset of a “smart industrial park” includes design anywhere, manufacture anywhere. Our servers and services selections bear in mind computer aided design, engineering and manufacture as well as design collaboration. Cloud-based design to manufacture currently entails software as a service (SaaS), and platform as a service (PaaS). Peachcorp will be provisioned for infrastructure as a service (IaaS). A strategy which would enable collaborative work teams to work from home, or at their downstream customer site.

Cloud Based

Businesses know the advantage of shifting to cloud-based storage and services, but often can’t afford the network to provide them. Small businesses can offload the cost of a IT department on us. As a PeachCorp tenant, the cost is covered in the contract with a guarantee of availability, security and support.

Property

As this property is fully occupied, fulfilling our promise to enable new business ideas to market, as well as expansion assistance, PeachCorp will benefit from our regional market strategy of leveraging existing available commercial industrial real estate, technology enhancing, and subleasing conscripted new customer tenants. To facilitate and fulfill PeachCorp commitment to 48 hours, our team has devised ***“Rolling Rack”*** as the name implies,

technology on a carte. Before the ink is dry on the contract with our customer we will have the customer VPN'd into the PeachCorp family.

Future

Identifying all the potential competitive advantages that could be achieved with this Investment. To the point;

- Peer-to-Peer Modeling Services, Product Market Integration
- Concept to Market expedience, 3D prototyping, Product Data Design-to-Manufacture
- Dynamic Grouping, Design Teams, Marketing, sharing dynamic "living" files
- Collaborative Decision Making
- Logistics and Tracking

The potential limited only by the availability and willingness of professional partnerships;

- Design, Manufacturing, Universities, Research, Education

5. NEW TENANT USE CASE: JONES ENGINEERING

Mike Jones, an Army Veteran and web developer, after having contributed to several successful startups returns home to Chattanooga. Mike has a million-dollar idea. Armed only with a notebook full of 3D Models and his savings.

Thanks to PeachCorp's marketing channels and community partners, Mike heard on ALT 98.7 FM, which also leases with Peach Corp., about the 36/86 Entrepreneurship and Technology Conference in Nashville. Attending, visited Peach Corporation's presentation. There Mike heard PeachCorp's.

Mike realized he needed a brick and mortar location with a, and quickly. PeachCorp's promise of a turn-key workspace within 48 hours, precisely. On Monday, Mike arrived at PeachCorp's, Wednesday Mike launched Jones Engineering. Powered by cutting-edge hardware and software, Jones Engineering core services reside securely on the cloud and are maintained by skilled Peach Corp onsite technicians.

Leveraging PeachCorp's, Mike takes full advantage of the campus' opportunities and built-in advantages. Chattanooga State Community College will work with Jones Engineering placing engineering students in Jones Engineering's as interns. PeachCorp's Small and Medium Enterprise SME Technology INCubator, working with the SBA Small Business SBA will work with Mike to secure a small business grant offered to Veterans.

Mike received a phone call from a buyer, placing a massive order for his idea. PeachCorp tenants Kenco Logistics will help with short-term warehousing.

6. FINANCIALS

Networking Equipment	Model	Price per Unit	# of Units	Total
Router	Cisco ASR 1001-X	$ 17,000.00	1	$ 17,000.00
Switches	3850 24xu	$ 4,635.00	18	$ 83,430.00
	C9500-12Q	$ 15,000.00	1	$ 15,000.00
Firewall	Palo Alto 5020	$ 40,000.00	1	$ 40,000.00
Servers	Dell Poweredge 730xd	$ 8,000.00	2	$ 16,000.00
Wireless	Cisco Aironet 2800	$ 840.00	35	$ 29,400.00
	Cisco Aironet 1572EAC	$ 1,799.00	8	$ 14,392.00
Capital Expense				**$ 215,222.00**

Additional Equipment Costs		
Security	**RFID/Cameras**	**$ 21,995.00**
Rollin Rack	VPN Server/Connects	$ 7,175.00
IpTVs	Conference Rooms	$ 3,707.76
Production Printer	Mass Reproduction	$ 6,033.00
Conference Phones	For Conference Rooms	$ 4,177.00
Wireless IP Phones	IT/Security/	$ 1,697.94
Capital Expense		**$ 47,786.00**

Labor Items	Labor Totals	% of Total
Project Management	$135,936	14%
Cabling Infrastructure	$242,173	25%
WAN/LAN Wired Network	$26,143	3%
Wireless Network	$16,580	2%
Telecommunications	$11,700	1%
Miscellaneous	$33,440	39%
Reserves	$162,137	17%
Total Cost Estimate	**$975,223**	

Annual Maintenance & Support Expense	Annual Expenses
Cisco Support/Maintenance Contracts	$8,142
Desktop Services & Software	$1,784
AWS Partner Certification	$2,500
PeachPass App Maintenance	$2,500
Annual Maintenance/Support	$14,296

Cabling	Model	Price Per Unit	# of Units	Total
Fiber	Altos 012EUC-T4100D20	$0.45	5363	$2,536.20
Trencher	Equipment Rental	$138.00/Hr	$22,000.00	$22,000.00
			Materials Cost	$50,698.20
			Shipping 20%	$10,139.64
			Contractor Markup 50%	$30,418.92
			Sales Tax	$11,818.10
			Capital Expense	$103,074.86

Revenues	Year 1	Year 2	Year 3
Leasing Operations	$402,000	$470,944	See NVP Forecast
Devices	$42,297	$0	See NVP Forecast
IT Services	$60,000	$120,000	See NVP Forecast
Conference Rooms	$0	$40,800	See NVP Forecast
Benefits	$504,297	$631,744	

For Sale	# of Units	Pass Through Expense	Average Profit
Conference Phones	8	$4,177.00	$835.47
VoiP Phones	50	$7,499.17	$1,499.83
Printers/Fax	10	$1,385.27	$277.05
Wireless IP Phones	6	$1,697.94	$339.59
Laptops	100	$143,233.33	$28,464.67
Tablets	100	$48,332.33	$9,666.47
Cellphones	40	$5,600.00	$1,200.00
Total Pass Through Expense		**$211,925.04**	**$42,297.07**

NPV Year by Year

	Benefits	Equipment	Sustaining Operations	Labor	Cash Flow
Year 1	$504,297.00	$442,072.00	$14,926.00	$975,223.00	$(927,924.00)
Year 2	$631,744.00	$342,605.80	$14,926.00	$5533,876.00	$(259,663.80)
Year 3	$887,111.87	$188,443.19	$14,296.00	$560.569.80	$123,182.88
Year 4	$1,082.295.13	$61,240.79	$14,926.00	$588,598.29	$417,530.05
Year 5	$1,229.027.32	$44,207.20	$14,926.00	$618,028.20	$551,865.92
Year 6	$1,374,406.22	$80.600.78	$221,036.00	$648,929.61	$423,839.83
Year 7	$1,582,654.68	$62,465.60	$14,926.00	$681,376.10	$823,886.98
Year 8	$1,748,462.98	$44,330.43	$14,926.00	$718,444.90	$973,761.65
NPV	**$778,525.45**				

8. GANTT CHART

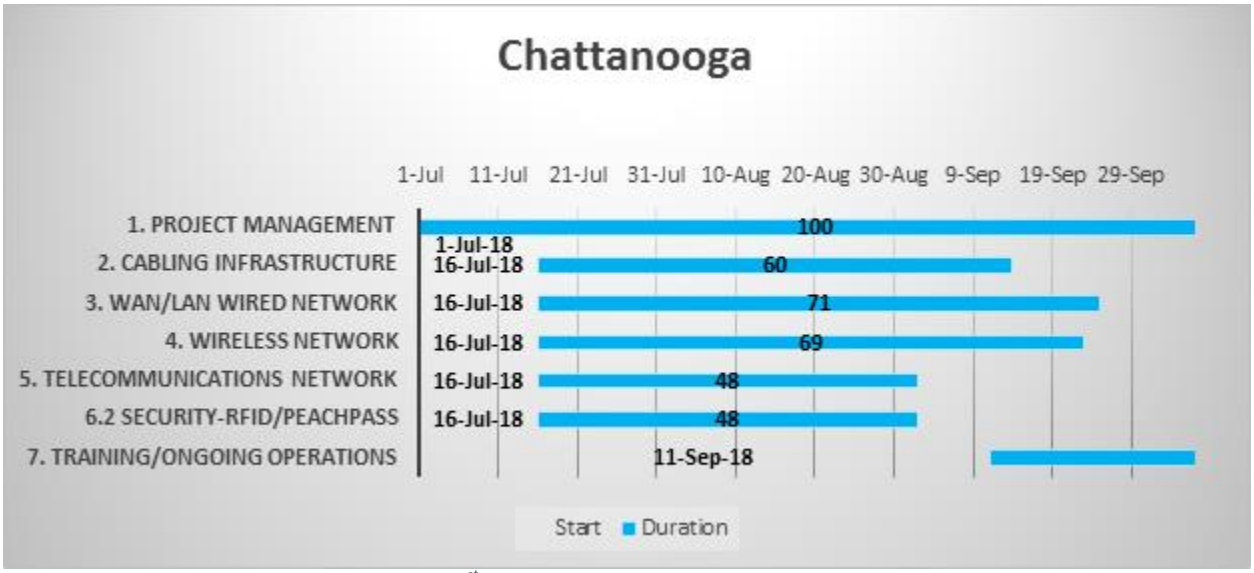


Figure 3 - Time framework, Project Starts July 1st and ending September 29

9. REJECTED ALTERNATIVES

VoIP Selections

While considering VoIP vendors, the issues of incompatibility arose. Some VoIP are proprietary or worse the old H.323 classic telephony protocol, Avaya, and others. SIP protocol is more universal. Also, a standalone router CE, was considered. However, after further investigation, with Cisco, the ASR router our team selected for WAN/LAN can be card enhanced to provide the same SRST survivability and SBC session border controller, anti-DoS features. Also, this solution better positions us for the SD-WAN enabled VoIP, when this site has achieved 5-10G.

Data Center

Our team humbly recommends that PeachCorp should refrain from attempting to build a complete datacenter in order to house systems for tenants. There are currently numerous amounts of server hosting providers who are capable of providing this service at a scale significantly greater than what is possible to house at the technology park. That type of investment's initial cost would be $500,000 - $1,000,000 without a foreseeable return on investment unless tenants are charged significantly higher prices to tenants compared to the likes of Amazon Web Services or Microsoft Azure. We see potential in charging tenants for assistance in leveraging these hosting services since that is the inevitable direction the industry is headed. PeachCorp could raise rates while offering this unique service to the tenants.