BSP
Technical Advisors

Technical Assessment

of

DATA CENTER

for

XYZ
Capital Partners

BSP

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I. Executive Summary

XX is considering an investment in Acme Data Center – codenamed Project XXX. Acme Data Center is the state's largest carrier-neutral data center and cloud computing services provider. XX engaged Broadband Success Partners to conduct a comprehensive technical due diligence. Most of the areas analyzed remotely and physically inspected were found to be reasonable and expected. No red flag items were identified. However, two issues raise the level of a yellow flag. They are as follows:

Expansion Planning. We would expect to see forecasting for Zones Z and Y reflected in the model to anticipate timing of capital spend. There was mention that the buildout of Cage A and the new chiller system was due to unanticipated growth. It is understood that customer requirements will drive projections. However, starting with a baseline for anticipated requirements through proactive data gathering is typical.

Carrier Fiber Feed Process. Acme Data Center allows carriers to pull fiber into cages within the data center. Taking a semi-hands-off approach until the fiber hits their cross connect could possibly have a negative impact on tenants as well as Acme Data Center. This is not the workmanship we expected to see Acme allow in their data center. It is recommended that Management consider taking over the process of pulling fiber via conduit from the carrier vault that they own or as soon as it enters the building.

Interestingly, our inspection of the PDU and cooling revealed a customer-centric trait which is a potential concern. Namely, custom designs and configurations, which can have a significant bearing on the power plant. Reacting to a customer request should be carefully planned to ensure compatibility and efficiency. Management acknowledged that continuous monitoring is performed by Acme Data Center personnel to avoid constraints.

Of the positive findings, these are particularly noteworthy:

Structural Expansion Planning. During the walk through of Cage A, Management explained their thinking for turning the remaining parking lot into the next expansion area, Zone Z. It was clear that there has been significant structural expansion planning. This also applies to extending off of existing cages to maximize the use of infrastructure.

Management Attitude and Approach. Management team members are very proud of what they have built at Acme Data Center. Their positive attitudes were observed and quite pleasant to witness. It is no coincidence that they are well connected to the day-to-day operations since they manage a fairly small team. The CEO has a "never say no" approach to serving their tenants. Combined with the COO's "we'll make it work" attitude, they collaborate very well together.

II. Introduction

XX is considering an investment in Acme Data Center – codenamed Project XXX. Operating in the state of A since 2000 and headquartered in the city of B. Acme Data Center is the state's largest carrier-neutral data center and cloud computing services provider, serving ~XXX direct customers. The facility currently has XX,XXX square feet of data center space.

Since 2000, Acme Data Center has completed XX expansions and grown its customer base, space and power capacity tenfold. The most recent expansion was completed last year. With this, the company added XX of the XXX cabinets available for colocation services.

III. Objective

To conduct and complete a full technical due diligence of Acme Data Center according to the agreed-upon scope of work.

IV. Scope of Work and Methodology

The Scope of Work consisting of a Red Flags Assessment (Phase I) and Onsite Confirmation (Phase II) can be found in Appendix A. Both phases were executed concurrently. As such, for ease of presentation and comprehension, each section of this report integrates our findings from both the desktop red flags assessment and the onsite confirmation. The opinions of Broadband Success Partners are in *italics*.

V. Product and Services

- Colocation Services
- Connectivity & Internet Exchange
- Cloud Marketplace
- Professional Services

VI. Capital and Operational Expenditures

A. Facility Infrastructure and Maintenance

1. Capital Expenditures

Acme Data Center is positioned for rapid growth. The Cage A expansion was planned as an effort to increase infrastructure for current and future tenants. Building out Cage A increased power capacity by XXX kW and added XXX cabinets. Capital expenses for growth and expansion of critical infrastructure are reflected in the charts below depicting actual (2020-2023) and projected (2024-2029) costs.

Capital budgets for growth, expansion and maintenance actuals from 2020 through 2023 are as follows:

	2020A	2021A	2022A	2023A
Facility Expansion Capex				
Growth Capex				
Maintenance Capex				

Capital budgets for growth, expansion and maintenance projections as of Q2 2024 through 2029 are as follows:

	2024E	2025E	2026E	2027E	2028E	2029E
Facility Expansion Capex						
Growth Capex						
Maintenance Capex						

Capitalized maintenance by Acme Data Center definition is comprised of improvements and upgrades that prolong the life of an asset.

Capital expenditures are reasonable. Maintenance capex costs for lease improvements, facility plant and machinery part replacements are in line with industry costs.

Additional expansions are expected. When budgeting for expansion and growth, Acme Data Center considers and adjusts based on known customer requirements and requests. The Management team is currently planning to expand a portion of the facility's parking lot, calling it Zone Z. Zone Z capital expenditure expectation is approximately $X.XM based on similar power and cooling standards as Cage X with another XXX kW UPS expansion. One of Acme Data Center' current tenants recently inquired about XXX kW per rack liquid cooling capabilities. It is assumed that liquid cooling is in preparation for AI driven efforts, which would require a completely different design than the standard used for modeling.

Zone Z is another expansion that Management is strategically planning. The exact location is unknown. However, they are expecting the expansion to cost about $XXM.

Early planning for growth is recommended. With projections in the Financial Model extending to 2029, we would expect to see forecasting for Zone Z reflected in the model to anticipate timing of capital spend. We view the lack of detailed forecasting as a Yellow Flag with the significance of the combined buildout reaching $XXM+. This also impacts operational expense budgets.

2. Operational Expenditures

XXX is the landlord for Acme Data Center. The executed Lease Agreement was turned over to Acme Data Center in 2000. It states the rent will increase annually by X.X% through the lease term of 2041. Actual facility rental expenses from 2020 to 2023 are:

	Square Footage	Facility Lease	Lease / Sq Ft	Facility CAM	CAM / Sq Ft	Parking
Q4 2020A						
Q4 2021A						
Q4 2022A						
Q4 2023A						

Projected facility rental expenses from 2024 through 2029 are as follows:

	Square Footage	Facility Lease	Lease / Sq Ft	Facility CAM	CAM / Sq Ft	Parking
Q4 2024E						
Q4 2025E						
Q4 2026E						
Q4 2027E						
Q4 2028E						
Q4 2029E						

We recommend the lease agreement be reviewed to confirm the X.X% annual increase.

Infrastructure costs for R&M (repair and maintenance) and power average $XXXK and $X.XM respectively from 2020 through 2023. The average projected costs from 2024 through 2029 are $XXXK and $X.XM respectively.

Reasonable and expected.

VII. Facility

A. Geography

Located in XX, Acme Data Center is in a multi-tenant building in the XXX near the airport. It is outside of known flood Zone Z (same as mountaintops), storm surge, river, valley, delta and canal affected areas. In the event of a hurricane or tornado, Acme Data Center exterior walls are rated to withstand CAT 5 winds. It also meets current earthquake building code specifications. *Overall, the location of the data center reduces costs, latency and disaster recovery requirements. There are no geography concerns.*

Below is a view of the industrial park from one of the two streets accessing the property. The building in the very back of the photo is where Acme Data Center is located, in the far-right corner. There are no security gates to enter the industrial park. Therefore, physical access onto the property is not secure.

It is common to see data centers behind a security gate with a call box for access. Due to

the location of Acme Data Center, it is not expected. Management confirmed the location was chosen by engineers due to power availability and fiber diversity.

B. Exterior

The building's exterior seems to be maintained and a continuation of the industrial park's aesthetic. There is a generator yard in front of the building, protected by a chain link fence and concrete bollards. Parking spaces are on the top two levels of the building.

The Acme Data Center space is secure. Acme Data Center is staffed 24x7x365 with multi-layered access control systems. CCTV surveillance cameras are visible from the generator yard and side door. All exterior doors are secured. The only exterior door visible is the side door entrance into the lobby. There are pin code readers for all other doors except the main entrance which is biometric. A proximity card access control system is used to grant access to employees. Proximity cards are issued and verified by HR.

CCTV surveillance is monitored by security desk personnel. They can view external cameras as well as internal cameras covering specific areas of the data center floor. Cameras are strategically placed to cover major areas specified by management. All camera views can be changed to expose different areas on the property and within the facility. Cameras are not positioned to show inside cages as these are tenants' private spaces.

Upon arrival, the security process was observed. Visitors, vendors and customers must use the external call box located outside of the lobby door. Once identified, security personnel will acknowledge and grant access. Valid identification must be presented and the visitor log signed along with reason for visit. Color coded badges are provided depending on the purpose of the visit.

Security measures are reasonable and expected.

Acme Data Center does not have a loading dock. To move packages and shipments to the second and third floors, Acme Data Center personnel have forklifts, lifts and golf carts depending on the size of the shipment as shown in the photos below. All operations and IT personnel are forklift certified.

This is a good way to maximize the workforce.

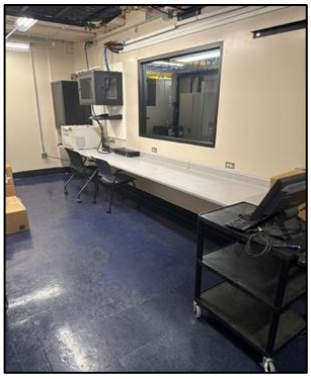
C. Interior

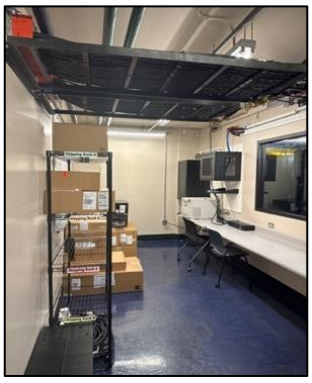
The property's interior has been well maintained. There are 3 levels: the first floor, mezzanine and second floor. Rentable space is located on all levels with conference rooms, staging rooms and lobby waiting areas for employees, visitors and tenants. These areas may be reserved or accessed on a first come, first serve basis. There is a small kiosk area available for visitor and customer use.

Upon entry, the lobby area was clean with fire safety equipment on the wall.

1. Staging Room

Also on the first floor is a customer kiosk/staging inside Cage X, behind the security desk. Management referred to this room as a staging room. On the floorplan diagram, it is listed as a kiosk. Customers may rent for a fee or utilize the space on a first come, first serve basis. If the space is rented, Acme Data Center may provide a XXG fiber connection and charge a monthly fee. The staging is outfitted with fiber connect and communication equipment. *This is reasonable and expected.*

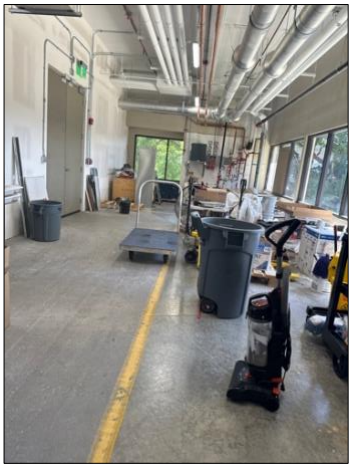




2. Warehouse and Storage

Acme Data Center has X,XXX square feet of warehouse and storage closets located on the second floor. It utilizes their warehouse for purposes specific to the facility. The photograph shows one side of the "L" shaped space seen in the diagram.

Customers do not have access to this space. While there are plans to retrofit the space for customer use, it currently does not operate as an existing warehouse.



The capital necessary for lease improvement of this space was not listed in the financial model. However, management explained there are currently no solid plans of how they will retrofit the space even though customers have been making requests.

This is reasonable since the space will require minimal capital. It would, however, be good stewardship to realistically plan and provide timing for customers.

An Inventory Management System was briefly discussed while walking through the warehouse. Acme Data Center does not currently have an Inventory Management System.

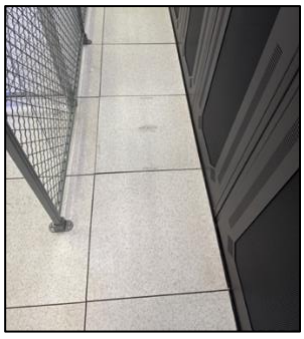
This is something that should be explored upon building out the space.

There is a storage area on the first floor that is utilized by Acme Data Center facility personnel. Management explained the area is not cooled since no IT equipment is ever stored in the room.

This was good to hear as it spoke to management's consciousness on cooling preservation.

3. Flooring

All caged areas have epoxy flooring, except Cage X. Cage X is legacy data center space built by XXX. It is the only area with raised flooring. Underneath the raised flooring are smoke detectors, power and a chilled water loop. Raised flooring is not an Acme Data Center standard. Therefore, no future buildouts will have raised flooring.



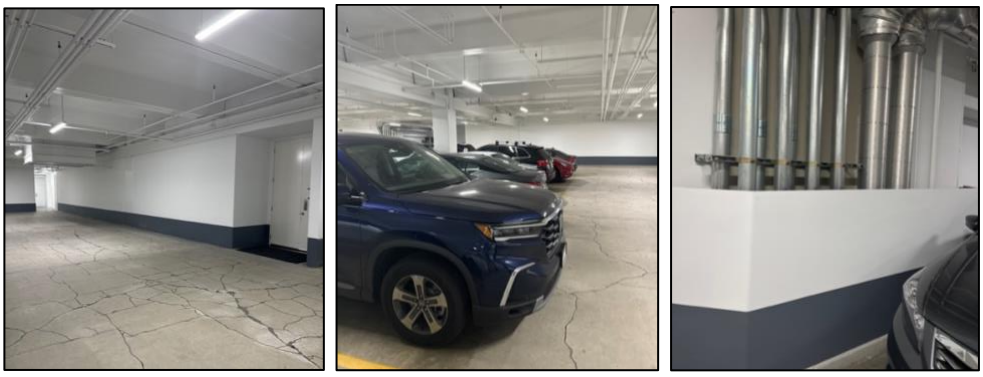
Raised flooring is common in data centers. *This design is rather expensive to maintain. It's good that Acme Data Center has opted for an overhead design instead.*

Cabling workmanship underneath the floor was not observed. *However, the space is completely built out, so there are no future issues with running cabling for new tenants nor concerns with floor loading except for repair and maintenance purposes*.

4. Expansions

During the walk through of Cage X, Management explained the thought process that went into turning the remaining parking lot into the next expansion area, Zone Z. Cage X was once part of the parking lot seen in the photos below plus office space. Zone Z photos below capture Cage X shared wall, parking spaces and the existing fiber and cooling conduits.

It was obvious that significant thought went into future expansion planning from a structural standpoint.



In addition to the parking lot turning into Zone Z, there are plans to retrofit a space on the opposite side of the conduit wall for a NOC. The NOC area has not been modeled for the same reason as the warehouse. Although, customers are requesting this addition as well.
It is thoughtful planning to continue to extend off existing cages to maximize the use of infrastructure. Based on the positive relationship Management has with the landlord, there are several identified options for growth and future expansions.

VIII. Power Systems

A. PUE

Power usage effectiveness has improved ~XX% since 2020. Acme Data Center is in the process of upgrading their cooling system from XXX-ton to XXX-ton chillers. Bringing the

new chiller system online will further improve PUE. The chart below shows PUE at the end of each year through Q2-2024.

Date	Dec-20	Dec-21	Dec-22	Dec-23	Q2 2024	AVG PUE
FACILITY PUE						

A PUE average of X.X is typical for older data centers. This also means there is room for improvement via continuous data center optimization. It is worth noting that Acme Data Center' month over month PUE tracking revealed their lowest and highest PUE of X.XXX in 2023 and X.XXX in 2019. During the onsite, Management explained their goal is set around X.X range. Diligent monitoring of PUE and strategies for improvement are expected and reasonable.

B. Power Grid Connectivity

XXX Electric is the power provider for Acme Data Center. It is the only electric utility company in the state. There is X.X Megawatts of on-site power with a minimum N+1 configuration. This photo illustrates where the power substation is located in proximity to the Acme Data Center building.

Since there is only one utility company, diverse feeds from different substations would not be advisable.

C. Generator, Backup and Maintenance

The generator and fuel tank yard sits on X,XXX square feet. There are N XXX kW Cat generators (N+1) for mechanical load on MMM and N XX MW generators (N+1) on MMM (located in front of the building) for critical load, making up X.X MW of backup power with a minimum N+1 configuration. MMM is at XX% capacity with ~XXX kW load. PPP is at XX% capacity with ~XXX kW load. Management confirmed these power metrics during the walk through.

The generator configuration of N+1 to carry the mechanical load and N+1 configuration to carry critical load is reasonable and expected. Generator load is reasonable and expected for anticipated growth. They are very close to the metrics, ensuring there are no capacity constraints.

Photos below show the XX XXX kW Cat generators in the triangle and the XX X MW generators in the front generator yard.

Although generators in the triangle are older, they are in good condition. The generators and power feeds appeared to be well maintained and clean. The generator yard areas were maintained appropriately.

Photos below show the XX,XXX-gallon fuel tank, generator as well as the camera overlooking the main generator yard. *The area underneath the generator is clean and well maintained. The generator yard areas were maintained appropriately.*


Acme Data Center is the primary site for the hospitals. Therefore, they are on the priority fuel list with the state's emergency service. There are two different suppliers for diesel with red dye for no road tax and they can use commercial fuel that has road tax as a backup.

Preventative maintenance is performed on generators every quarter. Generator run hours are logged and appropriate maintenance is conducted at the recommended run hours. Test runs of the generators are conducted each month. Load bank testing is conducted once every X years.

Acme Data Center uses a fuel polisher to remove impurities and contaminants from fuel reserves. The polishing system was not observed. *As an alternative to replacing fuel, polishing is economical.*

Preventative maintenance frequencies are reasonable. It is good to see yearly preventative maintenance reports as well as load bank testing results to understand any anomalies that may have occurred over time. These types of health reports provide a good estimate of possible generator replacement concerns and timing.

D. DC Plant

Acme Data Center has X pair of small DC plants. Each plant is configured in an A+B topology, providing DC power to customers or dedicated DC plants for specific

customers. Client cabinets receive DC power from designated DC plants, depending on the cabinet location in the data center. The DC Plant was not observed during the walk through.

- DC-B & DC-BB have batteries
- DC-C & DC-CC have batteries
- DC-D & DC-DD have batteries
- DC-F & DC-FF have batteries

Each individual battery's health is monitored by modules which report battery voltage, temperature and resistance. These modules utilize protected equalizing technologies that optimize charging of the individual batteries to increase its efficiency and prolong the batteries life expectancy.

DC Plant configuration with monitoring is reasonable and expected.

E. UPS

Acme Data Center uses XXX's model 2N redundant UPS systems. There is a X.XX MW A&B with XXX kW load (XX%) and a XXX kW A&B with XX kW load (XX%). UPS systems perform most efficiently between XX% to XX% load. Operating at less than XX% affects the efficiency of the systems as much as operating too high or above XX%. These systems will eventually serve Cage X, slowly increasing load.

Each lineup has three X/XXX UL XXXX certified model lithium-ion battery cabinets. UL XXXXA is a test method that a battery manufacturer can use to demonstrate the safety of its solutions. To complete the test, a testing agency will force the lithium-ion battery to catch on fire and then monitor the fire. The agency will evaluate whether the fire's flames move from one cabinet to another. To complete the test, flames must be limited to the originating cabinet, and the fire must be able to be fully extinguished with water. A successful UL XXXXA report demonstrates that solutions have completed a critical fire test. Battery manufacturers can present the data in the report as evidence of the fire

safety of their solutions.
The vendor has engaged XXX Laboratories to test the XXX model to UL XXXA standards. The cabinets fully conformed to and exceeded the standard, thus conforming to NFPA XXX and IFC requirements.

Acme Data Center has protected the UPS space with the following fire protection strategies:

- XXX early detection
- Dedicated XXX fire alarm panel
- Fire XXX mist pre-action system (NFPA XXX)

This installation complies with NFPA XX, XXX, XXX, UL XXXX, IFC, and other applicable codes and standards. Major telecom carriers, power utilities, and the US Military have adopted this detection and suppression fire protection strategy for mission-critical facilities.

Acme Data Center is within the standard operating efficiency range. The reasoning behind the sizing difference between A&B may be due to right sizing, balancing or growth efforts; however, it is unknown at this time. Continuous monitoring is required and necessary to ensure growth and expansions do not negatively impact operations. Right sizing and load balancing should be taken into consideration for future planning. Fire protection strategies are reasonable and expected.

The new XXX kW UPS and battery room was observed. XXX UPS systems are arranged in X groups of A+B with output power connecting to XX different PDUs deployed in an A+B topology in cages. Client cabinets receive power from designated A+B PDUs, depending on the cabinet location in the data center. PDU design and setup were observed.

XXX systems are in great condition. The UPS and batteries were arranged neatly in the room with uniformed cable runs. We also noticed there is space in the room to grow if necessary. Expected and nice to see.



F. PDU

Client cabinets receive power from designated A & B PDUs depending on the cabinet location in the data center. There are XX different PDUs deployed in an A+B topology fed from the UPS output power connections. Detailed list can be found in Appendix C.

Customers have the option to switch from AC to DC power if desired. The configuration shown in the photo below is a custom design requested by a tenant. This is another accommodation effort by Acme Data Center.

It is not uncommon for a data center to provide both AC and DC power. Custom designs and configurations have significant bearing on the power plant. Reacting to a customer request should be carefully planned to ensure compatibility and efficiency. Proactive planning when possible is recommended. Acme Data Center management acknowledged that continuous monitoring is performed by Acme Data Center personnel to avoid constraints.

PDU manufacturers are well known and reliable.

Reasonable and expected.

IX. Cooling Systems

A. Chillers

Acme Data Center is in the process of upgrading their cooling system from XXX-ton to XXX-ton chillers. The decision to upgrade was mainly due to rapid growth. The facility employs three York XXX-ton chillers configured in an N+1 topology within a closed chilled water loop system. These chillers currently cool approximately XXX tons (XXX kW) of load but have the capacity to handle up to XXX tons (XXXX kW). *Upgrading the cooling system to accommodate growth will improve PUE. This is reasonable and expected.*

At right is a photo of one of the new chillers that is specifically for Cage X. Behind the chiller is the main XX XMW generator yard. Management confirmed this is a temporary location. The chiller will be moved to the second level. Although it is in a temp location, it is tied in for use if needed.

This is proactive thinking in case of an emergency. We do recommend moving the chiller to its permanent location quickly to avoid potential damage as it is currently protected by plastic barriers.

The old and new chillers were observed along with the chiller pumps. The old pumps will remain once the new chillers are put in place. *Chillers are new and in good condition. The chiller area is clean and well maintained.*

The chilled water system at Acme Data Center consists of the following components:

Asset ID	Asset Description	Room / Space	Manufacturer	Model No.

The chilled water loop supplies cooling to the following data center rooms:

- Cage X XX CRAC units
- Cage X XX CRAC units
- Cage X XX CRAC units
- Cage X XX CRAC units
- Cage X XX CRAC units, with the option to add more CRACs
- Cage X XX In Row Cooling Units

A detailed list can be found in Appendix D.

B. CRAC and CRAH

The original data center was designed with the CRAC units shown above. Acme Data Center has moved to a new standard using the CRAC units shown in cages X and X. The design in these cages allow air to flow out of the bottom while hot air rises to get transferred back to the CRAC. Up to XX kW in a rack is possible with this type of air flow.

Cage XX sets the standard for any future expansions. The CRAC units shown in the photo below will be common throughout the data center. The photo below shows the cooling system, tiered overhead rack layout, power connections as well as the standard epoxy flooring. The drip pans have not been installed underneath the units.

Tenants may request specialized cooling that alters the standard in which Acme Data Center will need to perform capacity analysis and requirements.

Older CRAC units such as the ones shown below in Cage X are no longer supported, but still function. The management team explained that they make efforts to be efficient in their approach to get the most life out of facility assets.

Continuing to utilize older systems in addition to newer ones is a good approach to ensuring cooling availability. Older CRACs are strategically being retired.

The various cooling methods that Acme Data Center have in place are sufficient with capabilities of handling growth. Reasonable and expected.
CRAH Units are listed below. Detailed list in Appendix D.

Asset ID	Asset Description	Room / Space	Manufacturer	Model No.

C. In-Row Cooling

Cage X uses XX In Row Cooling Units, each rated at XX kW, also set up in an N+1 topology, providing up to XX kW of cooling. These units operate on a compressor/ condenser system and are not connected to the chilled water loop. Currently, the In Row Cooling Units are utilized at approximately XXX kW (XX%).

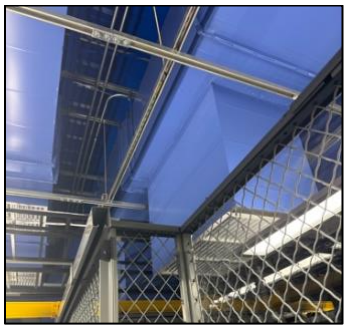
At XX% capacity, the systems are operating within a favorable load. This means they are neither overutilized nor underutilized.

The photo at right shows the XXX in-row cabinet.

D. Cold Aisle and Hot Aisle Containment

Acme Data Center uses hot aisle containment where possible. There are inherited spaces such as Cage X where mixed air is present due to the expense to retrofit or the inability to retrofit for hot aisle containment. Acme Data Center tries to minimize mixing of air by forcing hot air removal through ducting. Customers may also request containment for their cages in which the team makes every effort to accommodate where feasible.

In some cases, Management came up with creative ways to provide containment where traditional containment was not an option. *The team became really resourceful and installed plexiglass panels for cages to reduce mixing of hot and cold air. While not an ideal solution, it does provide some level of containment.* In the photo below, the plexiglass is barely noticeable. Tiny clips are attached to the cage to secure the glass.



Frosted plexiglass was also used in other instances to provide CCTV privacy for tenants, such as the hospital. In this instance, Management was resourceful, avoiding the extra capital to build a wall for the client for privacy.

Exploring creative ways to improve cooling is expected, especially in a data center that had previous owners. Each containment design is sufficient and expected.

E. Contractors – Commitments & Capacity

Acme Data Center provided a key vendor's list. The list includes services performed, significance status and annual spend from 2017 through August 2023. Vendor names were not provided in this file. Vendor names were only found on purchase orders. Vendor MSAs were not provided. Vendor list details can be found in Appendix B.

X. Environmental Systems

A. Safety

Acme Data Center security guards are staffed 24x7x365 to monitor the facility and ensure safety. From an environmental perspective, they check for anomalies during walk throughs such as condensation, panel alarms, tampering, etc. Camera systems are also monitored from the security desk. All doors are secured with either a badge or pin reader and biometric screening. In addition to the onsite security monitoring systems, the city Fire Department does annual inspections for the industrial park which includes Acme Data Center. All systems were checked by the fire department during permitting. A permit was acquired for the on-site fuel tank and inspected by the fire department.

B. Fire Suppression

Acme Data Center was built in phases, so fire suppression/detection vary. There is a combination of smoke detectors, heat detectors and XXX. There are clean agent handhelds in all areas, and *they were observed to be in good condition.* Some areas have FMXXX and pre-action dual interlocking sprinkler systems. New areas have XXX Mist Pre-action system. Acme Data Center has these fire protection strategies: XXXX early detection; dedicated XXX fire alarm panel, and fire mist pre-action system.

The XXX system in the first photo below was located behind the security desk. *This makes it easy for monitoring.* Photos two and three show evidence of an active maintenance being performed on the fire suppression system to tie into the upstairs system in Cage X. These systems are in Cages X and X. Everywhere else are the interlock pre-action systems. *Reasonable and expected.*

C. Compliance

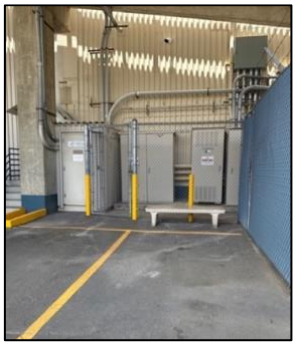
Inspection certificates to ensure fire safety compliance include:

- Pre-action Fixed Fire System Suppression – Passed
- Portable Fire Extinguishers – Passed
- Pre-action Water-based Fire Protection – Passed

XI. Network

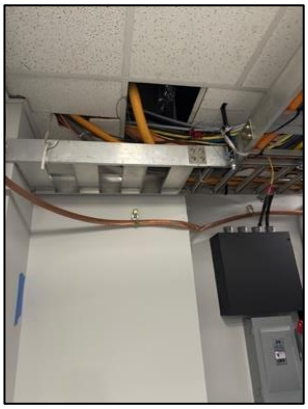
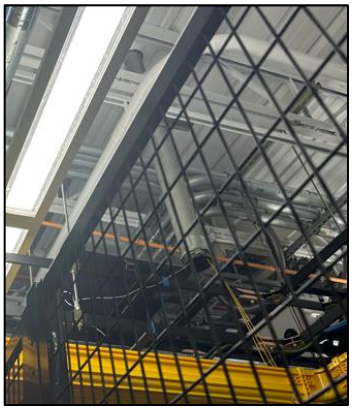
A. Fiber Feeds

Acme Data Center does not manage customer fiber feeds from the street to the cross connect space inside the building. However, we were able to observe the fiber path from the street into the building. From the pole on the street, underground conduits bring fiber to the telco room underneath a vehicle ramp. The fiber then leaves the telco room via conduits running under the vehicle ramp to the Acme Data Center building.


Once the fiber enters the Acme Data Center building, carriers pull fiber to the one of two cages depending on the path their specified conduit takes. Carriers pull fiber from the ceiling in the cage to the Acme Data Center cross connect. Acme Data Center Smarthands takes over once cross connects are made.

The carrier fiber photo below shows the location where tenants pull their own fiber from the cage ceiling and run to the data center cross connect. Management was keen to point out that this is not a reflection of their Smarthands workmanship. The second photo is where the fiber drops into the cable tray in another cage from the ceiling.

We view this as a Yellow Flag since the cabling is untidy and could potentially cause issues if one carrier damages another carrier's fiber. It is recommended that Acme Data Center Management considers taking over the process of pulling fiber via conduit from the carrier vault that they own or as soon as it enters the building.

B. Network

The Acme Data Center network is relatively simple but provides all the currently needed connectivity for any customers requesting DIA (Direct Internet Access). There are dual redundant routers forming the core of the network. The routers are interconnected via a XX connection, and each provide NG links to a mix of aggregation switches. Internet connectivity is provided via X upstream transit connections from XXX and XXX. One XX connection to each upstream from the redundant routers for a total of NNG of Internet connectivity.

With only two major carriers for DIA, it should be relatively easy for Acme Data Center to scale up on capacity as demand grows.

The network also provides internet exchange services. The exchange provides the ability for operators, content providers and other high-traffic networks to easily exchange traffic locally in the state versus backhauling demand and response traffic to the mainland or other off island locations. This dramatically improves performance and reduces costs for tenants. This also provides connectivity to CDNs.

Reasonable and expected.

XII. Network Capacity, Utilization and Scalability

A. Circuit Utilization

Current circuit utilization on the network appears to be within limits and no circuits show any excessive or maxed out utilization. Most inbound Internet traffic appears to be ingressing via the XXX circuit. The circuit shows occasional peaks close to XX% but the average during peak times appears to be around XX%. As this circuit approaches an average of XX% Acme Data Center will either need to increase the size of the XXX circuit or adjust their configurations to balance traffic with the XXX circuit.

A failure of the XXX circuit should cause all traffic to revert to the XX circuit once all of the IP scopes are announced via the XXX circuit.

Reasonable and expected

B. IP Address Capacity

Acme Data Center has a pool of XXXX IPv4 addresses in 1/21, 3/22 and 1/24 blocks. They also have an IPv6 /32 assigned which is X billion IPv6 addresses.

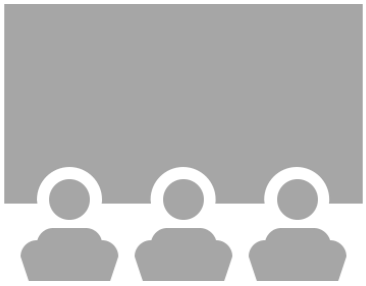
Reasonable and expected.

XIII. Operations and Engineering/Technical Organization

A. Organization Chart

The organization chart appears to be appropriate for an operation of this size and scale. While it denotes specific titles and responsibilities. it was noted that multiple individuals wear multiple hats to get the job done.

While this could indicate a good team atmosphere, it can present issues over time with growth and scaling. Additionally, due to the also noted custom solutions for customers to always meet their needs, this can introduce additional layers of complexity leading to elevated training requirements for technicians, possible confusion and longer mean time to repair. This will also need to be accounted for if/when a NOC is stood up as the varying different design solutions can also confuse and delay the NOC in response.



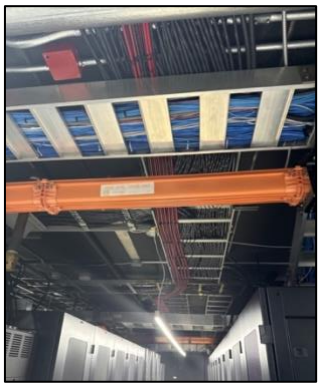
Reasonable and expected.

B. Open Positions

Only one open Data Center Technician position is currently shown as vacant.

Filling this position with a qualified candidate should be a priority.

C. Installation and Repair



Installation and repair and/or Smarthands services are provided by both the data center team and the IT team when needed. During the onsite, Management confirmed that cross training is essential and that all IT, Operations and Facility personnel are capable of performing Smarthands functions.

Cross training personnel is a very efficient approach to maximizing capabilities of the workforce.

Smarthands are responsible for running all cabling for tenants. Above is an example of the quality of their work. *It was nice to see cabling organized and well maintained.*

D. Tools and Test Equipment

Acme Data Center contracts vendors to maintain critical infrastructure systems. They are responsible for tools and test equipment that are necessary to perform maintenance and repairs. Smarthands and Security personnel monitor system controls to identify anomalies. Any tools and test equipment that the facility personnel may use were not observed such as clamps, fluke meters, etc. Customers are responsible for tools and test equipment deemed necessary to perform services within rented cages.

Reasonable and expected.

XIV. NOC Capabilities and Processes

A. Locations

NOC services are not currently provided by Acme Data Center. The Management team has identified space for a NOC in the near future. Providing *NOC services would be a valuable addition to Acme Data Center' overall service offering.*

B. Event Management

Operations and IT send out notifications for maintenance and any other customer notifications that are approved by the executive team.

Reasonable and expected.

C. Trouble Tickets and Alarms

Support requests are handled by Operations. These requests are received through the portal, a phone call or email. Notes and service requests are entered into customer service portal as well. IT is responsible for network alarms. The security team watch for alarms during their rounds.

Reasonable and expected.

D. Security

Acme Data Center Security Personnel provide 24x7 coverage. Security functions include hourly patrolling of the facility, physically checking the data center for any anomalies internally and externally.

Reasonable and expected.

XV. BMS/DCIM

A. Infrastructure, Facilities and IT Management

XXX is used to monitor the physical facility. A project is in progress to migrate from XXX to YYY per Management. ZZZ's DCIM is used for infrastructure monitoring, reporting.

Department	IT System	Environment	Description

Reasonable and expected.

B. Sales, Orders and Billing

Salesforce is used for sales, ordering and billing. It is currently going through enhancements to improve efficiency for Acme Data Center employees and customers.

Department	IT System	Environment	Description

Reasonable and expected.

C. Trouble Ticketing and Dispatch

Acme Data Center' IT department uses XXXXXXXX to log all trouble tickets and change management activities.

Reasonable and expected.

D. Inventory

No inventory system, process or procedures provided.

XVI. Red Flags Analysis

No Red Flag items were identified. Two Yellow Flag items were identified.

Expansion Planning. It is assumed that Zone Z expansion will be an extension of Cage X since the two areas share a common wall. The Zone Z location currently is unknown. We would expect to see forecasting for Zones Z and Z reflected in the model to anticipate timing of capital spend. There was mention that the buildout of Cage X and the new chiller system was due to unanticipated growth. It is understood that customer requirements will drive projections. However, starting with a baseline for anticipated requirements through proactive data gathering is typical. Zone Z will require additional capital north of the $X.XM. Anticipating the timing of when the additional capital will be needed is critical.

Carrier Fiber Feed Process. Acme Data Center allows carriers to pull fiber into cages within the data center. This shows a semi-hands-off approach from Acme Data Center. Taking a semi-hands-off approach until the fiber hits their cross connect could possibly have a negative impact on tenants as well as Acme Data Center. Although there was no mention of incidents from carrier fiber pulls, the exposure still remains. Management even commented that it looked like a bird's nest. This is not the workmanship we expected to see Acme Data Center allow in their data center. It is recommended that Acme Data Center Management consider taking over the process of pulling fiber via conduit from the carrier vault that they own or as soon as it enters the building.

XVII. Appendices

Appendix A: Scope of Work

1. Phase I: Red Flags Assessment

Evaluate and validate information provided by Acme Data Center in response to BSP questions about the areas below. Answered will be captured from the question trackers, the virtual data room and management interviews.

Physical Facility.

- Assess physical location and local natural disaster risks
- Determine if structure is purpose built or remodeled previous structure
- Gauge availability of these key structural features:
  - Loading dock
  - Storage areas
  - Staging / build out areas
  - Tenant work areas
  - Conference rooms
  - Raised floors
  - Floor loading/capacity

Power Infrastructure. Analyze:

- Commercial power grid connectivity
- Number of connections
- Capacity
- Diversity of commercial power
- Local power generators for commercial grid outages, capacity, run-time, refueling procedure
- Uninterruptible Power Supply (UPS) type, capacity, battery maintenance
- Power Distribution Units (PDU)
- AC power plant design, distribution, and management
- DC power plant design, distribution, and management

Cooling / HVAC Infrastructure. Analyze:

- Cooling Type
- Computer Room Air Conditioning (CRAC)
- Chilled water
- Cooling capacity
- Redundancy
- Heat management strategy and efficiency

Fire Suppression. Analyze:

- Type of system installed

- Environmental monitoring
- Fire detection and alarming

Cabling Infrastructure & Management. Analyze:

- Design
- Layout
- Installation
- Management of all power and data cables
- Networking for tenant cross connects

Data Center Operations. Analyze:

- Network Operations Center (NOC)
- External physical security
- Internal physical security
- Cyber security
- Tenant access
- Smarthands
- Network management
- Capacity planning
- Building Management Systems (BMS)
- Cost to operate including power cost and cooling per square foot

2. Phase II: Confirmatory Review

Broadband Success Partners visited Acme Data Center to report on this:

- Physical items listed in Phase 1.
  Opine on the condition and workmanship of these items.
- Condition and installation of plant equipment:
  - Inside Plant: Fiber Optic Patch Panels, DWDM multiplexers and amplifiers/regeneration equipment
  - Outside Plant Equipment Types: Fiber Cable / Drops, Enclosures, Cabinets, Conduits
- Core Network: Routers, Switches, Optical / DWDM Transport
- Support facilities and resources including warehouse, material management, staging and build out areas and tenant work areas
- Smarthands technical workforce

Appendix B: Key Vendor List

Appendix C: Power Equipment Inventory

Appendix D: HVAC TON of Cooling