**Created:** 2025-10-30 **Referenced from:** [[1BOD - General Requirements (CSI Div 01)]]

# APPENDIX A - ASSET NAMING AND TAGGING STANDARD

## SAGA DATA CENTERS GLOBAL NAMING CONVENTION

**Purpose:** Establish consistent, scalable naming standard for all SAGA data center facilities worldwide

**Scope:** Applies to all campuses, buildings, zones, equipment, cables, and customer spaces

## GEOGRAPHIC HIERARCHY

### Level 1: Campus Code (Airport IATA Code)

**Format:** XXX (3-letter airport code)

**Pryor, Oklahoma:** - Nearest major airport: **Tulsa International (TUL)** - Campus Code: **TUL**

**Examples of Future Campuses:** - Dallas: DFW or DAL - Phoenix: PHX - Amsterdam: AMS - Frankfurt: FRA - Singapore: SIN - London: LHR - Tokyo: NRT

**Rationale:** IATA codes are globally recognized, unique, and immediately identify geographic location

### Level 2: Data Center Building Number

**Format:** XXX-## (Campus + Building Number)

**Pryor Campus:** - First building: **TUL-01** - Future expansion: TUL-02, TUL-03, etc.

**Numbering Rules:** - Two digits support up to 99 buildings per campus - Sequential numbering by construction order - Skip numbers for cancelled projects (maintain chronology)

### Level 3: Floor Level

**Format:** XXX-##-F# (Campus + Building + Floor)

**Pryor Data Center (Multi-Level):** - Ground floor: **TUL-01-F1** - Mezzanine (NOC, offices): **TUL-01-F2** - Upper level (gym): **TUL-01-F3**

**Future Multi-Story Buildings:** - Basement: F0 or FB - Ground: F1 - Second floor: F2, etc. - Penthouse: FPH

### Level 4: Zone/Area Type

**Format:** XXX-##-F#-ZZZ (Campus + Building + Floor + Zone Code)

**Zone Codes:**

| Code | Description | Example |
| --- | --- | --- |
| **DH#** | Data Hall | DH1, DH2 |
| **EYN** | Equipment Yard - North | Mechanical yard |
| **EYS** | Equipment Yard - South | Electrical yard |
| **SUB** | Substation | 138 kV substation |
| **NOC** | Network Operations Center | - |
| **MDA** | Main Distribution Area | Telecom backbone |
| **MMR#** | Meet-Me Room | MMR1 (east), MMR2 (west) |
| **MPE#** | MPOE (Main Point of Entry) | MPE1, MPE2 |
| **MER#** | Mechanical/Electrical Room | MER1, MER2 |
| **CHY** | Chiller Yard | - |
| **GNY** | Generator Yard | - |
| **STG** | Staging Area | Loading dock |
| **SHL** | Storm Shelter | FEMA 361 shelter |
| **OFC** | Office Area | - |
| **BRK** | Break Room | - |
| **LDG** | Loading Dock | - |

**Pryor Examples:** - **TUL-01-F1-DH1** = Data Hall 1 (ground floor) - **TUL-01-F1-DH2** = Data Hall 2 (ground floor) - **TUL-01-F2-NOC** = Network Operations Center (mezzanine) - **TUL-01-F1-EYN** = North Equipment Yard (Mechanical) - **TUL-01-F1-EYS** = South Equipment Yard (Electrical) - **TUL-01-F1-SUB** = 138 kV Substation

## EQUIPMENT ASSET TAGGING

### Format: XXX-##-F#-ZZZ-EEEEE-###

**Components:** - XXX-##-F#-ZZZ = Location (Campus-Building-Floor-Zone) - EEEEE = Equipment Type Code (5 characters max) - ### = Sequential Unit Number (3 digits)

## EQUIPMENT TYPE CODES (COMPLETE LIST)

### **ELECTRICAL EQUIPMENT**

| Code | Description | Example | Notes |
| --- | --- | --- | --- |
| **XFMSU** | Substation Transformer (138kV/11kV) | TUL-01-F1-SUB-XFMSU-001 | 2N redundancy: -001, -002 |
| **XFMR** | Power Transformer (11kV/480V) | TUL-01-F1-EYS-XFMR-001 | Sequential 001-008 |
| **GEN** | Generator | TUL-01-F1-EYS-GEN-001 through GEN-006 | N+1 redundancy |
| **RMU** | Ring Main Unit (11 kV switchgear) | TUL-01-F1-EYS-RMU-001 | Ring A: 001-003, Ring B: 004-006 |
| **SWBD** | Switchboard (480V) | TUL-01-F1-EYS-SWBD-A, SWBD-B | 2N: Path A/B |
| **UPS-IT** | IT UPS Module | TUL-01-F1-EYS-UPS-IT-001-A | Path A: 001-005, Path B: 001-005 |
| **UPS-MC** | Mechanical UPS Module | TUL-01-F1-EYS-UPS-MC-001 | N+1: 001-020 |
| **BATT** | Battery Cabinet | TUL-01-F1-EYS-BATT-001 | Grouped with UPS modules |
| **PANEL** | Distribution Panel | TUL-01-F1-DH1-PANEL-001 | Per zone |
| **PDU** | Rack PDU | TUL-01-F1-DH1-PDU-R001-A | Rack 1, A-side |
| **ATS** | Automatic Transfer Switch | TUL-01-F1-EYS-ATS-001 | - |
| **PDM** | Power Delivery Module | TUL-01-F1-EYS-PDM-A, PDM-B | 2N paths |
| **BRKR** | Circuit Breaker | TUL-01-F1-EYS-BRKR-001 | Major breakers only |
| **METER** | Power Meter | TUL-01-F1-EYS-METER-001 | Revenue/submetering |

### **MECHANICAL EQUIPMENT**

| Code | Description | Example | Notes |
| --- | --- | --- | --- |
| **CHLR** | Chiller | TUL-01-F1-EYN-CHLR-L1-001 | Loop 1, Unit 1 |
| **PUMP** | Pump | TUL-01-F1-EYN-PUMP-L1-P01 | L1=Loop, P=Primary |
| **CDU** | Coolant Distribution Unit | TUL-01-F1-DH1-CDU-R001-A | Cabinet 1, A-side |
| **FCU** | Fan Coil Unit (in-cabinet) | TUL-01-F1-DH1-FCU-R001 | Cabinet 1 |
| **AHU** | Air Handling Unit | TUL-01-F1-DH1-AHU-001 | - |
| **DOAS** | Dedicated Outdoor Air System | TUL-01-F1-DH1-DOAS-001 | White space pressurization |
| **RTU** | Rooftop Unit | TUL-01-F1-NOC-RTU-001 | Support spaces |
| **EXPTK** | Expansion Tank | TUL-01-F1-EYN-EXPTK-L1-001 | Per loop |
| **VLVMX** | Mixing Valve | TUL-01-F1-EYN-VLVMX-001 | - |
| **VLVBL** | Balancing Valve | TUL-01-F1-EYN-VLVBL-001 | - |
| **STRN** | Strainer | TUL-01-F1-EYN-STRN-001 | - |
| **AIRSEP** | Air Separator | TUL-01-F1-EYN-AIRSEP-001 | - |

### **FIRE & LIFE SAFETY**

| Code | Description | Example | Notes |
| --- | --- | --- | --- |
| **FACP** | Fire Alarm Control Panel | TUL-01-F1-NOC-FACP-001 | Primary panel |
| **VESDA** | VESDA Detector | TUL-01-F1-DH1-VESDA-001 | Per zone |
| **SPRKL** | Sprinkler Riser | TUL-01-F1-DH1-SPRKL-001 | - |
| **SUPPR** | Suppression System (Clean Agent) | TUL-01-F1-DH1-SUPPR-001 | FM-200/Novec |
| **FEXT** | Fire Extinguisher | TUL-01-F1-DH1-FEXT-001 | Portable units |
| **FPUMP** | Fire Pump | TUL-01-F1-FP-FPUMP-001 | - |
| **EMRLT** | Emergency Light | TUL-01-F1-DH1-EMRLT-001 | Battery-backed |

### **TELECOM & NETWORK**

| Code | Description | Example | Notes |
| --- | --- | --- | --- |
| **RACK** | Telecom/Network Rack | TUL-01-F1-MMR1-RACK-001 | Carrier equipment |
| **CORE** | Core Switch | TUL-01-F2-MDA-CORE-A, CORE-B | Redundant pair |
| **FW** | Firewall | TUL-01-F2-MDA-FW-001 | - |
| **PATCHP** | Fiber Patch Panel | TUL-01-F1-MMR1-PATCHP-001 | - |
| **ROUTER** | Router | TUL-01-F2-MDA-ROUTER-001 | - |

### **SECURITY**

| Code | Description | Example | Notes |
| --- | --- | --- | --- |
| **CAM** | Security Camera | TUL-01-F1-DH1-CAM-001 | Per zone |
| **NVR** | Network Video Recorder | TUL-01-F2-MDA-NVR-001 | Redundant pair |
| **ACSDR** | Access Control Door Reader | TUL-01-F1-DH1-ACSDR-001 | Per door |
| **ACSCP** | Access Control Panel | TUL-01-F2-MDA-ACSCP-001 | Central controller |
| **IDS** | Intrusion Detection Sensor | TUL-01-F1-DH1-IDS-001 | Motion, glass break |
| **DRSN** | Door Sensor | TUL-01-F1-DH1-DRSN-001 | Open/close monitoring |

### **BMS/CONTROLS**

| Code | Description | Example | Notes |
| --- | --- | --- | --- |
| **BMS** | BMS Server | TUL-01-F2-NOC-BMS-001 | Redundant A/B |
| **DDC** | Direct Digital Controller | TUL-01-F1-EYN-DDC-L1-001 | Per plant/zone |
| **EPMS** | Electrical Power Monitoring Server | TUL-01-F2-NOC-EPMS-001 | SCADA |
| **DCIM** | DCIM Server | TUL-01-F2-NOC-DCIM-001 | Asset management |
| **MGC** | Microgrid Controller | TUL-01-F1-SUB-MGC-001 | IEEE 2030.7 |

## CUSTOMER SPACE NAMING

### Cabinets/Racks

**Format:** XXX-##-F#-DH#-R### (Campus-Building-Floor-DataHall-Rack)

**Pryor Examples:** - **TUL-01-F1-DH1-R001** = Data Hall 1, Rack 001 - **TUL-01-F1-DH1-R030** = Data Hall 1, Rack 030 - **TUL-01-F1-DH2-R001** = Data Hall 2, Rack 001

**Rack Numbering Rules:** - Sequential, left-to-right, front-to-back (when facing cold aisle) - Start at R001 in each data hall - Three digits support up to 999 racks per hall

### Cages/Suites

**Format:** XXX-##-F#-DH#-C## (Campus-Building-Floor-DataHall-Cage)

**Examples:** - **TUL-01-F1-DH1-C01** = Data Hall 1, Cage 01 (4-rack cage) - **TUL-01-F1-DH1-C02** = Data Hall 1, Cage 02 (8-rack cage)

**Suites (Larger):** **Format:** XXX-##-F#-DH#-S##

**Examples:** - **TUL-01-F1-DH1-S01** = Data Hall 1, Suite 01 (12-rack suite)

## ELECTRICAL PATH DESIGNATION (2N ARCHITECTURE)

### Path A vs. Path B

All dual-fed equipment includes path suffix:

**Switchboards:** - TUL-01-F1-EYS-SWBD-A (Path A) - TUL-01-F1-EYS-SWBD-B (Path B)

**UPS Modules:** - TUL-01-F1-EYS-UPS-IT-001-A (Path A, Module 1) - TUL-01-F1-EYS-UPS-IT-002-A (Path A, Module 2) - TUL-01-F1-EYS-UPS-IT-001-B (Path B, Module 1) - TUL-01-F1-EYS-UPS-IT-002-B (Path B, Module 2)

**Cabinet PDUs:** - TUL-01-F1-DH1-PDU-R001-A (Rack 1, A-side) - TUL-01-F1-DH1-PDU-R001-B (Rack 1, B-side)

**Distribution Panels:** - TUL-01-F1-DH1-PANEL-A (Path A distribution) - TUL-01-F1-DH1-PANEL-B (Path B distribution)

## MECHANICAL LOOP DESIGNATION

### Loop Numbering (Phase-Specific)

* **Loop 1:** Air cooling, Loop 1 coil (Coil #1 in cabinet FCUs)
* **Loop 2:** Air cooling, Loop 2 coil (Coil #2 in cabinet FCUs)
* **Loop 3:** Direct-to-chip cooling (D2C)

**Chillers:** - TUL-01-F1-EYN-CHLR-L1-001 (Loop 1, Chiller 1) - TUL-01-F1-EYN-CHLR-L1-002 (Loop 1, Chiller 2) - TUL-01-F1-EYN-CHLR-L1-003 (Loop 1, Chiller 3) - TUL-01-F1-EYN-CHLR-L1-004 (Loop 1, Chiller 4) - TUL-01-F1-EYN-CHLR-L3-001 through L3-008 (Loop 3, Phase 2)

**Pumps:** - TUL-01-F1-EYN-PUMP-L1-P01 (Loop 1, Primary Pump 1) - TUL-01-F1-EYN-PUMP-L1-S01 (Loop 1, Secondary Pump 1)

## GENERATOR & TRANSFORMER NUMBERING

### Generators (Sequential by Installation)

* TUL-01-F1-EYS-GEN-001 through GEN-006
* **Phase 1:** GEN-001, GEN-002, GEN-003
* **Phase 2:** GEN-004, GEN-005, GEN-006

**Rationale:** Sequential numbering regardless of ring assignment (simplifies identification)

### Transformers (11kV/480V)

* TUL-01-F1-EYS-XFMR-001 through XFMR-008
* **Phase 1:** XFMR-001, XFMR-002, XFMR-003
* **Phase 2:** XFMR-004 through XFMR-008

### Ring Main Units (11 kV)

* **Ring A:** TUL-01-F1-EYS-RMU-001, RMU-002, RMU-003
* **Ring B:** TUL-01-F1-EYS-RMU-004, RMU-005, RMU-006

**Rationale:** Ring assignment embedded in sequential numbering (001-003 = Ring A, 004-006 = Ring B)

## PHYSICAL ASSET LABELS

### Label Format (QR Code + Human-Readable)

┌─────────────────────────────┐  
│ [QR CODE] │  
│ │  
│ TUL-01-F1-EYS-GEN-001 │  
│ Generator #1 (Path A) │  
│ 4.0 MW @ 11 kV │  
│ Serial: [VENDOR-SN] │  
│ Commissioned: [DATE] │  
└─────────────────────────────┘

**Label Specifications:** - **Size:** 4” × 6” minimum (larger for big equipment) - **QR Code:** Links to DCIM asset record (dynamic URL) - **Font:** Sans-serif, minimum 12pt for human-readable text - **Colors:** Black text on white/silver background (high contrast)

**Label Placement:** - **Primary label:** Front panel, eye level (5-6 ft AFF) - **Backup label:** Rear or side panel (for large equipment) - **Cable entry:** Small labels at cable/conduit entry points

**Label Material:** - **Outdoor equipment:** Anodized aluminum, UV-resistant - **Indoor equipment:** Laminated polyester (3M or equivalent) - **Method:** Laser-engraved (permanent, no fade, chemical resistant)

## CABLE & CONDUIT TAGGING

### Cable ID Format

**Format:** [SOURCE]-[DEST]-[TYPE]-###

**Examples:** - SWBD-A-PANEL-DH1-PWR-001 (Power cable from SWBD-A to DH1 panel) - RMU-001-XFMR-001-MV-001 (MV cable from RMU-001 to XFMR-001) - MMR1-DH1-R001-FIBER-001 (Fiber from MMR1 to Rack 001) - XFMR-001-SWBD-A-LV-001 (LV cable from XFMR-001 to SWBD-A)

**Cable Type Codes:** - PWR = Power cable (480V or below) - MV = Medium voltage cable (11 kV) - FIBER = Fiber optic - CAT6 = Category 6 copper - CTRL = Control wiring - INST = Instrumentation

**Cable Labels:** - **Frequency:** Every 10 ft + at terminations (both ends) - **Material:** Vinyl wrap-around labels or heat-shrink sleeves - **Color coding:** Optional by voltage level (red=480V, yellow=11kV, blue=fiber)

## DATABASE/DCIM INTEGRATION

### Asset Registry Fields (Required)

| Field | Example | Notes |
| --- | --- | --- |
| **Asset ID** | TUL-01-F1-EYS-GEN-001 | Primary key |
| **Asset Type** | Generator | From equipment type code |
| **Location** | TUL-01-F1-EYS | Zone assignment |
| **Vendor** | Caterpillar | Manufacturer |
| **Model** | 3516E | Model number |
| **Serial Number** | CAT12345XYZ | Vendor SN |
| **Capacity** | 4.0 MW @ 11 kV | Nameplate rating |
| **Commissioned Date** | 2026-06-15 | ISO 8601 format |
| **Warranty Expiration** | 2031-06-15 | - |
| **Maintenance Schedule** | [Link] | PM schedule reference |
| **Path/Loop** | Ring A | Redundancy group |
| **BMS Point** | GEN-001-STATUS | Control system address |
| **Drawing Reference** | E-401, Sheet 12 | As-built drawing |
| **Photo** | [Link to image] | Equipment photo |

### QR Code Implementation

* **URL Format:** https://dcim.sagadata.com/asset/TUL-01-F1-EYS-GEN-001
* **Dynamic link:** Redirects to current DCIM record (survives DCIM platform changes)
* **Mobile-friendly:** Accessible via smartphone for field technicians

## EXAMPLE: COMPLETE PRYOR DATA CENTER ASSET LIST (SAMPLE)

### Electrical Equipment (Sample)

| Asset ID | Description | Location | Path/Ring |
| --- | --- | --- | --- |
| TUL-01-F1-SUB-XFMSU-001 | 138kV/11kV Transformer A | Substation | 2N-A |
| TUL-01-F1-SUB-XFMSU-002 | 138kV/11kV Transformer B | Substation | 2N-B |
| TUL-01-F1-EYS-GEN-001 | Generator 1, 4.0 MW | Electrical Yard South | Ring A |
| TUL-01-F1-EYS-GEN-002 | Generator 2, 4.0 MW | Electrical Yard South | Ring A |
| TUL-01-F1-EYS-GEN-003 | Generator 3, 4.0 MW | Electrical Yard South | Ring B |
| TUL-01-F1-EYS-RMU-001 | Ring Main Unit 1 | Electrical Yard South | Ring A |
| TUL-01-F1-EYS-XFMR-001 | 11kV/480V Transformer 1, 3.5 MVA | Electrical Yard South | Ring A |
| TUL-01-F1-EYS-SWBD-A | Switchboard Path A | Electrical Yard South | Path A |
| TUL-01-F1-EYS-UPS-IT-001-A | IT UPS Module 1, Path A | Electrical Yard South | Path A |

### Mechanical Equipment (Sample)

| Asset ID | Description | Location | Loop |
| --- | --- | --- | --- |
| TUL-01-F1-EYN-CHLR-L1-001 | Chiller L1-1, 1,500 kW | Equipment Yard North | Loop 1+2 |
| TUL-01-F1-EYN-CHLR-L1-002 | Chiller L1-2, 1,500 kW | Equipment Yard North | Loop 1+2 |
| TUL-01-F1-EYN-PUMP-L1-P01 | Primary Pump L1-P1 | Equipment Yard North | Loop 1 |
| TUL-01-F1-DH1-FCU-R001 | Cabinet FCU, Rack 1 | Data Hall 1 | Loop 1+2 |
| TUL-01-F1-DH1-CDU-R001-A | CDU Rack 1, A-side | Data Hall 1 | Loop 3 |

### Customer Racks (Sample)

| Asset ID | Description | Customer |
| --- | --- | --- |
| TUL-01-F1-DH1-R001 | Rack 001 | Customer A |
| TUL-01-F1-DH1-R002 | Rack 002 | Customer A |
| TUL-01-F1-DH1-R003 | Rack 003 | Customer B |

## SUMMARY RUBRIC

| Level | Format | Example | Description |
| --- | --- | --- | --- |
| **Campus** | XXX | TUL | Airport IATA code |
| **Building** | XXX-## | TUL-01 | Campus + Building # |
| **Floor** | XXX-##-F# | TUL-01-F1 | Building + Floor |
| **Zone** | XXX-##-F#-ZZZ | TUL-01-F1-DH1 | Zone/Area code |
| **Equipment** | XXX-##-F#-ZZZ-EEEEE-### | TUL-01-F1-EYS-GEN-001 | Full asset ID |
| **Rack** | XXX-##-F#-DH#-R### | TUL-01-F1-DH1-R001 | Cabinet location |
| **Path** | Add -A or -B | SWBD-A, PDU-R001-B | Electrical path |
| **Loop** | Add -L# | CHLR-L1-001 | Mechanical loop |
| **Cable** | SRC-DST-TYPE-### | SWBD-A-PANEL-PWR-001 | Cable ID |

## BENEFITS OF THIS STANDARD

**Scalability:** - Supports global expansion (unlimited campuses, 99 buildings/campus) - Accommodates multi-story, multi-hall, multi-customer deployments

**Parseability:** - Machine-readable (DCIM, BMS, CMMS integration) - Structured format enables automated validation and reporting

**Human-Friendly:** - Intuitive hierarchy (location → equipment → unit) - Self-documenting (asset ID reveals location and type)

**Future-Proof:** - Three-digit equipment numbers (001-999) support large deployments - Flexible zone codes accommodate new facility types

**Operational Efficiency:** - Technicians locate equipment quickly (even without DCIM access) - Reduces errors in maintenance work orders and incident response - Simplifies spare parts inventory management (standardized equipment)

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**Tags:** #naming-standard #asset-tagging #dcim #operations #standards