Manufacturing Defect Detection Architecture
Single Camera/Simple Configuration

IoT Hub DPS
Private Link
(PoC Optional)

Stream
Analytics

SQL Database

PowerBI

Cognitive
Services

Azure ML

Git repo

Azure
Key Vault

10.0.0.1

IoT Hub
Private Link

10.0.0.2

Retraining
Images

Pipeline
Manifest

AI
Pre-
Built

ML/
AI

Code
Curation

Env
Variables/
Keys

Virtual Network

10.0.0.0/24
Private
Subnet

10.0.0.3

Container Registry
Private Link

10.0.0.4

Pipeline
Build/Deploy

Storage Blob
Private Link

Azure DevOps

ExpressRoute

IDE

ExpressRoute
(optional)

Azure IOT
EDGE

Visual Studio

Visual Studio Code

ExpressRoute
(optional)

ExpressRoute
(optional)

Image Upload
(Blob or ADL G2)

Module Twin
Configuration

Edge Hub

Custom
Dashboard

Annotated,
Raw &
Retraining
Frames

Inference Output

Store Inference

Dashboard

Camera

Stream

CIS Module (per camera)
<capture>/<inference>/<store>

Annotated & Raw Frames

Azure SQL
On Edge

Grafana

Model &
Labels

Directory on
Host Device

Image Visualization

Custom ML
Model Repo

Image Cleanup
(user-defined TTL)