IRON SERVICE GLOBAL (ISG) | META PROJECT | NEW ALBANY: VNA / NAO / NLH / LCO / QNO

Data Center Fiber Troubleshooting Field Guide

A fast, evidence-first reference for safer work, cleaner diagnosis, and handoffs the next technician can act on.

1 Confirm scope

2 Capture state

3 Inspect & isolate

4 Verify result

5 Document & hand off

Field principle: Do the least disruptive action that the evidence supports. Preserve before/after evidence and make the next action unmistakable.

TEAM REFERENCE

Prepared by Tarek Kharroubi
Fiber Optic & Data Center Technician

Version 1.0
22 September 2026
New Albany, Ohio

Unofficial field reference. Site procedures, approved playbooks, change controls, safety rules, and authorized scopes of work always take priority.

Protect the link, then preserve the evidence

Before touching fiber or hardware, confirm what is failing, which side you own, and what work is authorized. Record the initial state so every later action has a clean before/after comparison.

Scope

DEVICE · PORT · SIDE · SITE

State

LINK · ALARMS · COUNTERS

Proof

PHOTOS · READINGS · TEST ID

First 5 minutes

1. **Read the full ticket:** failure type, endpoints, side ownership, priority, and prior work.
2. **Confirm the physical target:** rack, device, slot, port, fiber ID, and connector type.
3. **Capture baseline:** admin/oper state, link light, optical levels, counters, alarms, and neighbor state.
4. **Check history:** recent flaps, repeated repairs, far-end notes, and test failures.
5. **Select one low-risk action:** inspect, clean if needed, reseat only when authorized, then retest.

Laser safety

Never look into a fiber, connector, or optical port. Invisible laser energy may be present. De-energize when the approved procedure requires it and use inspection equipment designed for fiber work.

Stop before disruptive work

A transceiver swap, line-card reseat, or cable move can affect live traffic. Verify authorization, drain/change state, blast radius, and rollback path before proceeding.

Use this guide in this order

Need	Go to	Outcome
Choose next action	Seven-step triage	Low-risk isolation path
Interpret readings	Read the evidence	Evidence-based fault domain
Handle end faces	Inspect-clean-inspect	Verified clean connection
Post a clear update	Ticket templates	Ready-to-act handoff

Move from symptom to fault domain - one controlled step at a time

This sequence separates local physical issues, far-end issues, device reachability, and test-harness failures without jumping directly to hardware replacement.

1. **Confirm scope and ownership**

   Match ticket endpoint, New Albany site code (VNA / NAO / NLH / LCO / QNO), device, slot, port, side, and authorized task. Stop if labels or physical topology do not match.

2. **Capture the baseline**

   Record link/admin state, LEDs, local and remote Tx/Rx power, alarms, error counters, LLDP/neighbor data, last flap, and existing test results before any change.

3. **Check the physical path**

   Verify correct port and polarity, seated connectors, bend radius, strain, patch routing, labels, and visible damage. Do not move unrelated fibers.

4. **Inspect - clean only if needed - reinspect**

   Inspect both accessible end faces and ports. Clean a failed end face with approved materials, then reinspect before mating. Save PASS/FAIL evidence when the tool supports it.

5. **Retest the smallest changed element**

   Reconnect, allow the link to settle, then recheck power, counters, alarms, and neighbor state. Clear counters only when the approved workflow allows it; note that you did.

6. **Run the approved verification**

   Use the ticket/playbook test. Record test name, job or task ID, timestamp, result, and any infrastructure error separately from the circuit result.

7. **Resolve or escalate with ownership**

   If healthy, state the evidence and close per workflow. If not, name the isolated side or fault domain, what was ruled out, who owns the next action, and what action is requested.

> **Do not stack changes.** Cleaning, reseating, swapping an optic, and reseating a line card in one pass destroys causality. Change one thing, verify, and document the result.

No single reading proves the root cause

Use optical telemetry, counters, alarms, topology, and test history together. Compare each value with the approved threshold for the exact optic and platform - never with a universal number.

dBm = absolute optical power

Use dBm for transmitter output and receiver input. A more negative value means less received power.

dB = relative gain or loss

Use dB for insertion loss, margin, or change between two measurements.

Evidence	What it may indicate	Best next check
Rx below low threshold	Loss, dirt, bend, open path, weak Tx	Inspect path; compare far-end Tx
Rx above high threshold	Receiver overload risk	Confirm optic/budget; do not clean blindly
FEC errors on one side	Signal quality issue toward that receiver	Correlate Rx, history, far-end work
CRC/input errors rising	Active degradation	Record rate; isolate side and path
Historical errors only	Past event, not proof of active fault	Clear if authorized; observe delta
Single old flap	Transient event	Check time, recurrence, current health
LLDP mismatch	Wrong patch or unexpected neighbor	Compare planned vs. actual endpoints
No neighbor, link otherwise healthy	Protocol/config or one-way advertisement	Check far-end view and design intent
Device unreachable	Management/collection issue	Separate reachability from physical health

STRONG EVIDENCE

- Current counters increasing
- Repeatable test failure
- Out-of-range power vs. exact optic threshold
- Before/after change in the same conditions

NEEDS CONTEXT

- One old alarm or flap
- Stale test result
- Generic playbook recommendation
- Automation error with no device response

Fault-domain rule: The receiver's errors describe the signal arriving at that receiver. Use direction, Tx/Rx pairing, and both endpoints to decide which path or side to investigate.

A clean link starts before the connectors mate

Fluke Networks' “golden rule” is simple: inspect before cleaning and reinspect after cleaning. A connector that already passes should not be cleaned without a reason; cleaning itself can introduce contamination.

1
Inspect

Use an approved video probe or inspection scope. Inspect every accessible end face and port before mating.

2
Clean if failed

Use the cleaner and method approved for the connector. Protect the clean surface from hands, trays, and reused materials.

3
Reinspect

Confirm PASS before mating. If marks remain after correct cleaning, treat them as possible damage and escalate or replace per process.

Good handling

- [ ] Verify the correct probe tip
- [ ] Keep dust caps clean and sealed
- [ ] Use fresh approved wipes/swabs
- [ ] Inspect both sides of a mating pair
- [ ] Save before/after images
- [ ] Protect bend radius and slack

Never

- Look into an active connector or port.
- Touch the end face or clean area of a wipe.
- Reuse a wipe or contaminated swab.
- Mate a connector before confirming it is clean.
- Force a keyed connector or wrong adapter.
- Use unapproved fluids or materials.

Evidence to attach

Before	Action	After
Scope image + PASS/FAIL	Cleaner/method used	Scope image + PASS
Initial Rx/Tx + counters	Port and side handled	New Rx/Tx + counter delta
Link/alarm state	Time and technician	Link/alarm + verification result

MPO note: Multi-fiber connectors have larger ferrules and more surfaces where debris can migrate. Inspect the full ferrule and all fibers using the approved tool and acceptance criteria.

Write notes that let the next technician act immediately

A strong update answers five questions: What was wrong? What did you verify? What did you change? What happened after? Who owns the next action?

Before

Endpoint, side, symptom, current state, baseline readings.

Action

Exact port, inspection/cleaning/reseat, authorization, evidence.

After

Power, counters, link, test result, next owner and request.

Template A - local side healthy, far-end action required

```
Checked [local device:port] at [site code]. Inspected [connector/port]; end face [PASS / cleaned and reinspection PASS]. Link is [state]. Local Tx/Rx: [values] dBm; remote Tx/Rx: [values] dBm. [Counters/alarms] are [result]. Verification [test name / job ID] [passed/failed]. Local physical path is healthy. Please inspect [far-end device:port] and perform [specific requested action].
```

Template B - local corrective action completed

```
At [time], inspected [device:port] at [site code]. Initial condition: [symptom/readings]. Performed [one exact action]. Post-work inspection: PASS. Link is [state]; Tx/Rx: [values] dBm; counters [result]. Verification [test name / job ID] [passed/failed]. [Ticket ready to close / remaining issue and owner].
```

Template C - test infrastructure or device reachability issue

```
Physical checks on [device:port] are healthy: [scope result], [link state], Tx/Rx [values] dBm, and [counter result]. Verification could not complete because [exact tool/device error]. This result does not by itself indicate a fiber fault. Requesting [device reachability / test-platform] review by [owner/team].
```

Team-chat summary

[Ticket ID] - [site code / device:port]: [action] completed. [One-line health result]. Verification [result]. Next action: [owner + action], or “No further action required from local side.”

Write only what the evidence supports. “Link up” is not the same as “all tests passed.” “Tool unreachable” is not the same as “circuit failed.” Keep the physical result and automation result separate.

Finish every task with an owner, a result, and a next step

The best handoff is short because the evidence is complete. Use this checklist before posting to the ISG team chat or closing the ticket.

Technical completeness

- [ ] Ticket and endpoint match
- [ ] Site code recorded
- [ ] Before/after scope result attached
- [ ] Tx/Rx and counters recorded
- [ ] Test name, ID, and result included
- [ ] No unsupported root-cause claim

Operational completeness

- [ ] One action per verification cycle
- [ ] Disruptive work authorized
- [ ] Physical and tool results separated
- [ ] Remaining risk stated
- [ ] Next owner named
- [ ] Requested action is specific

30-second handoff formula

Ticket + endpoint → baseline → one action → after-state → verification → next owner/action.

New Albany site context

Use the exact site code shown in the ticket and physical labeling: **VNA / NAO / NLH / LCO / QNO**. Never infer the site or endpoint from a previous ticket.

Stakeholders & escalation

Route updates through the approved chain for the relevant stakeholder: Meta, Vantage, Turner, or Iron Service Global (ISG).

- Labels or topology do not match.
- Damage remains after approved cleaning.
- Thresholds or authorization are unclear.
- Action could affect other live ports.
- Far-end or platform ownership is required.

Final check: If the next technician cannot tell exactly what to do, where to do it, and why, the handoff is not finished.

Reference the standard practice behind the field workflow

These public technical sources support the inspection, cleaning, testing, and traffic-protection principles summarized in this guide.

Fluke Networks - inspection and certification

Standard-compliant certification and inspection best practices

Supports inspect-before/after-cleaning workflow, equipment-port inspection, and MPO contamination guidance.

Fluke Networks - contamination and cleaning

Fiber contamination, cleaning and inspection

Supports inspecting plugs, adapters, tester ports, and other end faces; clean failed end faces and reinspect.

Fiber Optic Association - testing

Fiber optic testing reference

Supports loss-budget thinking, directional isolation, insertion-loss testing, and OTDR use for locating faults.

Cisco - optical troubleshooting

Optical troubleshooting guidance

Supports checking polarity, cleaning and retesting patch cords, and protecting traffic before card-level work.

Scope: References accessed 22 September 2026. This guide summarizes general practice and does not replace Meta project procedures, Vantage or Turner requirements, site safety rules, or Iron Service Global (ISG) authorization.