

1 - Bid for 2021 Giga Schools Connectivity RFP

1. Cover Letter/Executive Summary

ZanziCom Solutions
10.1.2021

UNICEF Procurement Services
3 United Nations Plaza
New York, NY 10017

Subject: Bid Proposal for Rwanda School Connectivity Project – RFP 9165317

Dear UNICEF Procurement Team,

On behalf of ZanziCom Solutions, a leading provider of innovative connectivity solutions across East Africa, we are pleased to submit our comprehensive bid proposal for the Rwanda School Connectivity Project.

ZanziCom is committed to bridging the digital divide by leveraging cutting-edge technologies and sustainable business models. Our proposal offers a robust, reliable, and future-proof solution that exceeds the RFP requirements and aligns with Rwanda's ICT strategic objectives. We are confident that our expertise and innovative approach will deliver exceptional value to UNICEF and the Rwandan educational community.

Sincerely,
John Doe

Project Manager
john.doe@example.org

2. Company Profile

2.0 ZanziCom Solutions: Company Overview

ZanziCom Solutions is a pan-African telecommunications company headquartered in Nairobi, Kenya, with over 15 years of experience in designing, deploying, and managing large-scale connectivity networks. We specialize in innovative last-mile solutions, leveraging fiber optics, wireless technologies, and satellite communications to deliver reliable internet access to underserved communities.

Key Highlights:

- Established in 2010, serving over 500,000 subscribers across East Africa.
- Proven track record of successful project implementations in challenging environments, including rural schools and refugee camps.
- ISO 9001:2015 certified for quality management systems.
- Partnerships with leading technology providers, including Cisco, Nokia, and SpaceX.
- Strong local presence in Rwanda with a dedicated support team and local office in Kigali.
- Commitment to corporate social responsibility through digital literacy programs and environmental sustainability initiatives.
- Financial Stability: Annual revenue exceeding \$50 million USD (audited financial statements available upon request).

Organizational Structure

- Project Director: Jane Smith, responsible for overall project execution.
- Technical Lead: Paul Green, responsible for network design and implementation.
- Financial Manager: John Pullman, responsible for budget management and reporting.

Overview of Solution

Our comprehensive bid response meets all mandatory requirements of UNICEF's RFP 9165317 while exceeding expectations through innovative technical solutions, sustainable financial models, and community empowerment strategies. The proposal demonstrates full alignment with Rwanda's ICT Sector Strategy 2018-2024 and Giga's four-pillar framework through cutting-edge network architecture, real-time monitoring systems, and scalable revenue models.

Technical Approach and Business Model

Hybrid Network Architecture Core Infrastructure

- National Backbone Integration: Direct peering with Rwanda's National Fiber Backbone at 10Gbps capacity using Arista 7280CR3 routers¹
- Traffic Engineering: Multiprotocol Label Switching (MPLS) with Segment Routing (SR-MPLS) for optimal path selection
- Redundant Connectivity: Dual BGP sessions with Liquid Intelligent Technologies (AS30911) and SEACOM (ASAS37100)

Last-Mile Solutions

School Type	Technology Deployed	Throughput	Coverage
Urban (38 schools)	G.fast over existing copper (212m)	750Mbps DL/500Mbps UL	Full campus WiFi 6
Rural (25 schools)	TV White Space (802.22af)	50Mbps DL/25Mbps UL	5km radius
Refugee Camps (13)	Starlink Gen3 + Ubiquiti AirFiber	150Mbps DL/30Mbps UL	Community mesh network

Innovation Highlights

1. AI-Powered Spectrum Management: Dynamic frequency selection (DFS) for TVWS bands using TensorFlow-based interference prediction
2. Satellite Hybridization: Seamless Starlink-to-LTE failover with <200ms handoff
3. Edge Caching: Localized content servers storing 500GB educational materials per school

Connectivity Speed and Coverage

Performance Guarantees

- Base Connectivity: 25Mbps dedicated line + 75Mbps burst capacity during school hours (07:00-17:00)

- QoS Implementation:

```
{
  "priority_levels": [
    {"class": "EduVideo", "dscp": 46, "bandwidth": 40%},
    {"class": "ExamPortal", "dscp": 34, "bandwidth": 30%},
    {"class": "Admin", "dscp": 18, "bandwidth": 20%},
    {"class": "Guest", "dscp": 0, "bandwidth": 10%}
  ]
}
```

- Latency Optimization:
 - <30ms for local educational resources
 - <80ms for international learning platforms

Quality of Service (SLA)

Service Parameters

Metric	Guarantee	Measurement Method
Availability	99.9% monthly	SNMP polling every 30 seconds
Packet Loss	<0.5%	Cisco IP SLA synthetic probes
Jitter	<5ms	ThousandEyes enterprise monitoring
Mean Time to Repair	4 hours	Automated ticketing system logs

Real-Time Monitoring

- Public API endpoint providing:

python

```
class ConnectivityMonitor(Resource):
    def get(self, school_id):
        return {
            "throughput": current_speed,
            "latency": network_latency,
            "uptime": system_availability,
            "power_status": solar_battery_level
        }
```

- Integration with Giga's Map platform through GeoJSON feeds updated every 60 seconds

Sustainability Model

Financial Architecture

Cost Structure

- CapEx: \$182,500 (One-time)
 - Network equipment: \$127,750
 - Installation: \$54,750
- OpEx: \$8,750/month
 - Bandwidth: \$3,500
 - Maintenance: \$2,250
 - Community Support: \$3,000

Revenue Generation

1. After-Hours Community Access:
 - \$0.10/hour for WiFi access
 - \$5/month premium package with VPN services
2. Digital Marketplace:
 - 15% commission on e-learning content sales
 - Agricultural price alerts via SMS (\$0.01/alert)

Energy Resilience

- 5kW solar arrays per school with Tesla Powerwall 2 (13.5kWh)
- Dynamic power management via LoRaWAN-connected sensors
- 92% renewable energy penetration achieved through geofenced power policies

Implementation Plan

Phased Deployment

Phase	Task	Start Date	Duration	End Date
Phase 1	Site Survey	March 1, 2025	30 days	March 30, 2025
Phase 1	Equipment Import	March 31, 2025	15 days	April 14, 2025
Phase 2	Urban Deployment	April 15, 2025	45 days	May 29, 2025
Phase 2	Rural Tower Construction	April 15, 2025	60 days	June 13, 2025
Phase 3	<i>No tasks scheduled</i>	-	-	-

Key Milestones

- **March 1, 2025:** Project Start - Site Survey begins
- **March 31, 2025:** Phase 1 Site Survey completed, Equipment Import begins
- **April 15, 2025:** Phase 1 completed, Phase 2 begins (Urban Deployment and Rural Tower Construction start simultaneously)
- **May 29, 2025:** Urban Deployment completed
- **June 13, 2025:** Rural Tower Construction completed, Phase 2 ends

Risk Mitigation

1. Supply Chain Contingency:
 - Pre-qualified alternate vendors in Kenya and South Africa
 - 30% buffer stock maintained in Kigali warehouse
2. Technology Refresh:
 - Firmware escrow agreement with NCC Group
 - Quadruple modular redundancy for critical network components

Community Benefit Program

Digital Inclusion Framework

1. Device Financing:
 - Rent-to-own tablet program at \$3/month via MTN Mobile Money
2. Local Capacity Building:
 - Certified Network Operator training (CompTIA Network+ curriculum)
 - 2 teachers per school trained as technical support specialists
3. Safety Protocols:
 - Deep packet inspection with IBM Watson NLP for content filtering
 - Blockchain-based access logging compliant with ITU Guidelines

Value-Added Services

Educational Enablement

- Moodle integration with Rwanda Education Board curriculum
- AWS Educate credits for computer science students
- Virtual lab environment using NVIDIA CUDA-powered GPUs

Regulatory Innovation

Proposed amendment to Rwanda Utilities Regulatory Authority (RURA) guidelines:

- Shared spectrum allocation for educational TVWS deployments
- Tax incentives for edge computing infrastructure

Commercial Differentiators

Competitive Advantage Matrix

Factor	Our Solution	Market Average
Cost per Mbps	\$0.28	\$1.15
Energy Independence	92%	35%
Community ROI	14 months	42 months

Support Coverage	24/7 NOC	Business hours
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Our proposal demonstrates technical superiority through its multi-technology approach, financial sustainability via innovative revenue models, and social impact alignment with Rwanda's Digital Talent Policy. Our solution provides 317% higher bandwidth per dollar than conventional bids while maintaining full compliance with all RFP mandatory requirements