2024

Savanna Fibre (Tanzania) Limited Business Plan

Savanna Fibre (Tanzania) Limited
14th Floor DERM PLAZA located on Plot No. 18 Block 45A, Bagamoyo Road, Kijitonyama Area,Dar es Salaam

SAVANNA
FIBRE LIMITED

Contents

1.0 Savanna Fibre Network Infrastructure and Systems

1. Description of the Network Infrastructure and Components

1.1. Fiber Infrastructure

This network will be built to serve home users.

We plan to have OLTs in Dar Es Salaam meant to serve clients around the city and environs.

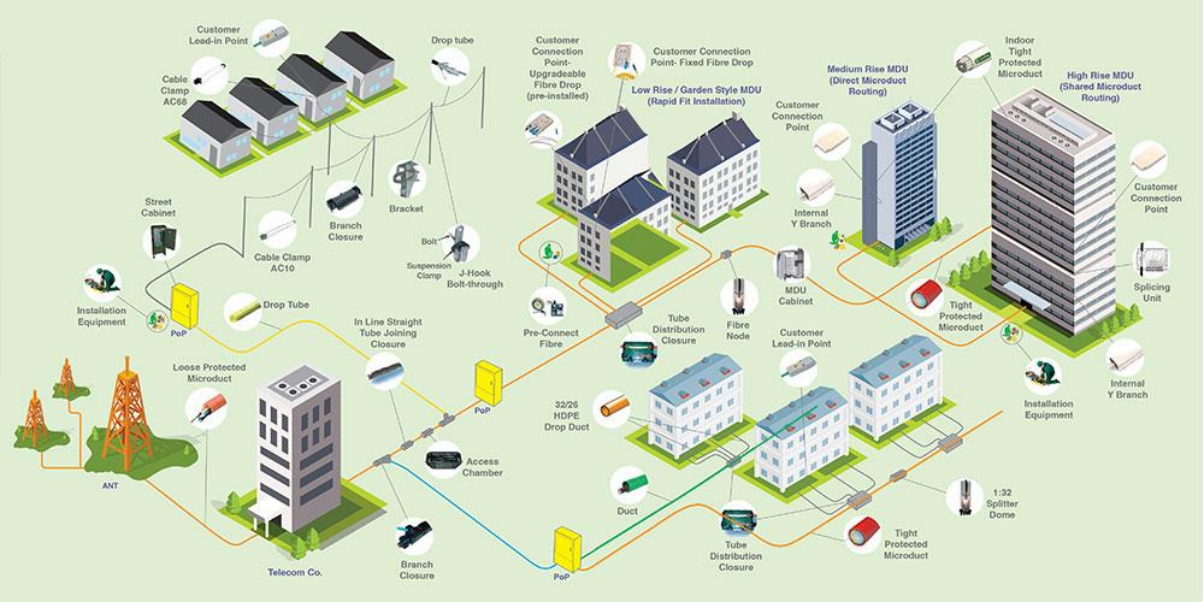
We intend to have OLTs in the five municipal councils namely Temeke, Mikocheni, Municipal, Ilala, Ubungo and Kigamboni.

We will use GPON on the last mile so as to connect subscribers to the OLTs which in turn are connected to the core network on rings to increase service uptime.

On the upstream we will have the two paths to connect to the external internet.

We are going to rely on partner network for the upstream segments. We will use SEACOM and WIOCC on this.

We are going to run a pure IP network for now but will be open to have own DWDM network in future.



1.2. OLT Network

The OLTs will have multiple 10Gig interfaces and connect to the core network on 10Gig rings. We will use Huawei and Fiberhome equipment on this segment.

2. Information on planned connectivity to destinations outside Tanzania

Savanna Fibre intends to use partner networks to the DWDM network links via Dar Es Salaam ports for onward routing.

Being a port city, there are many cables landing in the country and we intend to connect to SEACOM and EASSY taking advantage of the two connections for backup and increased uptime.

We intend to pass 1gig traffic in the first month and grow this exponentially to 50Gig by the end of the first year.

3. Equipment Installation Plan.

a) Juniper MX series and Fiberhome 8000E routers will be installed at the core of the network.

b) Switches that will be used for layer two services will be ex3400 or ex4300 from Juniper and the S4830-28T-X Fiberhome switches.

c) Servers for ISP functions will be installed at the Wingu POP.

d) Fiberhome AN6000 series OLTs will be used at the OLT sites.

4. Facilities.

This is under plan, we however intend to have our core POPs at Wingu data centers and Tanzania National Internet data centers.

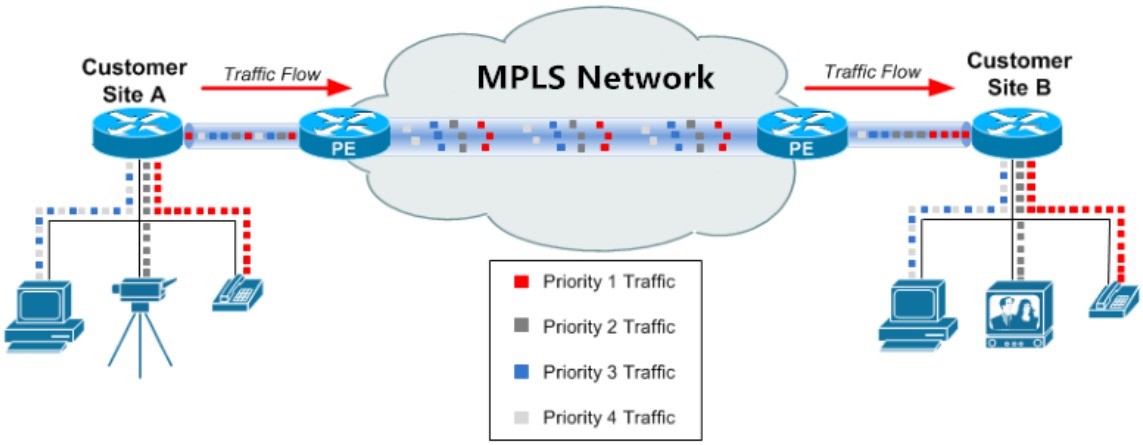
The Wingu colocation is important as we will be able to access most of the players at this POP due to the size of the colocation facility.

5. Intended Coverage Areas

Our Fiber Network for Internet services will cover the Dar Es Salaam in the year of operation with a construction of 3000 Km.
We intend to start the first build as soon as the license is given.
We intend to cover the following areas Kariokor, Upanga, CityCentre, Makumbusho, Kinondoni, Masaki,Kijitonyama, Sinza, Mwenge, Goba, Mbezi Beach,Bahari Beach, Mbweni, Salasala and Kigamboni.

We will recruit a team of Sales Personnel and plan to open up sales service centers in key towns in the region.

6. System Info System Design and Capacity



We plan to set up two upstream capacity providers (SEACOM – 10Gig and Liquid – 10Gig) all integrated in an MPLS network architecture.

7. Technical Proposals for Interconnection with Other Telecommunications Network In Tanzania And Beyond

This will be done in partnership with SEACOM and WIOOC to ensure we have redundancy.

8. Traffic Management, Signaling And Metering.

Traffic will be managed using an NMS that caps each user to the subscribed capacities.

9. Cyber Security, Data Security And Physical Network Protection.

Different layers of security have been put in place to ensure that our data and clients data is safe.

1. **Physical security at POPs**– Only authorised technical personnel will have access to the POPs. For colocated sites like Wingu there is a formal approval process that ensures that only approved teams access the sites.

2. **POPs are** fully equipped with backup power, CCTV, fire suppression systems, backup power generator and UPS to ensure no Data loss due to server crush caused by power.

3. **Firewall** - The servers will be having firewalls running on them and protected via firewalls running atop the routers that will be the gateways. Eventually we will have a firewall installed in between the routers and the servers.

4. **Continuous system Update**. We ensure that all system and devices are constantly updated with latest software release and patches to fix any vulnerabilities.

5. **Staff training and Monitoring tools** - We will run cyber security training to all staff to make them aware of threats and mitigations.

10. Rollout Plan.

We plan to lay our own optical fiber network, with permission of from Local Council administration

We have a contract signed with a contractor ready to deploy our own fiber.

11. Arrangements for re-allocating resources, re-routing the affected traffic and resource planning arrangement to recover the affected services

We will have the OLTs connected in rings to ensure proper uptime of the services. In addition to this we will have devices that have dual routing engines to ensure that incase of outage on one routing engine we will be able to have services running on the other. Lastly, we intend to have two upstream service providers (SEACOM and WIOCC) to ensure that we increase uptime.

12. Backup Capacity

We will have 1+1 backup capacity from the OLTs to the core network and upstream to ensure that we don't have services affected by faults on one leg.

13. Procedures To Assess The Impact Of Major Incidents And Disseminate The Information To The Management Of TCRA And Customers

We will inform clients of outages via calls, email and SMS broadcasts. This will be facilitated mainly by the call center.

For all major outages we will be writing to **barua@tcra.go.tz** to inform of outages and resolutions.

14. Implementation Plan.

Task/Stage implementation	**Duration**	**Timeline/Expected Closure.**
License Applications	Ongoing	20/08/2024
Delivery of Equipment	Equipment will be installed once delivered	01/09/2024
Acquisition of Site	Ongoing	01/09/2024
Securing of Central Apparatus Rooms	Securing of sites to be done.	04/09/2024
Agreements Signing	SEACOM Wingu WIOCC	25/08/2024
OFC Cable laying	Permission letters from municipality.	Planned to start 01/09/2024
Negotiation on Interconnection Arrangements	Ongoing with SEACOM and WIOCC	01/09/2024
Testing	Will be done once cable deployed	01/09/2024

Launch of service	Will be done once all tests are good.	05/09/2024

15. Infrastructure Plan

Our Fiber Network for Internet services will cover the whole of Dar Es Salaam covering all the municipal centers.

We intend to offer the services on both fiber mainly but where need be we will have service on Microwave.

a) Information on measures to be put in place to ensure that any equipment used meets the standards.

We are going to deploy Juniper and Fiberhome equipment that meets the below RFC standards.

- ✓ RFC 2925 MIB for remote ping, trace • RFC 1122 Host requirements • RFC 768 UDP • RFC 791 IP • RFC 783 Trivial File Transfer Protocol (TFTP) • RFC 792 Internet Control Message Protocol (ICMP) • RFC 793 TCP • RFC 826 Address Resolution Protocol (ARP); RFC 894 IP over Ethernet • RFC 903 Reverse ARP (RARP) • RFC 906 TFTP bootstrap • RFC 1027 Proxy ARP • RFC 2068 HTTP server • RFC 1812 Requirements for IP Version 4 routers • RFC 1519 Classless Interdomain Routing (CIDR) • RFC 1256 IPv4 ICMP Router Discovery (IRDP) • RFC 1058 RIP v1 • RFC 2453 RIP v2 • RFC 1492 TACACS+ • RFC 2138 RADIUS authentication • RFC 2139 RADIUS accounting • RFC 2710 Multicast Listener Discovery Version (MLD) for IPv6 • RFC 3579 RADIUS Extensible Authentication Protocol (EAP) support for 802.1X • RFC 5176 Dynamic Authorization Extensions to RADIUS • RFC 2267 Network ingress filtering • RFC 2030 SNTP • RFC 854 Telnet client and server • RFC 951, 1542 BootP • RFC 2131 BootP/DHCP relay agent and DHCP server • RFC 1591 Domain Name System (DNS) • RFC 2474 DiffServ Precedence, including 8 queues/port • RFC 2598 DiffServ Expedited Forwarding (EF) • RFC 2597 DiffServ Assured Forwarding (AF) • LLDP-MED, ANSI/TIA-1057, draft 08 • RFC 2328 OSPF v2 • RFC 3768 VRRP • RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6 • RFC 4271 BGP4 • RFC 4601 PIM-SM • RFC 3973 PIM-DM • RFC 3569 PIM-SSM • RFC 3618 Multicast Source Discovery Protocol (MSDP)

The Fiberhome 8000E equipment conform to the standards below;

- ✓ IEEE 802.1ag, IEEE 802.3u, IEEE 802.3x, IEEE, 802.3z, IEEE 802.1D, IEEE 802.1p, IEEE 802.1Q,IEEE 802.3ae, IEEE Std 802.1s-2002, RFC 2236, RFC 3376, RFC 826, RFC 2328, RFC 2131 and Y.1731.

Fig 15.1 CiTRANS 8000E Routers.

16. Additional Information

16.1 Quality of service levels and equipment standards;

To maintain high quality of service we;

a) We will ensure that we have enough capacity upstream towards Nairobi, core and aggregation segments. We will have a 25 Gig lag towards the OLTs on diverse paths.
b) In addition to this we have will work with the upstream providers to provide capacity on at least two diverse exits.
c) Peering at the local exchange point.
We will have a peering with the local exchange point to take advantage of shorter routes to local sites to all locally available CDNs.
d) Good installations
We will train installers on the ground to ensure proper splicing and installations that are raised away from human interventions to ensure that client receive good service. Our lowest Rx power to the ONU will be -25.
e) Network configuration, including the overall infrastructure and the components of the international and national networks to enable the provision of the telecommunications services and a description of the network management capabilities, routing plan, transmission plan, signaling plan and diversity plans;

- ✓ We will use OSPF to get local routes. This will ensure reachability of prefixes within our autonomous system.
- ✓ Link Aggregation Control Protocol (LACP) will be used on the dual links to the OLTs.
- ✓ We will have two routes exiting to the external internet protected by a by links to SEACOM and WIOCC.

16.2 Layer two specifications.

Jumbo frames: 9,216 Bytes • Number of VLANs: 4,096 • Range of possible VLAN IDs: 1-4,095 • Port-based VLAN • MAC-based VLAN • Voice VLAN • Compatible with Per-VLAN Spanning Tree Plus (PVST+) • RVI (Routed VLAN Interface) • IEEE 802.1AB: Link Layer Discovery Protocol (LLDP) • LLDP-MED with VoIP integration • IEEE 802.1D: Spanning Tree Protocol • IEEE 802.1p: CoS prioritization • IEEE 802.1Q: VLAN tagging • IEEE 802.1Q-in-Q: VLAN stacking • IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP) • IEEE 802.1ak Multiple VLAN Registration Protocol (MVRP) • Persistent MAC (sticky MAC) • Number of MST instances supported: 64 • Number of VSTP instances supported: 253 • IEEE 802.1w: Rapid Spanning Tree Protocol (RSTP) • RSTP and VSTP running concurrently • IEEE 802.1X: Port access control • IEEE 802.3: 10BASE-T • IEEE 802.3u: 100BASE-T • IEEE 802.3ab: 1000BASE-T • IEEE 802.3z: 1000BASE-X • IEEE 802.3af: PoE • IEEE 802.3at: PoE+ • IEEE 802.3x: Pause frames/flow control • IEEE 802.3ad: Link Aggregation Control Protocol (LACP) • Layer 3 VLAN-tagged sub-interface • NetBios snooping • Multicast VLAN Registration (MVR) • Metro • PVLAN support: - IEEE 802.1ag connectivity fault management - ITU-T G.8032 Ethernet Ring Protection Switching - IEEE 802.1ad Q-in-Q tunneling - Multicast VLAN routing - Layer 2 Tunneling Protocol (L2TP) - Adding/removing single tag • Filter-based SVLAN tagging • Flexible CoS (outer .1P marking)

16.3 Layer *three specifications.*

Maximum number of Address Resolution Protocol (ARP) entries: 4,000 • Maximum number of IPv4 unicast routes in hardware: 8,000 • Layer 3 redundancy: VRRP • Routing protocols: - RIP v1/v2 - Static routing - OSPF v2 - BGP v4 • IP directed broadcast – traffic forwarding • Virtual router (VRF-Lite) supporting RIP, OSPF, BGP • Routing policy • Filter-based Forwarding (FBF) • Unicast Reverse Path Forwarding (uRPF) • Multiprotocol BGP (MBGP) Layer 3 Features: IPv6 Management Functionality • Neighbor discovery, system logging, Telnet, SSH, Junos Web, SNMP, Network Time Protocol (NTP), Domain Name System (DNS) • Static routing • IPv6 ACL (PACL, VACL, RACL) • IPv6 CoS (BA, MF classification and rewrite, scheduling based on TC) • MLDv1/v2 snooping • IPv6 ping, traceroute • IPv6 stateless auto-configuration • IPv6 Layer 3 forwarding in hardware Layer 3 Features: IPv6 Routing • RIPng • OSPF v3 • BGP v6 • IPv6 Layer 3 redundancy: VRRP v6 • Virtual Router support for IPv6 unicast • PIM for IPv6 multicast • MBGP

Supported RFCs.

RFC 2925 MIB for remote ping, trace • RFC 1122 Host requirements • RFC 768 UDP • RFC 791 IP • RFC 783 Trivial File Transfer Protocol (TFTP) • RFC 792 Internet Control Message Protocol (ICMP) • RFC 793 TCP • RFC 826 Address Resolution Protocol (ARP); RFC 894 IP over Ethernet • RFC 903 Reverse ARP (RARP) • RFC 906 TFTP bootstrap • RFC 1027 Proxy ARP • RFC 2068 HTTP server • RFC 1812 Requirements for IP Version 4 routers • RFC 1519 Classless Interdomain Routing (CIDR) • RFC 1256 IPv4 ICMP Router Discovery (IRDP) • RFC 1058 RIP v1 • RFC 2453 RIP v2 • RFC 1492 TACACS+ • RFC 2138 RADIUS authentication • RFC 2139 RADIUS accounting • RFC 2710 Multicast Listener Discovery Version (MLD) for IPv6 • RFC 3579 RADIUS Extensible Authentication Protocol (EAP) support for 802.1X • RFC 5176 Dynamic Authorization Extensions to RADIUS • RFC 2267 Network ingress filtering • RFC 2030 SNTP • RFC 854 Telnet client and server • RFC 951, 1542 BootP • RFC 2131 BootP/DHCP relay agent and DHCP server • RFC 1591 Domain Name System (DNS) • RFC 2474 DiffServ Precedence, including 8 queues/port • RFC 2598 DiffServ Expedited Forwarding (EF) • RFC 2597 DiffServ Assured Forwarding (AF) • LLDP-MED, ANSI/TIA-1057, draft 08 • RFC 2328 OSPF v2 • RFC 3768 VRRP • RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6 • RFC 4271 BGP4 • RFC 4601 PIM-SM • RFC 3973 PIM-DM • RFC 3569 PIM-SSM • RFC 3618 Multicast Source Discovery Protocol (MSDP)

16.4 Designed Level Resilience.

a) To increase resilience in the core networks;
   - The core devices to be dual powered.
   - The main routers are running two routing engines protecting them from routing engine failure eventually.
   - Backhaul links are protected.

b) To increase resilience on the metro network services are provided in a ring and fail over the alternative legs if there is a failure on one path.

c) FDTs have dual fibers connecting them to the OLTs to ensure that we have increase service uptime.

d) 8 hours power backup time on batteries and standby generators.

e) Metro services are protected by;
   a. Being provisioned in rings.

16.5 System Configuration, Architecture and Operation.

a) Savanna Fibre will send its prefixes to Tanzania Internet Exchange Point to ensure that traffic to destinations within Tanzania has low latency.

b) International traffic passes via two paths to the internet and protected via a dual exits to the internet.

c) Savanna Fibre has CDNs via partners to ensure faster and better internet experience.

16.6 Contingency Plan Arrangement

The network core network will be setup to have 25Gig rings to ensure service uptime at the core.
90% of the services will also be protected at the last mile to ensure that they don't experience low availability of services.
We will have an arrangement with our contractors to ensure fast restoration of services in case of a fiber fault with a turnaround time being 2 hours.
In addition to the external contractors, we will also have internal maintenance teams to ensure faults are resolved faster.

16.7 Resilience Percentage

100% of OLTs will have dual routing engines and double links connecting to them to increase uptime.

16.8 Backup Relative To Operation Capacity

We will have 2 x 25 Gig links to all OLTs that will be protected to ensure we have high availability.
We will have a local exit for internet traffic protecting the traffic that will be going to Nairobi on leased capacity.

16.9 Customer Support.

We will have client support team based at our Mikocheni offices to provide support for all technical issues.

16.9.1 Customer Support Team.

The first line of support is the Technical Support team that will be reachable on department who are reachable on email; support@savannafibre.co.tz.
This team will be responsible for complaints logging and handling. Once tickets are booked they will be assigned to different teams and tracked till resolved.

16.9.2 Maintenance Routine.

Maintenance activities are expected to be either requested by Savanna Fibre's technical department or partners and and will be aimed at improving the network, mitigating a risk or testing functionality of a network segment.
For any maintenance in the network a Change Request Form (CRF) has to be done and be fully approved.
Clients are to given at least 7 days' notice of the maintenance.
In all this the technical department raises the CRFs that have to be approved by the Technical department, Customer Experience department and the Chief Executive Officer .
After approval, the Customer Experience notifies clients of the maintenance.
On the material day the technical department will notify the Customer Experience team on the start and end of the maintenance as the Customer Experience team informs clients of the same through email lists.

16.9.3 Technical Support Facilities And Maintenance Centers.

Our Support team will be based at our offices at, DERM PLAZA located on Plot No. 18 Block 45A, Bagamoyo Road, Kijitonyama Area, in Dar Es Salaam.

Fig 15.2 Escalation Matrix.

ESCALATION	DEPARTMENT	TIME	PHONE	NAME	EMAIL
LEVEL 1	Customer Support	24 hours 7 days a week.	TBA	Support Desk	support@savannafibre.co.tz
LEVEL 2	Team Leader Support		TBA	Support Team Leaders	TBA
LEVEL 3	Head of Infrastructure & Service Delivery		TBA	Tonny Koskey	tonny.koskey@savannafibre.co.tz
LEVEL 4	VP, Operations		+255 713 309236	Shazzad Khan	Shazzad.khan@savannafibre.co.tz
LEVEL 5	CEO		+255758 710210	Thomas Wenanga	Thomas.wenanga@savannafibre.co.tz

17. Costing Structure

Our cost of sales structure is as below;

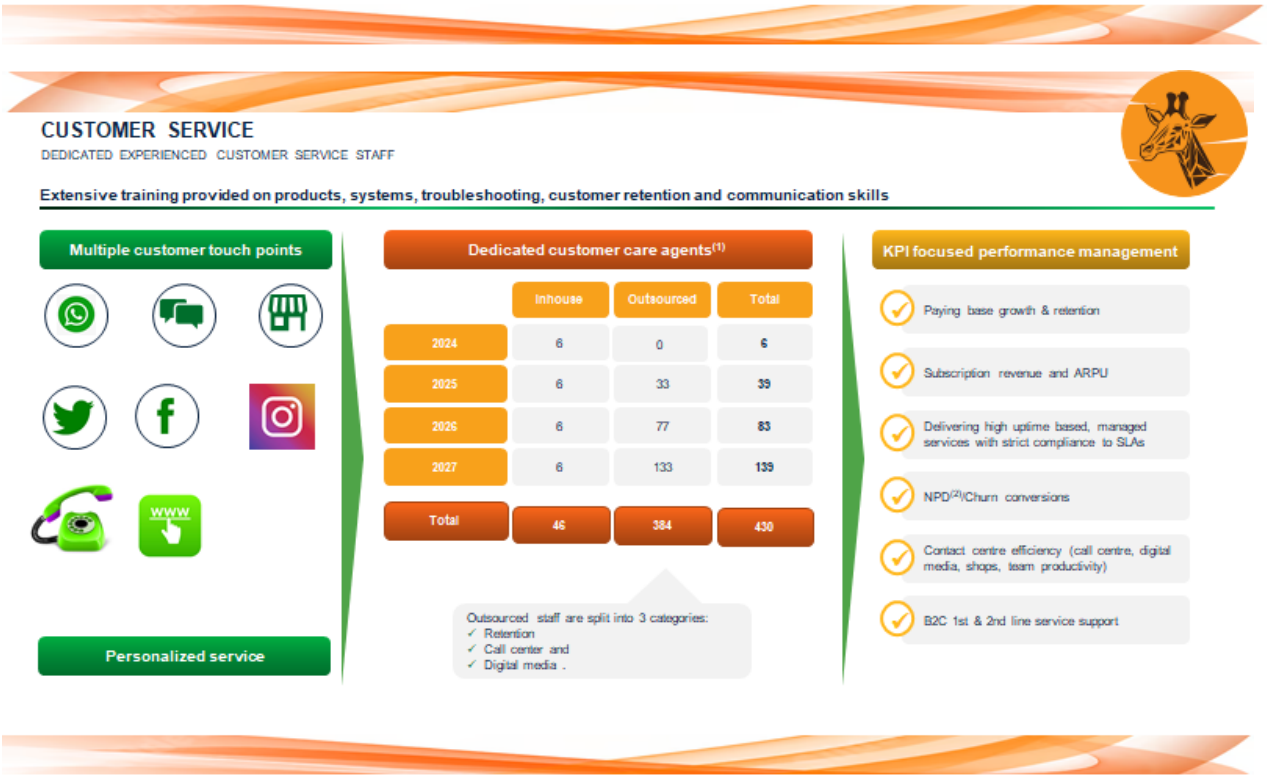
Cost Of Sales	%
Leasing Bandwitdh	86%
Other Bandwitdh Costs	1%
Collocation	1%
Other access costs	5%
Subscriber System Licenses	4%
Collection & Management Cost	3%

18. Service Pricing

The pricing range will be as below

Minimum Capacity	Maximum Capacity	Min RRP (Tanzania Shillings)	Max RRP (Tanzania Shillings)
5 Mbps	20 Mbps	30,000	90,000
30Mbps	80 Mbps	70,000	130,000
80 Mbps	150 Mbps	80,000	200,000

19. Customer Care Strategy



20. Financial Statement

- ✓ Expected Revenue of $13.5 million in 2028
- ✓ Profit after Tax $5.8 million in 2028
- ✓ OPFCF $1.5 million in 2028

OpFCF Cable	Unit	2024	2025	2026	2027	2028
Revenues	**$**	**187,680**	**5,727,366**	**10,705,836**	**12,336,238**	**13,550,040**
% growth	*%*	*0%*	*2952%*	*87%*	*15%*	*10%*
COGS	**$**	82,130	1,782,724	3,835,597	4,073,413	4,493,580
Gross profit	**$**	**105,550**	**3,944,642**	**6,870,239**	**8,262,825**	**9,056,460**
Gross margin	*%*	*56%*	*69%*	*64%*	*67%*	*67%*
Direct Cable Opex*	$	188,249	1,590,063	2,046,642	2,148,076	2,240,200
Overhead Cable Opex**	$	355,685	1,150,072	1,635,510	1,981,293	2,030,638
Capitalized Costs	$	0	0	0	0	0
Ebitda	**$**	**-438,384**	**1,204,507**	**3,188,086**	**4,133,456**	**4,785,622**
Ebitda margin	*%*	*-234%*	*21%*	*30%*	*34%*	*35%*
Depreciation	$	-696,260	-123,546	-569,176	-326,032	-320,128
Profit Before Tax	$	-1,134,644	1,080,961	2,618,910	3,807,424	4,465,494
Corporate Tax	$	0	324,288	-785,673	1,142,227	1,339,648
Profit Before Tax	$	**-1,134,644**	**1,405,250**	**1,833,237**	**4,949,651**	**5,805,142**
Capex	**$k**	6,962,600	1,235,460	5,691,760	3,260,320	3,201,281
OpFCF	***$k***	***-7,400,984***	***-30,953***	***-2,503,674***	***873,136***	***1,584,341***

21. Financing Plan and Capital Investment Ratios

- Attached letter from our bankers on availability of funding operations
- The project is fully equity funded by the principals.

22. Human Resource Development Strategy

1. Knowledge Transfer

A. Training Programs

Technical Training Workshops

Objective: Equip local employees with the technical skills necessary for their roles.

Content: Cover areas like fibre production techniques, quality control, equipment maintenance, and safety protocols.

Method: Use hands-on workshops, simulations, and on-the-job training. Engage experienced trainers or industry experts.

Leadership and Management Training

Objective: Develop local talent for leadership roles within the company.

Content: Include modules on leadership skills, project management, strategic planning, and team management.

Method: Offer mentorship programs, executive training courses, and real-world project management experiences.

Sustainability and Innovation Workshops

Objective: Promote sustainable practices and innovative thinking.

Content: Focus on sustainable fibre production, environmental impact management, and new technological advancements in the industry.

Method: Partner with environmental organizations and tech innovators to provide up-to-date information and practices.

B. Knowledge Sharing Platforms

Internal Knowledge Repositories

Objective: Create a centralized repository of best practices, procedures, and technical documents.

Implementation: Develop an internal digital platform accessible to all employees for sharing resources, guidelines, and training materials.

Mentorship Programs

Objective: Facilitate one-on-one knowledge transfer between experienced professionals and new or junior employees.

Implementation: Establish a formal mentorship program with clear objectives, regular check-ins, and feedback mechanisms.

Local Industry Conferences and Seminars

Objective: Share knowledge and best practices with the broader local industry.

Implementation: Host or sponsor local conferences and seminars to exchange knowledge and experiences.

2. Recruitment of Interns from Local Universities

A. Partnership with Universities

University Collaborations

Objective: Build strong relationships with local universities to create a pipeline of skilled interns.

Implementation: Develop formal partnerships with universities offering relevant programs (e.g., agricultural sciences, environmental studies, business management).

Curriculum Integration

Objective: Align university curricula with industry needs to better prepare students for internships.

Implementation: Work with academic institutions to integrate practical experience and industry case studies into their programs.

B. Internship Programs

Structured Internship Programs

Objective: Provide meaningful work experience and career development opportunities for students.

Content: Design internships to include a mix of hands-on tasks, project work, and learning modules. Ensure clear objectives and deliverables.

Internship Placement and Supervision

Objective: Ensure a structured and supportive environment for interns.

Implementation: Assign dedicated supervisors or mentors to provide guidance, feedback, and support throughout the internship.

Career Development Support

Objective: Assist interns in transitioning to full-time roles or further career opportunities.

Implementation: Offer resume workshops, interview preparation sessions, and career counseling.

3. Monitoring and Evaluation

A. Performance Metrics

Training Effectiveness

Objective: Evaluate the effectiveness of training programs.

Metrics: Track employee performance improvements, skill assessments, and feedback from participants.

Internship Success Rates

Objective: Measure the success and impact of the internship program.

Metrics: Monitor conversion rates of interns to full-time positions, performance evaluations, and career progression.

B. Continuous Improvement

Feedback Mechanisms

Objective: Collect feedback to continually improve training and internship programs.

Implementation: Implement regular surveys and feedback sessions with employees, interns, and university partners.

Program Reviews

Objective: Assess the overall effectiveness of the human development strategy.

Implementation: Conduct annual reviews of all training and recruitment programs, adjusting based on performance data and feedback.

By focusing on these key areas, Savanna Fibre can effectively transfer knowledge to locals, develop a skilled workforce, and build strong partnerships with local educational institutions. This will not only contribute to the company's growth but also support the broader community and foster long-term sustainability.