TATA COMMUNICATIONS
TRANSFORMATION SERVICES

OUR INTERNATIONAL FIELD OPERATIONS AND GLOBAL MANAGED NETWORK SERVICES EMPOWER:

- Fixed and mobile - 2G/ 3G/ NEXT GEN networks, 52,000+ sites, 68+ million subscribers
- 710,000 kilometres of terrestrial and subsea fibre network and 44 data centres both for Tata Communications and other customers worldwide
- One of the largest, most advanced subsea cable networks spread over 500,000 kilometres
- A terrestrial fibre network stretching 210,000 kilometres
- A global, Tier-1 IP network that comprises 24% of the world's internet routes

About Tata Communications Transformation Services (TCTS)

Tata Communications Transformation Services Limited (TCTS), a 100% subsidiary of Tata Communications Ltd, provides leading business transformation, managed network operations, network outsourcing and consultancy services to telecom companies around the world. TCTS delivers operational efficiency, cost transformation and revenue acceleration solutions for all the stages of the carrier process lifecycle including but not limited to network engineering and design, implementation and operations functions.

TCTS is a part of the US$100+ billion Tata Group. The Tata Group comprises of over 100 operating companies in seven business sectors with presence in more than 100 countries across six continents and has a market capitalisation of USD $128.88 billion. TCTS leverages the market leadership of the Tata Group's global telecom operations, established IT/OT processes & consulting capabilities to deliver world class transformation projects and managed services. TCTS embraces the rich traditions and business ethics of the Tata companies.

TCTS is head quartered in Mumbai, India with global offices spread across Europe, North America, Middle East and Asia. TCTS has two world class India delivery centres in Pune and Chennai. These facilities operate completely independently from its parent affiliate, preserving full confidentially in managing all customers' business processes and operations.

For more details, visit www.tatacommunications-ts.com

TATA COMMUNICATIONS
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EMPOWER YOUR SUBSEA NETWORK OPERATIONS

BEST-IN-CLASS SERVICES ACROSS LIFECYCLE

MARINE SUPPORT SERVICES
PROJECT MANAGEMENT
SYSTEM DEPLOYMENT
SUBSEA ENGINEERING
OPERATIONAL TRANSFORMATION

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Subsea cable system operators face a multitude of process, organisational and technological challenges as their networks expand & product portfolios grow. With falling capacity globally, the challenges are further compounded, with the need to optimise both capital and operational expenditure, and to shrink commercialisation schedules as far as possible. In order to meet these challenges effectively, operators need to institute fundamental change across their business in:

- Developing strategic partnerships around technology
- Integrating multiple domains such as IT, the network and customer relationship management
- Establishing business processes that are more end-user centric
- Optimising capital and asset management
- Adaptating the operator organisation to become more agile

TCTS SUBSEA SERVICES

We at Tata Communications Transformation Services (TCTS) are one of the leading providers of managed services for network operations, and consultancy and business enablement services to global enterprises and telecommunications companies. We are a part of the Tata Group, one of India's largest business groups with combined revenues of over US$100billion.

We are the largest global service provider for sub-sea cable design, build and operate services, managing 33 cable systems spanning 500,000 kilometres. Our experience spanning 25 years in transforming, simplifying and managing global networks has given us an edge in terms of market awareness, product knowledge, best practices, and multi-vendor domain skills, that help us deliver real world success and better value for our customers.

Empowering **1/4**th of global internet traffic

Largest global team of **250+** engineers

Experience across **all technologies**

Experience across **all OEMs**[2]

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TCTS CAPABILITY

We are thought leaders in the subsea cable management space with our capability spanning across the subsea cable lifecycle, right from the pre-Ready-For-Service (pre-RFS) consulting, to assuming overall operational responsibility for the entire network post-RFS, and network upgrades. We also have expertise in running the Cable Landing Stations (CLS) and related on-shore management, and deeply understand the challenging local liaison requirements.

We have developed a best-in-class proprietary tool for network administration (Network Administration System) which obviates the requirement of an operational support system, thus proving to be of great commercial value for our customers. Also, the experience of working across private as well as consortium cables has enabled us to develop mature processes suited to the specific requirements.

[1] Technologies include Submarine transport, SDH, DWDM (10G/40G/100G), EoS, OTN, Ethernet, NGN, MPLS
[2] OEMs include TE-Subcom, Ciena, Alcatel, Huawei, Infinera, Tejas, XTERA, Ekinops, JDSU, Fujitsu, ECI, EXFO, Marconi, Nortel, Cisco

Pre-RFS

Project management	Engineering and planning	Training	Process building
• Cable deployment • Network deployment • CLS setup • NOC setup	• Network planning and design • Technical evaluation • Cable retirement	• Technology • Equipment • Process • Tools	e-TOM/ ITIL framework

Post RFS

Network upgrade	Operation liaising	Service assurance	Service delivery
• Upgrade forecast • Vendor finalisation and co-ordination • Operational trial • Commissioning and acceptance test	• O&M • Co-ordination • Restoration and liaising • MLO	• L0 NOC • L1 NOC • L2 NOC • Change management	Service fulfillment

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THE TCTS ADVANTAGE

At TCTS, we translate our domain expertise into tangible business benefits for our customers, facilitating these changes and enabling them to meet their business goals.

15% Direct savings in capital expenditure with right routing and OEM selection

6-12 months shorter commercialisation schedule

Design and customise SLAs for transforming operations

10% Reduction in operating expenses

Business Continuity Management system (ISO-22301) certified to minimize impact of disruptive events

e-TOM Business Process framework for enhanced efficiency, effectiveness and agility

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Transform Operations

- Process re-engineering
- Tools transformation
- Network transformation
- Getting ready for next-gen subsea operations
- Cost transformation
- Aligning networks with business strategy

Drive Efficiencies

- Network evaluation and consulting
- Network optimisation
- Efficient cable station management
- Passive infra management
- Service improvement initiatives

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Accelerate revenues

- Faster go-to-market
- Improved lead time of cable projects
- Adaptability to new technology and services

Enhance customer experience

- Predictive operations and analytics
- CEM tools exploitation and network optimisation
- Implementation of CEM findings
- Custom dashboards with 360° view

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SUBSEA CABLE MANAGEMENT E2E OFFERINGS

E2E Subsea Network & Service Management Offerings

Consulting
Project Management
Post RFS Operational Estimation
Training | Process Building
Process Re-engineering

Engineering & Planning
Technical Evaluation | Network Administration &
Capacity Planning | Capacity optimization in cable &
related back hauls | Cable replacement planning
Perform financial analysis of O&M charges
Migration of circuits | Retirement of cables

Service Delivery
Order Management and Provisioning
Support for Cable station Installation and commissioning
Capacity Provisioning | Backhaul Provisioning
Review of Site Acceptance Test (SAT) Reports
Coordination of Commissioning & Acceptance (C&A)
for Cable Stations

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Network & Service Assurance
Landing Station management | L0, L1 & L2 NOC
Service and Network Fault Management
Network Quality Management
Infrastructure maintenance – coordination
with sub-contractors

Operation Liaisoning
Operation and Maintenance Co-ordination
Restoration and Liaisoning | Maintenance Liaisoning
Network Surveillance and Maintenance

Tools & Systems
Network Administration System (NAS)
NIMS
Metasolv
Cramer

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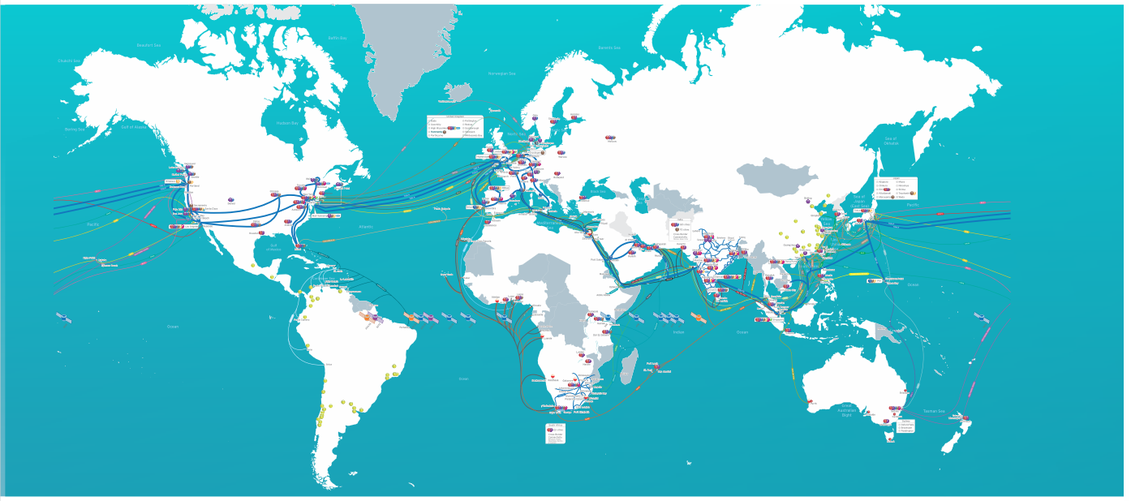
TCTS EXPERTISE AND COMPETENCY

As pioneers in submarine space, we are managing the operations of network administrator, restoration operations, maintenance operations & backup NOC for many consortium telco for more than 10 years.



33 CABLE NETWORKS OPERATING EXPERTISE

14 CABLE SYSTEM NETWORK MANAGEMENT EXPERTISE

5 CABLE SYSTEM SURVEY AND LAYING SUPPORT EXPERTISE

250+ SUBMARINE NETWORK MULTI-VENDOR EXPERTS

40+ SUBMARINE CABLE LANDING STATION O&M RESPONSIBILITY

A TOTAL OF 500,000 KMS LENGTH SUBMARINE CABLE

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TCTS VALUE PROPOSITIONS: SUB-SEA CABLE PLANNING AND OPERATIONS

Largest service provider globally managing 33 cable systems spanning 500,000 km

- Network advantage through potential for common NOC and off-shoring to India
- Deep experience of working with all the OEMs in the sector covering all latest and legacy technologies

Mature processes to deliver capex and opex advantage to the customers

- Consistently delivered 20% lower restoration time for wet-plant, leading to direct and indirect savings
- Pioneer in 'real-time' reporting services, resulting in 75% reduction in client man-hours
- Proprietary tools to replace OSS requirement saving upto $ 1mn Capex for the Clients

Comprehensive services capability across the pre and post RFS activities

- Single point responsibility and management
- Seamless shift from pre to post RFS stage

Experience of working across private and consortium lines

- Processes developed for consortium management and service delivery

Largest global team of 250+, with specific experience in the sector

- Managing the most complex industry SLAs with 100% compliance
- Consistently delivered 40% improvement in service delivery

CASE REFERENCE

Sub-sea capacity upgrade and channel insertion
(with cross-vendor platform) for a green field submarine cable operator in south and east Africa

Objectives	Key challenges	TCTS solution	Business benefits
Sub-sea cable system wet plant upgrade with new supplier SLTE –integration into existing system without impacting the performance	• Different channel spacing in both the systems • Ineffective line monitoring system post upgrade • Different Tx and Rx channel frequency in existing system • No support from incumbent wet plant supplier in the upgrade • Lack of proper expertise for impact consideration on line monitoring system and acceptance inclusion during sub sea upgrade with new	• Assisted in appropriate vendor selection • Implemented capacity planning and design with upgrade plan of work • Ensured quality and sustainability • Data Channel Network (DCN) planning & design for new vendor platform • Certified network ready for traffic by industry best practices	• Successfully upgraded to 100 G channels with new supplier equipment • Achieved zero impact on existing channels or system performance • Successfully implemented multi vendor subsea cable network system • Enhanced customer satisfaction on new service delivery scope