Response to the consultation paper by TRAI on the Access Facilitation charges for cable landing station:

We wish to bring to your attention that Sify Technologies Ltd is a licensed International long distance service provider, with Gateways at Chennai and Mumbai. As of date, we have purchased capacities on the SMW4 ( Mumbai and Chennai ), i2i, and EIG cable systems. While, we have recently set up a cable landing station at Versova, Mumbai for the submarine cable system called "Gulf Bridge International", GBI is a privately owned cable system (not a consortium cable) and Sify does not own any capacity in GBI. Thus, Sify is both an access seeker of submarine cable system from the other CLS owners, as well as a CLS owner for one cable system. Currently, all of Sify's international traffic is routed through other CLS, for which Sify pays for access facilitation, and we expect in the future that our balance of payments will continue to be skewed toward payment vs. receipt of such charges. Therefore, Sify is in a unique position to be able to represent its views as both a buyer and seller.

Sify's overall perspective is that we believe that there are enough undersea cable systems landing into India, and projected to land in the upcoming years, to provide a competitive market for cable landing. The traditional concentration of market share with only two ILDO players is gradually being eroded, and there will soon be enough options for ILD operators in India to access capacities through any of the alternative cables, or even build their own cable landing station for any of the upcoming undersea cables. Sify's recent investment in a CLS is evidence of this trend, and we are sure there would be more ILD operators who will put their own cable landing stations. With this, we feel that Cable landing station is no longer a bottleneck facility and it should be left to competition to decide the price of operations. However, if TRAI decides to continue regulating Access Facilitation Charges, then Sify has strong objection to a uniform AFC, applied indiscriminately to all CLS operators and all cable systems.

Sify believes that fixing a uniform Access Facilitation Charge is harmful to new and smaller operators, who lack the economies of scale and ability to reuse the same infrastructure for multiple purposes. Furthermore, this discriminates against value-added ILDO players who do not offer basic access services (such as mobile, fixed line, and DSL), so typically do not own the underlying network infrastructure and must lease fiber from other operators. If adopted, this would have the effect of discouraging new parties to enter the CLS market, thereby reducing choice and competition. If only major operators with fully-owned infrastructure and a large captive customer base can achieve the cost levels projected in the uniform AFC, then market share for cable-landing will become further concentrated. It is in the national interest to lower the barriers to entry into the CLS business, as it reduces the concentration of market share and reduces the ability of any party to treat a CLS as a bottleneck facility.

Additionally, Sify believes that fixing a uniform Access Facilitation Charge will have disproportionate impact on private cable systems, particularly those which do not have India as their primary target market and hence have a lower volume business plan for India termination. If adopted, this will discourage both incumbent and new CLS operators from being willing to land such cables, as they cannot recover their costs over the smaller volumes projected for such systems (or will force any party landing such systems to charge higher landing costs to ensure that they recover their costs). In fact,

reducing AFC for private systems may have the perverse effect of increasing the fixed cost of landing such systems, such that they may bypass India entirely. It is in the national interest to encourage more cables to be landed into India, including those private systems that have lower volume plans for India termination, as it increases customer choice, capillarity from India to multiple locations, and resiliency of India's international connectivity.

Finally, Sify believes that the current TRAI methodology requiring cost-based Access Facilitation Charges can be easily modified to take into account the actual costs and utilization, allowing the flexibility to accommodate different CLS operators, different network topologies, and different cable systems with different business plans for India termination. If TRAI does not accept the argument that active and unfettered competition among CLS owners is the best way to set AFC prices, then extending the current system to include an annual true-up of major assumptions provides a reasonable "middle path" to ensure that AFC pricing remains cost-based, but variances in real economics can be permitted so as to encourage more, rather than less, competition.

If TRAI adopts rules requiring uniform AFC prices, then Sify's business will be materially and irreversibly damaged due to the retroactive implementation on CLS that is already in place. Sify had become the first ICT-focused player to build a cable landing station in India, and the first to do so without also having a large captive mobile and DSL consumer base. Sify made substantial investments in line with the business plan for GBI, which cannot be fully recovered under the proposed uniform AFC pricing. Sify's commercial agreement with GBI for landing the cable was predicated on a separation of the CLS charges vs. the AFC charges, with the assumption that the regulator would permit Sify to recover all of its costs for access facilitation directly from ILDOs using the system. By changing the rules retroactively, Sify cannot recover the excess investment it has made to enable access to the CLS, which it would have included in its CLS charges had such regime been in place at the time of negotiating the landing agreement.

Sify recommends the following changes be considered to the proposed calculations in the consultation paper. We address each of these points, along with an explanation of the significant gap between the uniform cost model proposed by TRAI, and Sify's actual costs, in the remarks below.

1) **Access Facilitation Charges should reflect actual costs, which for Sify (or any smaller carrier or new CLS market entrant) are significantly higher than projected in TRAI calculations.**

The facilitation charges fixed for a particular cable system should be in relation with the backhaul setup cost and the cable system business plan itself. It is quite natural to have different setup cost and operational cost from operator to operator depending on the quality of implementation and support processes envisaged by that operator. Even if operators are trying to achieve a similar level of quality, each operator uses different design philosophy while setting up the network, considering their own unique circumstances, and hence their costs would be completely different. TRAI setting up standards on what should be the design philosophy and components that needs to be considered are excluded in the calculation is completely uncalled for.

In Sify's case, we are not a primarily a facilities-based operator. We lease underlying fibre and invest in hardware and operations to achieve a quality-of-service (QOS). As we cannot build significant business volumes for basic NLD services by buying and re-selling fiber capacity, we focus on MPLS and Managed Networks of much lower bandwidth. Our fiber network in Mumbai currently operates at only 5% utilization, and the business plan for GBI may increase this utilization to 10% over the next 4 years, far from the 70% utilization level assumed in the consultation paper.

2) **Access Facilitation Charges for Remote MMR must reflect the actual distance and network topology, which vary dramatically for different systems. Allowance should be made for operators who procure fibre on OPEX vs. CAPEX basis (ie, leased fibre).**

Due to the location of our existing Data center facilities in Navi Mumbai, Sify will incur a much higher cost for fiber lease due to distance, as well as additional cost of DWDM and DXC equipment to ensure sufficient mesh network resilience to achieve QOS over the longer distance. It is not viable to construct a backhaul network with the technical configuration proposed by TRAI, as the frequency of cable cuts in Mumbai exceed the QOS paramaters for this length of system. Please note that, for the GBI cable system, the fiber route is over 200km, over 90% of which is procured by Sify on an annual lease basis. Sify has also had to invest in 6 Km of new cable construction between the available leased fibre network and the CLS, where there is no other customer requirement. Hence, recovery of the cost of this fibre extension very heavily depends on AFC recovered from the accessing telecom operator.

3) **Access Facilitation Charges for Private Cable Systems should be different than for consortium systems, consider the different economics and business plans for India termination.**

In case of GBI undersea cable , this is a privately owned cable and there is no Indian or Foreign telecom operator who owns a capacity in this cable system . We are completely dependent on the business plan of the cable owner for selling the capacity to foreign operators. Private cables throughout the world are generally lower utilized compared to the consortium cables, where the Indian and Foreign telecom operators have their own capacity in the cable system.

Moreover, the GBI cable system's business plan is predominantly for connecting Gulf countries where the telecom tariffs are very expensive and hence the capacity off-take per operator on the cable system would smaller pipes but of higher value per unit. AFC charges on the India side cannot be considered in isolation from the AFC at the far end, as they both affect the system utilization.

GBI's business plan is also primarily focused on traffic between the Gulf countries and Europe. There is much smaller requirement projected for India-terminating traffic, but since the overall investment is supported by the Gulf-to-Europe traffic, and the cost of extending the cable to India is small in proportion to the overall project, it is still viable to connect India in spite of lower traffic requirements. The India leg is also envisioned to ultimately interconnect to cable systems reaching from India to Southeast Asia, and beyond. Hence, the terminating capacity in India will only be a fraction of the overall design capacity of the system.

In any telecom operations, the operator must invest CAPEX and related OPEX in advance based on the business plan and recover the costs over time, and they would have considered a margin to make up for their cost of capital and business risks. In the case of Access Facilitation Charges for OCLS, where TRAI is regulating the cost based on cost recovery with no margin, the cost recovery is completely dependent on the business projection over a period of time, any deviation in the projections and the actual utilization would put the OCLS in a high risk of losing money. We strongly recommend TRAI to consider the actual rate of capacity activation (which can be calculated based on the age of the cable and the current capacities terminated in India) when looking at the AFC charges. The cost of AFC for all the cable landing stations and the cable systems can never be equal.

4) **Various Cost Factors, particularly the Utilization Factor used in calculating Access Facilitation Charges, should be subject to periodic audit and updation to ensure they reflect the real costs of providing the service, and to provide a level-playing field for both larger and smaller operators to be able to provide CLS services.**

The consultation paper assumes a cost base that starts with a full deployment of DWDM and DXC, equipped with 40 10G channels, whereas Sify has only deployed a system of 2 channels (20G) to support its business projections. The actual equipment capacity deployed is easily auditable, and can be used as a basis to calculate a more appropriate cost factor. For carriers like Sify that lease fibre, it is likely that annual increases in fibre lease costs will impact its costs, whereas carriers who own their own fibre can rely on historical costs. By taking into the account the real differences in cost and utilization, it allows smaller operators, such as Sify, to be able to enter the CLS business and still recover their costs. As their capacity ramps up, it assures that cost savings from improved utilization are passed on to ILDO operators.

With regard to the specific proposed AFC prices in the consultation paper, our response and comments on the calculations taken up by TRAI and our counter calculations are as below. We address some of the points above, as well as specific instances of incorrect technical assumptions that impact the proposed AFC level. In these calculations, Sify has considered only the case of the MMR being in an alternative location to that of the CLS, considering the actual design of Sify's cable landing station.

1. Cost Data and costing methodology used by TRAI in fixing the AFC for CAPEX:
    a. Sify agrees with the CAPEX components considered by TRAI in calculating the AFC charges. We are also in agreement that the lower order capacities are more expensive than the higher order capacities. While the factor suggested by TRAI of dividing the higher order capacity by 2.6 to arrive at the next lower capacity is perhaps unscientific, we agree this being the general market practice.

    b. The business plan on the GBI cable system being predominantly lower capacity (business plan enclosed in strict confidence between corresponding parties). Sify chose to go in for a DXC equipped for lower capacity (only 20 G) and hence the cost of each 10G is different from that which has been calculated in the consultation paper for OCLS1 & 2. Detailed calculation enclosed.

    c. The MMR for GBI cable station sits at our data center in Airoli in Navi Mumbai which has a very long Fiber deployment in a Mesh ring topology. We have implemented a total of 5 nos DXC equipment and 5 Nos DWDM equipments in the CLS, MMR & 3 intermediate nodes as shown in the Figure below . The total length of the Fiber deployment between the CLS and MMR is about 203 kms. This has been done to take care of the diversity in fiber path between the CLS and MMR and also ensure there is a Mesh using ASON technology to take care of more-than-dual Fiber cuts. This Fiber network is a shared fiber network for both the CLS as well as our customer Metro fiber network in Mumbai.

    d. All Intermediate DXC equipments considered for the calculation are only those node elements used for the CLS to MMR Access and not the entire active components along the length of the fiber access ring. Every upgrade of 10G from the CLS to MMR would require additional upgrades in each of the intermediate DXC equipment, in addition to the CLS and MMR equipments.

    e. Even though the DWDM equipment is a 40 Channel system, the idea of dividing the total value of the DWDM equipment by 40 to arrive at per channel cost is not justified. The time factor involved in filling up the 40 channels would be higher than the life of the equipment and Sify does not have visibility of the plan to fill up the 40 channels in the next 10 years. The idea of going in for 40 channels is due to the cost advantage where the cost of a 10 Channels system and 40 channel system is almost the same. We would recommend and use the same formula that TRAI suggested for breaking down the higher capacity cost to lower capacity cost by dividing by 2.6. Sify's business plan for the

next 4 years for this CLS is only 20 G and we are not sure of any other Indian operator's requirement till date. If compelled to follow TRAI's direction of dividing the DWDM equipment system by 40, Sify will never be able to recover the cost of the equipment and quite naturally, we would like to refrain from doing any such business with an assured loss.

f. The Fiber cable between the CLS and MMR is a combination of Sify's own CAPEX for 6 kms where we did not have any existing IP1 provider having Fiber cable and the rest of distance is on an yearly OPEX from a IP1 provider in Mumbai. The CAPEX component of Fiber is purely for the CLS and we do not expect any other business on this 6 Kms other than the CLS to MMR capacity. The other fiber is a combination of CLS and other Metro customer bandwidth that we have in Mumbai.

g. On the Depreciation, while the depreciation is a financial aspect of what rate the asset would be de-valued, the actual obsolescence of equipment is unpredictable and the operators are forced to change the equipments even though they are not completely depreciated in the books and we do write off the assets in the book due to obsolesce of technology, this even when there is residual value attached to the equipment. In the case of Access facilitation, the AFC charges are based on the cost and it would become extremely difficult to maintain the equipment in case of obsolescence of technology and we would be forced to change the equipment even with residual book value considering the fast pace of technology in the industry today. We are already seeing 40G and 100 G's technologies being enabled on the cable systems and the day is not far when the user capacities goes beyond 10 G per circuit and would go up to 40G and 100G. In this case, the CLS owner would have to do a complete fork lift upgrade.

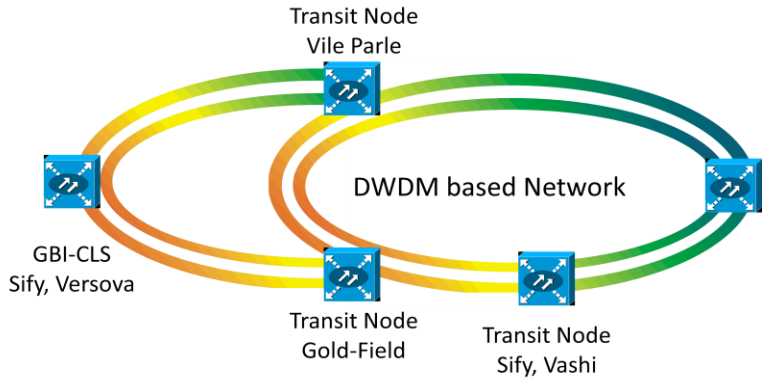
h. *We at Sify see these technologies becoming real in the next two to three years.* We would like to use only 5 years for calculation of technology obsolesce for this factor irrespective of the financial book management as this is cost based and there is no margin. It would be very difficult to justify to *our shareholders* on technology obsolesce if we have not got margin on the investments.

i. The life of the Fiber cable has been taken as 18 years, which is much higher than the industry average. Today the maintenance cost of the fiber is very high and considering the number of cable cuts and the road / infrastructure expansion activities. As a vendor, we would have to re-invest on new fiber whenever there is a infrastructure expansion activity. Considering all these, we would not factor a life of more than 10 years for the fiber cable.

Table: Sify's business plan for GBI

| | STM1 | STM4 | STM16 | STM64 | Total STM1 |
|---|---|---|---|---|---|
| Year 1 | 44 | 5 | | | 64 |
| Year 2 | 20 | 7 | 1 | | 64 |
| Year 3 | 20 | 11 | 2 | | 96 |
| Year 4 | 20 | 7 | 2 | 1 | 144 |

Fig 1: CLS to MMR




Tabel 1A: Calculation of the CAPEX components for 10G capacity at the CLS and MMR, including the intermediate nodes.

| Sl no | discription | Total Cost | No of units | Capacity | cost per 10 G | Remarks |
|---|---|---|---|---|---|---|
| 1 | DXC equipment inclucing intermediate nodes | 8300000 | 5 | 20 G | 4150000 | |
| 2 | DWDM equipment | 4300000 | 5 | 400 G | 1653846 | even though DWDM is 40 channel, cost per 10G cannot be divided by 40, have divided by 2.6 factor as taken by TRAI themselves |
| 3 | Fiber distribution frame | 1500000 | 5 nodes | 20 G | 750000 | Please note the FDF is the same whether it is for STM1 or 10g, cannot divide this by 2.6 |
| 4 | Fiber patch chord | 1000000 | 5 nodes | 20 G | 500000 | Please note the fiber patch chord is the same whether it is for STM1 or 10g |
| | | | | | 7053846 | |
| | Annualized CAPEX @ WACC 15% | No of Years | 5 | | 1829802 | |

Table 1 B: Calculation of the CAPEX component for the Fiber between the CLS and MMR.

| Sl No | description | Total Cost | No of units | Capacity | cost per 10 G | Remarks |
|---|---|---|---|---|---|---|
| 1 | CAPEX for Fiber length of 6 kms | 35000000 | 6 kms | 22 G | 15909091 | Sify's business plan for next 4 years is 22 gbps |
| | | | | | | |
| | Annualized CAPEX @ WACC 15% | 10 | years | | 2756451 | |

2. OPEX Calculation at the CLS, MMR and Fiber between CLS and MMR
    a. Sify is not in agreement of the directive that a flat 30% of the CAPEX be considered as OPEX as this is too low. The OPEX decides the maximum cost of operations, rather than the CAPEX. The OPEX has higher number of variables and this is escalating. The escalation of cost over period of time is in terms of Electricity, Rental & Manpower cost. Sify would request TRAI to account for an 10% cost escalation per year on the OPEX considering the current cost. Fixing and firming OPEX based on today's cost is advisable. The OCLS would be at a loss over two years time if this is not the case as the cost of operations is bound to increase, especially in the case of Access Facilitation where OCLS does not have an option of accounting for the Margin.

    b. Sify has a significant OPEX cost on Fiber connecting the CLS and MMR. This is a combination of maintenance cost of the Fiber and the lease of the Fiber itself. In this calculation we have accounted only 1/3$^{rd}$ the total cost of fiber for the CLS to MMR as we are using this fiber for our other customers as well. The 1/3$^{rd}$ figure comes for the ratio of my business plan for the next 4 years, wherein the CLS requirement for the next 4 years is only 22 Gpbs whereas our Metro access requirement for our internal business is around 66 Gbps. Today the operations and maintenance cost for the Fiber is in the range of 20% of the Capex and not 2 % as indicated in the consultation paper considering the number of fiber cuts and the patrolling required.

Table 2A: OPEX cost calculation:

| | | | |
|---|---|---|---|
| 1 | Apportioned network operating charges for space (C number of rack space for equipment and D number of rack space for other NMS equipment), power etc | 8000000 | CLS: 2 NMS + 3 Networks racks // MMR:3 network racks |
| 2 | Annual Maintenance charge ( equipment) | 2500000 | 12% for AMC |

| | | | |
|---|---|---|---|
| 3 | Repair maintenance fiber pair | 5600000 | 33% of (240.5 Kms of fiber in ring between CLS & MMR @ 70K INR/Km) |
| 4 | Shared Resource cost for engineers and supervisors | 4000000 | 5 x L1 resources (6L) + Manager shared (10L) |
| **5** | **Total OPEX for 20 G** | **20100000** | |
| 6 | Cost of OPEX for 10 G | 10050000 | |

The method of arriving at the cost per Rack OPEX is a below

Table 2B: Cost per Rack at the CLS

| | | |
|---|---|---|
| Total Opex | ₹ 15,521,850 | |
| Per rack | ₹ 776,093 | Total capacity 20 racks |
| Total Capex | ₹ 40,414,879 | |
| Depreciation | ₹ 5,773,554 | 7 years |
| Cost of Capital | ₹ 8,855,617 | |
| Total Capex per annum | ₹ 14,629,171 | |
| Capex per annum per rack | ₹ 731,459 | |
| Opex + Capex per rack per annum | ₹ 1,507,551 | |

3. Co-location Calculations:
    a. Sify has used the small area used for the MMR in our data center facility for deriving the cost per rack. We have provisioned for 20 Racks in a 450 sq ft of area. The CAPEx considered is @ 5 kw per rack, the electricity charges per kw is calculated separately

Table 3A: Collocation charges at the MMR

| | Rs. L | | |
|---|---|---|---|
| CO-Location | | | |
| Provisioned Power for MMR | 110 | | KW @ 5 KW per rack |
| Provisioned Space | 450 | | sq ft |
| Provisioned Racks | 22 | | |
| O&M ( AMC of AC, UPS, DG set, Substation, Etc) per rack | 0.60 | | Rs 12050 per Kw per annum |
| Space Rental per Rack | 0.59 | | Rs 84 per sq ft pm & white space to utility |

| | | | |
|---|---|---|---|
| | | | ratio 40% |
| Manpower per rack | 1.14 | | 5 manpower at 5 L per annum |
| Security Services | 0.03 | | Rs 3.5 L pa for entire facility |
| Depreciation | 4.11 | | |
| Total | 6.47 | | |
| | | | |
| Power for every 1 Kw | | | |
| Cost of 1 KWH per year | 0.753 | | Rs 8.6 per unit |
| IT power to Utililty power ratio | 2.2 | | |
| Cost of 1 KW IT power | 1.657 | | |
| | | | |

Considering the above tables and 70% utilization factor, sify's CLS AFC cost would be calculated as below:

Table 4A : consolidated CAPEX and OPEX cost for 10G ( MMR at a separate location from the CLS) in line with TRAI calculation would be as follows:

| Sl No | Cost components | Cost of 10G |
|---|---|---|
| 1 | Annualized cost for 10 as per Table 1A | 1829802 |
| 2 | Annualized cost for 10 G as per Table 1B | 2756451 |
| 3 | Annualized project management cost 1A & B | 230739 |
| | Total Annualized CAPEX cost | 4816992 |
| | Total Annualized cost considering 70% utilization | 6782529.5 |
| 4 | Operational and Maintenance cost (OPEX) from Table 2A | 10050000 |
| | Total Annual charges per annum for 10G | 16832529 |
| 5 | License Fee @ 8% | 1346602 |
| | **TOTAL charges per annum for 10G** | **18179132** |

Table 4B: derived cost for other Capacities as per TRAI calculation:

| Sl No | Capacity | Cost pa |
|---|---|---|
| a | STM1 (b/2.6) | 1034316 |
| b | STM4 (c/2.6) | 2689221 |
| c | STM16 (d/ 2.6) | 6991974 |
| d | STM 64 or 10 G cost | 18179132 |

**Other questions of the Consultation paper answered:**

1. Power requirement of the DWDM and DXC equipments:

The power requirement would drastically change with the type of equipment. Typically 5 to 6 Kw is the requirement of the transmission equipment when it is fully loaded.

2. Percentage factor of CAPEX used as CAPEX:

As explained above, Sify has a huge OPEX for the Fiber cable as well as the cost of operations is very high and cannot be compared as a percentage of factor of the CAPEX. This is a service provider business where OPEX forms the maximum amount of the budget and this has to be based on the factors and the ultimate capacity that would be consumed as per the business plan.

We would suggest TRAI to review the OPEX every year as the cost of OPEX components goes up significantly every year and increase in capacity utilization reduces the OPEX per unit. TRAI has to be fair to the operator to recover the cost of access facilitation based on the current cost and the capacity utilization and this cannot be fixed with few samples.

3. Whether a ceiling of Uniform AFC be prescribed by TRAI based on the two methods?

The AFC is cost based and the cost of operations and CAPEX entirely depends on the design philosophy of the organization as well as the expected volume of utilization. The quality and operational philosophy of different organizations are different and there is no one method which fits all. Sify does not believe that TRAI can fix a uniform ceiling on AFC as the cost components of a new entrant is much higher than the cost components of a older cable system who has already sufficient capacity to justify the business.

We strongly oppose the move of a ceiling as this would have adverse affect on the recovery of investment by a new cable landing owner like Sify who is in the initial stages of building capacity.

Importantly, it would also be counter productive for TRAI as prospective cable landing station operators would refrain from putting up investments considering the risk if TRAI equates the cost recovery model in line with the older players who are already established who would have a much better cost of operations considering the volume already built up. This would increase the monopolization as the new cable systems would be forced to use the existing cable landing stations only.

4. IRU based model for AFC:

Yes, we want TRAI to continue the IRU model of AFC also as this is a helpful to both the access seeker and the OCLS and reduces the cost for the seeker and reduces the risk for the OCLS.

5. Uniform co-location charges:

Even the market price of the co-location charges varies from data center to data center and location to location. The cost of setup and cost of operations is completely different from one data center to the

other and this can be never uniform and hence, should be computed separately by TRAI, facility by facility.

6. Cancellation and Re-instatement charges:

The very basis of AFC is cost based model, which means that the OCLS is providing service to the access seeker at cost without any margin. This automatically mandates TRAI to de-risk the OCLS from the risk of disconnection. The penalty on disconnection and re-connection has be a high sum to ensure there is sufficient penalty to the access seeker from disconnecting as the OCLS is making investment based on the request from the access seeker and providing service at cost. Hence, it is our weighted opinion that the prevalent cost of disconnection should continue.