

CONCLUSION ET PERSPECTIVES

Acteur majeur dans le déploiement de réseaux d'accès télécom cuivre et fibre, Orange –Sonatel est conscient que le réseau backbone en fibre optique est une technologie bien plus évoluée aux niveaux :

- + Du débit et de la bande passante,
- + De l'espace occupé et du poids des câbles.
- + Le transport d'un débit bien supérieur,
- + La rapidité des échanges, sans déperdition de signal

Ce qui font de la fibre optique un support de connexion et de télécommunication innovant et évolutif.

Attachés à la satisfaction de ses clients publics ou privés, plusieurs spécialistes et entreprises (Fournisseurs) interviennent dans ce déploiement au sein de Orange –Sonatel :

- + Les chargés d'études en ingénierie des infrastructures,
- + Les tireurs de câbles et les équipes techniques de déploiement aérien ou souterrain
- + Les contrôleurs de qualité et les techniciens de maintenance et SAV

C'est ainsi que l'année 2019, Sonatel a confiée à l'entreprise Camusat le déploiement du réseau à fibre optique backbone des villes de Joal et Thiadiaye visant à garantir le déploiement des technologies LTE, la qualité et la fiabilité de transmissions des données et la capacité des services.

Pour mieux pérenniser le réseau, on pourrait s'intéresser à voir une supervision du réseau afin de détecter les pannes et d'envisager des maintenances préventives régulières sur les différents nœuds pour assurer la continuité des services car ceci est exigé par les usagers.

ANNEXES

🔧 Développement du fichier SCF

```
1 <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2 <crml xmlns="raml21.xsd" version="2.1">
3 <cmData scope="all" type="actual">
4 <header>
5
6 <managedObject class="SBTS" distName="SBTS-9999" operation="create" version="SBTS16.10">
7 <managedObject class="TNL" distName="SBTS-9999/TNL-1" operation="create" version="SBTS16.10">
19 <managedObject class="ETHSVC" distName="SBTS-9999/TNL-1/ETHSVC-1" operation="create" version="SBTS16.10">
25 <managedObject class="ETHIF" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1" operation="create" version="SBTS16.10">
26 <managedObject class="VLANIP" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIP-1" operation="create" version="SBTS16.10">
33 <managedObject class="VLANIP" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIP-2" operation="create" version="SBTS16.10">
37 <managedObject class="VLANIP" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIP-3" operation="create" version="SBTS16.10">
41 <managedObject class="VLANIP" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIP-4" operation="create" version="SBTS16.10">
45 <managedObject class="L2SWI" distName="SBTS-9999/TNL-1/ETHSVC-1/L2SWI-1" operation="create" version="SBTS16.10">
46 <managedObject class="IBRGPR1" distName="SBTS-9999/TNL-1/ETHSVC-1/L2SWI-1/IBRGPR1-1" operation="create" version="SBTS16.10">
353 <managedObject class="BRGPRT" distName="SBTS-9999/TNL-1/ETHSVC-1/L2SWI-1/BRGPRT-1" operation="create" version="SBTS16.10">
357 <managedObject class="ETHLK" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHLK-1" operation="create" version="SBTS16.10">
372 <managedObject class="IPAPP" distName="SBTS-9999/TNL-1/IPNO-1/IPAPP-1" operation="create" version="SBTS16.10">
379 <managedObject class="IPSECC" distName="SBTS-9999/TNL-1/IPAPP-1/IPSECC-1" operation="create" version="SBTS16.10">
382 <managedObject class="IPNO" distName="SBTS-9999/TNL-1/IPNO-1" operation="create" version="SBTS16.10">
390 <managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-1" operation="create" version="SBTS16.10">
397 <managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-2" operation="create" version="SBTS16.10">
408 <managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-3" operation="create" version="SBTS16.10">
419 <managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-4" operation="create" version="SBTS16.10">
430 <managedObject class="RTPOL" distName="SBTS-9999/TNL-1/IPNO-1/RTPOL-1" operation="create" version="SBTS16.10"/>
441 <managedObject class="QOS" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1" operation="create" version="SBTS16.10">
442 <managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-1" operation="create" version="SBTS16.10">
537 <managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-2" operation="create" version="SBTS16.10">
556 <managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-3" operation="create" version="SBTS16.10">
575 <managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-4" operation="create" version="SBTS16.10">
594 <managedObject class="IPRT" distName="SBTS-9999/TNL-1/IPNO-1/IPRT-1" operation="create" version="SBTS16.10">
613 <managedObject class="SYNC" distName="SBTS-9999/SYNC-1" operation="create" version="SBTS16.10">
671 <managedObject class="CLOCKOUTPUTS" distName="SBTS-9999/SYNC-1/CLOCKOUTPUTS-1" operation="create" version="SBTS16.10">
691 <managedObject class="EXT2M" distName="SBTS-9999/SYNC-1/EXT2M-1" operation="create" version="SBTS16.10"/>
697 <managedObject class="SYNCE" distName="SBTS-9999/SYNC-1/SYNCE-1" operation="create" version="SBTS16.10">
698 <managedObject class="TIME" distName="SBTS-9999/SYNC-1/TIME-1" operation="create" version="SBTS16.10">
699 <managedObject class="ANTL" distName="SBTS-9999/ANTL-1" operation="create" version="SBTS16.10">
703 <managedObject class="ANTL" distName="SBTS-9999/ANTL-2" operation="create" version="SBTS16.10">
716
```

Create the First Managed Object "SBTS" and add the mandatory parameters:
For Example: btsProfile= LWG_2fsm25_3

```
<managedObject class="SBTS" distName="SBTS-9999" operation="create" version="SBTS16.10">
  <p name="btsProfile">LWG 2fsm25_3</p>
  <p name="actPowerMeter">>false</p>
  <p name="automaticSiteResetRecoveryEnabled">>true</p>
  <p name="intShutdownInUse">>false</p>
  <p name="virtualStatus">>false</p>
  <p name="operationalState">enabled</p>
  <p name="activeSWReleaseVersion">WN16_FL16_GF16_SBTS16.10_ENB_A53_0100_004390_000111</p>
  <p name="activeTERATSWVersion">FL16_ENB_0000_002021_000000</p>
  <p name="activeWCDMARATSWVersion">WBTS16_4000_1248_14</p>
  <p name="activeGSMRATSWVersion">GF16.5_2.0_16_50_BLI05</p>
</managedObject>
```

```

<managedObject class="TNL" distName="SBTS-9999/TNL-1" operation="create" version="SBTS16.10">
<managedObject class="ETHSVC" distName="SBTS-9999/TNL-1/ETHSVC-1" operation="create" version="SBTS16.10"/>
<managedObject class="ETHIF" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1" operation="create" version="SBTS16.10">
<managedObject class="VLANIF" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-1" operation="create" version="SBTS16.10">
<managedObject class="VLANIF" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-2" operation="create" version="SBTS16.10">
<managedObject class="VLANIF" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-3" operation="create" version="SBTS16.10">
<managedObject class="VLANIF" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-4" operation="create" version="SBTS16.10">
<managedObject class="L2SWI" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-1/L2SWI-1" operation="create" version="SBTS16.10">
<managedObject class="IBRGPR1" distName="SBTS-9999/TNL-1/ETHSVC-1/L2SWI-1/IBRGPR1-1" operation="create" version="SBTS16.10">
<managedObject class="BRGPR1" distName="SBTS-9999/TNL-1/ETHSVC-1/L2SWI-1/IBRGPR1-1/BRGPR1-1" operation="create" version="SBTS16.10">
<managedObject class="ETHLK" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-1/ETHLK-1" operation="create" version="SBTS16.10">
<managedObject class="IPAPP" distName="SBTS-9999/TNL-1/IPAPP-1" operation="create" version="SBTS16.10">
<managedObject class="IPSECC" distName="SBTS-9999/TNL-1/IPAPP-1/IPSECC-1" operation="create" version="SBTS16.10">
<managedObject class="IPNO" distName="SBTS-9999/TNL-1/IPNO-1" operation="create" version="SBTS16.10">
<managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-1" operation="create" version="SBTS16.10">
<managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-2" operation="create" version="SBTS16.10">
<managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-3" operation="create" version="SBTS16.10">
<managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-4" operation="create" version="SBTS16.10">
<managedObject class="RTPOL" distName="SBTS-9999/TNL-1/IPNO-1/RTPOL-1" operation="create" version="SBTS16.10"/>
<managedObject class="QOS" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1" operation="create" version="SBTS16.10">
<managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-1" operation="create" version="SBTS16.10">
<managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-2" operation="create" version="SBTS16.10">
<managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-3" operation="create" version="SBTS16.10">
<managedObject class="FSTSCH" distName="SBTS-9999/TNL-1/IPNO-1/QOS-1/FSTSCH-4" operation="create" version="SBTS16.10">
<managedObject class="IPRT" distName="SBTS-9999/TNL-1/IPNO-1/IPRT-1" operation="create" version="SBTS16.10">

```

Create the Transmission Managed Objects under "TNL" class, and add transmission parameters...

Create the "ETHLK" Managed Object, and add the following parameters:
 administrativeState: unlocked
 Connectorlabel: FSMF_EIF2_SFP

```

<managedObject class="ETHLK" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-1/ETHLK-1" operation="create" version="SBTS16.10">
  <p name="administrativeState">unlocked</p>
  <p name="clockMode">AUTODETECT</p>
  <p name="connectorLabel">FSMF EIF2 SFP</p>
  <p name="l2IngressRate">1000000</p>
  <p name="speedAndDuplex">AUTODETECT</p>
</managedObject>

```

Create VLANIF Managed Objects and assign for each VLAN interface a VlanId:
 For example: for VLAN interface 1 (VLANIF-1), the VlanId will be 2101.
 User label is optional parameter for labeling, in this case VlanId 2101 will be used for 4G User plane and Control plane Traffic.

```

<managedObject class="VLANIF" distName="SBTS-9999/TNL-1/ETHSVC-1/ETHIF-1/VLANIF-1" operation="create" version="SBTS16.10">
  <p name="vlanId">2101</p>
  <p name="userLabel">4G U/C PLANE</p>
</managedObject>

```

Create "IPIF" Managed Objects and assign for each Vlan IF an IP address
 For example: for VLANIF-1 assigned IP address is 10.147.199.5

```

<managedObject class="IPIF" distName="SBTS-9999/TNL-1/IPNO-1/IPIF-1" operation="create" version="SBTS16.10">
  <p name="ipMtu">1500</p>
  <p name="interfacePtr">ETHIF-1/VLANIF-1</p>
  <list name="ipAddrList">
    <item>
      <p name="ipAddrIdentifier">1</p>
      <p name="localIpAddr">10.147.199.5</p>
      <p name="localIpPrefixLength">30</p>
    </item>
  </list>
</managedObject>

```

Create "IPRT" managed Object and add the IP static routes:

```
<managedObject class="IPRT" distName="SBTS-9999/TNL-1/IPNO-1/IPRT-1" operation="create" version="SBTS16.10">
<list name="staticRoutes">
<item>
<p name="destIpAddr">10.210.1.0</p>
<p name="destinationIpPrefixLength">25</p>
<p name="gateway">10.166.255.6</p>
<p name="presrcIpV4Addr">0.0.0.0</p>
<p name="preference">1</p>
</item>
</list>
</managedObject>
```

Create the "SYNC" managed Object and add the synchronization source,
For Example Synchronization source is: SYNCE-1 (Synchronous Ethernet)

```
<managedObject class="SYNC" distName="SBTS-9999/SYNC-1" operation="create" version="SBTS16.10">
<p name="btsSyncMode">FreqSync</p>
<p name="manualFrameTimingAdjustment">0</p>
<list name="referenceSourceList">
<item>
<p name="inputReference">SYNCE-1</p>
<p name="inputReferencePriority">1</p>
</item>
</list>
</managedObject>
```

Create "SYNCE" managed Object and add the parameters related to SynchE

```
<managedObject class="SYNCE" distName="SBTS-9999/SYNC-1/SYNCE-1" operation="create" version="SBTS16.10">
<p name="ethlkid">1</p>
<p name="ssmEnabled">true</p>
<p name="ssmTimeout">5</p>
<p name="ssmAcceptanceLevel">ssmPRCorPRS</p>
</managedObject>
```

Create "ANTL" managed Object and assign for each antenna connector per RF Module an Antenna line Id:
For Example: For antennaConnector:1 on FR-1 we assign ANTL-1

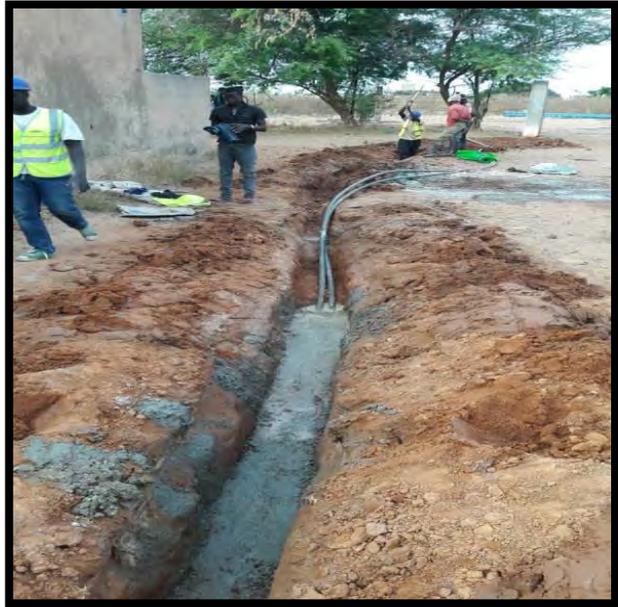
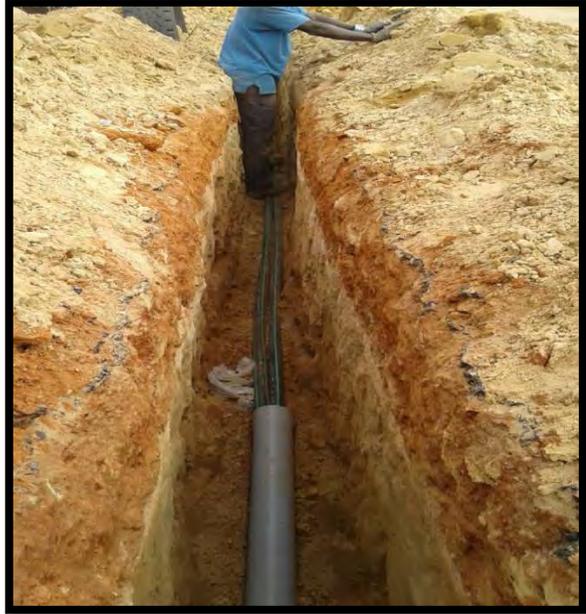
```
<managedObject class="ANTL" distName="SBTS-9999/ANTL-1" operation="create" version="SBTS16.10">  
  <p name="additionalRxGain">0</p>  
  <p name="antennaConnector">1</p>  
  <p name="antennaRoundTripDelay">45</p>  
  <p name="dcVoltage">OFF</p>  
  <p name="feederLoss">30</p>  
  <p name="frRef">FR-1</p>  
  <p name="hdlcCommunicationAllowed">>true</p>  
  <p name="ulDelay">0</p>  
  <p name="vswrMajorThreshold">16</p>  
  <p name="vswrMinorThreshold">15</p>  
  <p name="cwaThreshold">165</p>  
</managedObject>
```

Create "MPLANE" Managed Object and assign the Management plan IP address:
For example: mPlaneIpAddress: 10.166.255.5

```
<managedObject class="MPLANE" distName="SBTS-9999/MGMNT-1/MPLANE-1" operation="create" version="SBTS16.10">  
  <p name="mPlaneDscp">26</p>  
  <p name="mPlaneIpAddress">10.166.255.5</p>  
  <p name="oamTls">off</p>  
  <p name="tlsRenegotiationInterval">86400</p>  
  <p name="ingressTrafficShapingBandwidth">256</p>  
  <p name="ingressTrafficShapingEnabled">>false</p>  
</managedObject>
```

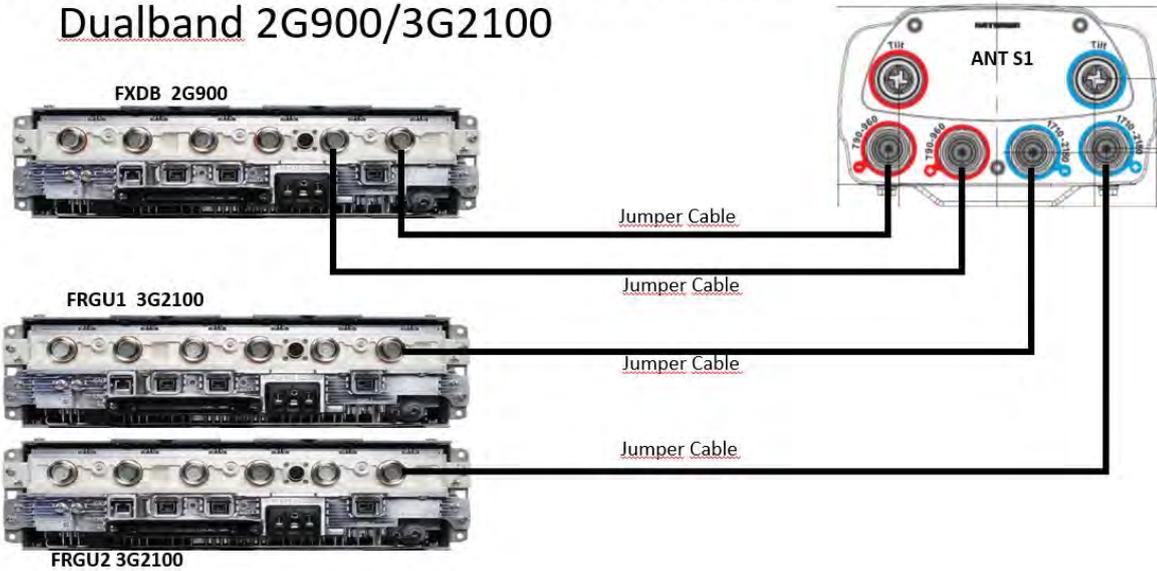
📌 Rapports photos lors du déploiement de Joal & Thiadiaye



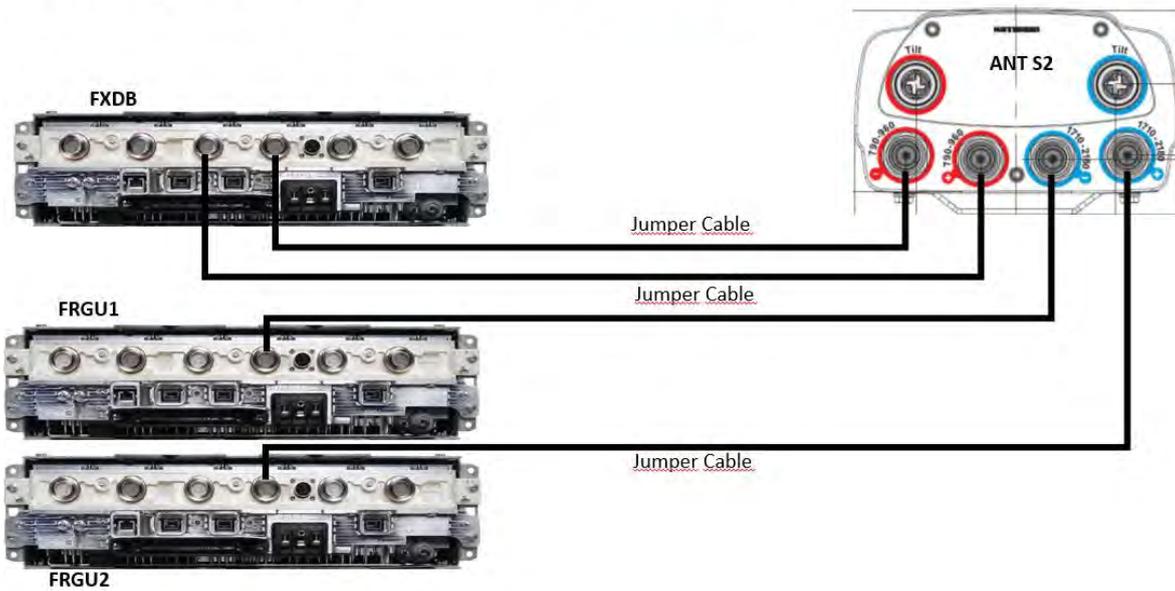


🚧 Cablage des Jumpers au niveau des trois secteurs :

3.1 Câblage des Jumpers du Secteur1: BTS Dualband 2G900/3G2100



3.2 Câblage des Jumpers du Secteur2: BTS Dualband 2G900/3G2100



3.3 Câblage des Jumpers du Secteur3: BTS Dualband 2G900/3G2100

