T-LEX : A Lambda Facility in Tokyo

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IEEAF Pacific link

☆ April 2004, ONS-15454’s prepared in both sides
  • ONSs didn’t see each other
    — Communication is done in DCC
    — The circuit did not provide DCC transparent
  • Only first subchannel was available
    — Every SONET equipment need to be configured consistently
    — Need to ask Tyco to reconfig when we reconfig the structure
    — This is not what we like to see
☆ Hitachi GS4000 Test in late May
  • GS4000-160 w/ 10GE-EW in Tokyo and Seattle
  • Connected to Tyco circuit directly
  • Links up without any special configuration
    — Just “clock source external”
  • No error was detected after 10 hours’ test
  — Only a short test
IEEAF Pacific link

☆ Modification of OC-192 circuit in Jun 2004
  • Without any SONET switch!
  • Just connected to DWDM equipment
  • Called as "Clear Channel"
☆ Need extra TX power in Tokyo side
  • 5dB att used for OC-192-LR removed
☆ All subchannels works well!
☆ Pros
  • Every bit is carried transparently
☆ Cons
  • No protection is provided
    – CPE should provide it if necessary
  • In IEEAF case, the OC-192 is unprotected, anyway.

T-LEX

☆ T-LEX is a counterpart of PNW-Gigapop/PW

http://www.t-lex.net/
• L1/L2/L3 exchange point in Tokyo
  – For mainly non-profit ISPs
  – A Base for future Asian extensions
• Located in NTT Communication building
  – Downtown Tokyo location
  – Convenient access to various JP networks
  – Not a carrier-free teleco hotel...
  – Limited facility for remote access from KDDI bldg
T-LEX

☆ T-LEX is operated by WIDE Project
  • A part of GLIF
  • Not a government project
    — No national politics resides in it
  • Works neutral/transparent as much as possible
  • There is no fee (at this moment)
    — While resource lasts...

T-LEX Configuration

• ONS-15454 : OC-192, OC-48, 4*ML1000-2
  — Optical MUX
• BigIron-15000 : 16*GbE, 3*10GE, 2*OC12-POS
  — Provides L2 switch as well as IPv4 L3
• Catalyst 6500 : OC-48, 4*10GE, 6*GbE
  — Provides OC-48 as well as IPv6 L3
**T-LEX access**

☆ **Current members include**
  - WIDE AS2500 at 10GE
  - APAN-JP AS7660 at 10GE
  - DragonTap AS9407 at FE
    ─ The link to Beijing is a DS-3
  - MAFFIN AS18125 at GbE
    ─ L3 configuration will be done shortly
  - SINET AS2907 at GbE
    ─ Fiber has been installed
  - JGN2 10GE at layer-2
    ─ will be done soon
    ─ KR folks get access through Genkai AS2523

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**T-LEX**

☆ **Operational coordination with UW**
  - Not easy because of time difference
    ─ 5pm PDT is 9am JST
☆ **A OC-12 (or GbE) will be used for "regular" traffic**
  - T-LEX got AS23814
  - Stable peer with AS101 is expected
☆ **Future usage is subject for future coordination**
  - Transit to AS11537 (Abilene) ?
  - Possible L2 bridging to Canarie
    ─ Even to Europe via CHI/NYC
  - IPv6 support via PacificWave switch
    ─ As AS101 doesn’t support it at this moment
Planned OC-192 Experiment

☆ A week-long OC-192 experiment is planned
  • Between Tokyo/JP and Geneva/CH
  • Data Reservoir by Prof. Hiraki will fill the pipe

Summary

☆ T-LEX has been booted
  • Policy free L1/L2/L3 exchange in Tokyo
  • Primary for IEEAF Pacific circuit to Seattle
  • WIDE/APAN/JGN2/SINET is (will be) connected
  • Access from oversea locations are welcome
  • No OXC is equipped
    — Need a few days rather than a few ms
  • http://www.t-lex.net/