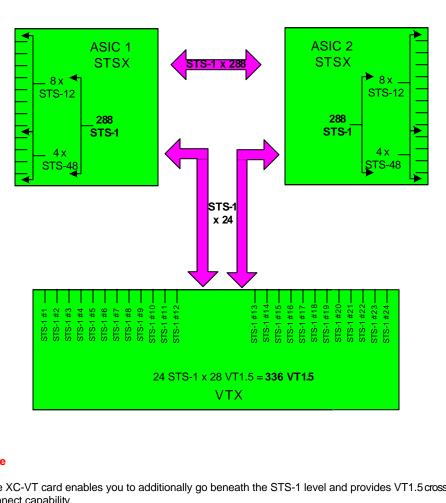
Understanding The XC and XC-VT STS-1 and VT1.5 Cross Connection Matrix



The XC-VT card enables you to additionally go beneath the STS-1 level and provides VT1.5 cross-

The VTX ASIC provides 24 STS-1 circuits onto each of which up to 28 VT1.5's can be groomed. This provides a bandwidth of (24 x 28) or 672 VT1.5's. However each VT1.5 connection requires two circuits so the simultaneous number of VT1.5 connections that can pass through the XC-

A VT1.5 on any VTX input port can be mapped to any VTX output port

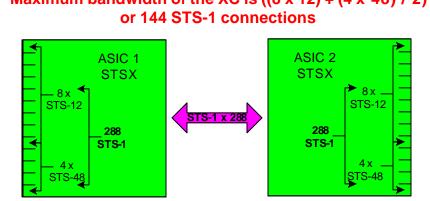
The XC-VT card is designed to be non blocking, which means that all 336 VT1.5 connections can simultaneously be used to their maximim capacity. Even if an STS-1 is only partially filled, every VT 1.5 in the STS-1 is terminated on the VTX. When every VT 1.5 in an STS is used, and all of the VTX ASIC's STS-1 ports are consumed, there is enough capacity on the VTX to switch every VT 1.5 in every terminated STS. Therefore, one counts STS-1 terminations on the VTX instead of VT

The VT-XC card provides the equivalent of a bidirectional STS-12 for VT1.5 traffic

1.5's can have access to the VTX matrix

The number of STS-1 ports on the VTX ASIC is 24. When all 24 ports are used, no additional VT

The XC card has 12 input ports and 12 output ports. Four of the input and output ports operate at either STS-12 or STS-48 rates. The remaining eight input and output ports operate at the STS-12 12 + 4 x 48) or 288 STS-1 circuits. However each STS-1 connection requires two circuits (source and destination) so the effective simultaneous number of STS-1 connections that can pass through the



I/O Internal SONET Mapping STS

DS-3 mapped in an STS

DS-3, VT1.5 mapped in an STS or an STS-1

DS-3, VT1.5 mapped in an STS or an STS-1

DS-3, VT1.5 mapped in an STS or an STS-1

DS-3, VT1.5 mapped in an STS or an STS-1

DS-3, VT1.5 mapped in an STS or an STS-1

an STS or an STS-1

Ethernet (Electrical) 2 in an STS-nc

1 This card can accept any type of DS-3 mapping, M13, M23, clear channel, DS-3, ATMetc

4 The STS stream can be configured in multiples of STS-1s, STS-3cs, STS-6cs or STS-12c

5 The STS stream can be configured in multiples of STS-1s, STS-3cs, STS-6cs, STS-12cs

9 Planned for 1H2001, this new card provides enhanced performance monitoring functions

2 This card's SONET mapping can be a DS-3 mapped STS or a VT 1.5 mapped STS.

3 Each of the 4 STS streams can be configured in multiples of STS-1s or STS3c

However, it does not convert between the two different mappings

7 Low Speed (LS) OC-48 IR and SL OC-48 -LR planned for GA 1H2001

6 There are 18 wavelength specific OC-48 ITU cards

8 OC-192 card is planned for GA 1H2001

or STS-48

VT1.5 mapped in an STS 6

mapped STS or clear

channel STS (Electrical M-13 mapped DS-3

S-3 mapped STS, VT1.5

mapped STS, clear channel STS or OC-nc

S-3 mapped STS, VT1.

mapped STS, clear channel STS or OC-nc

ATM (Optical)

S-3 mapped STS, VT1.5

mapped STS, clear channel STS or OC-nc

OC-48 IYU cards base

red and blue bands

S-3 mapped STS, VT1.5

mapped STS, clear channel STS or OC-nc

S-3 mapped STS, VT1.

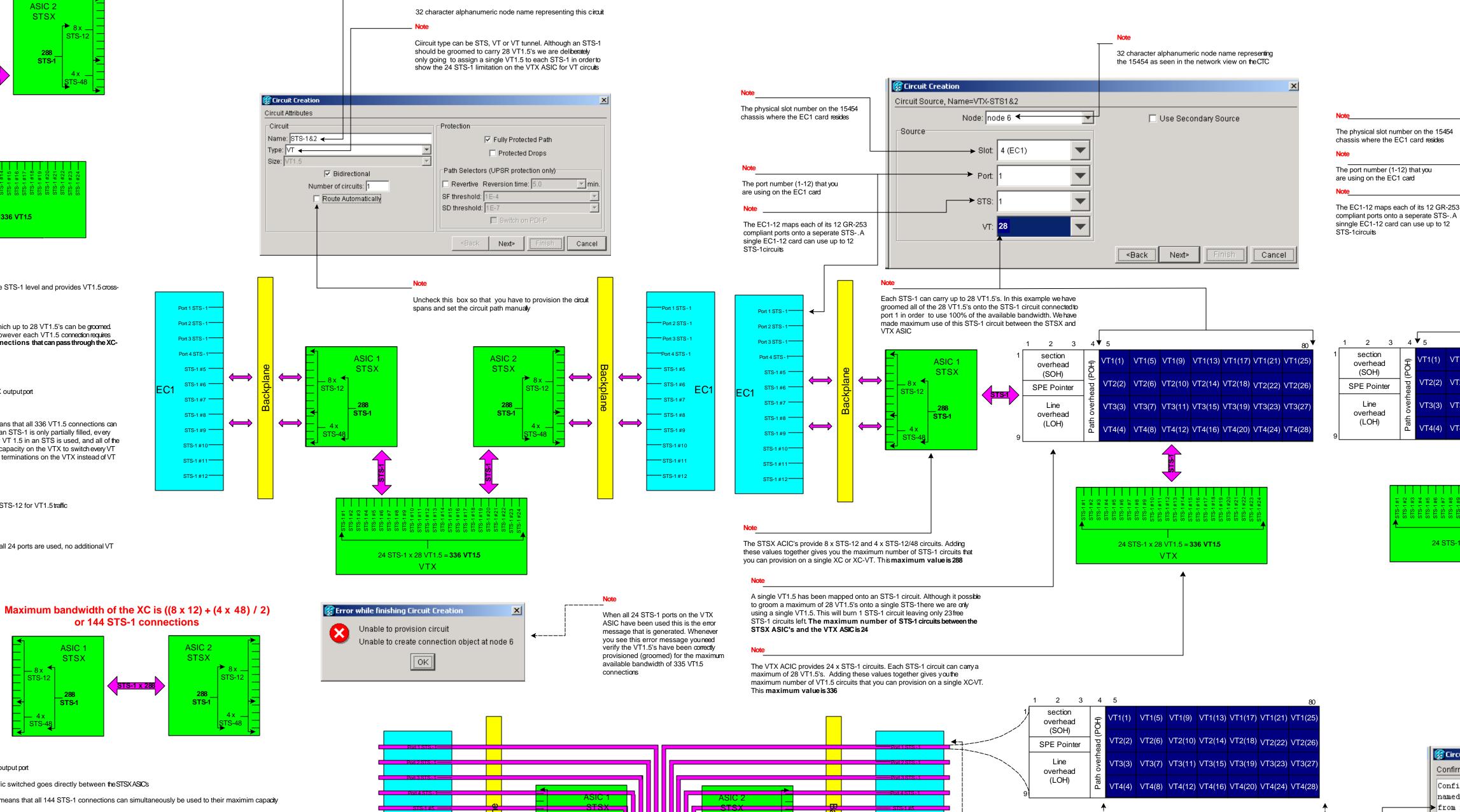
channel STS or OC - n c

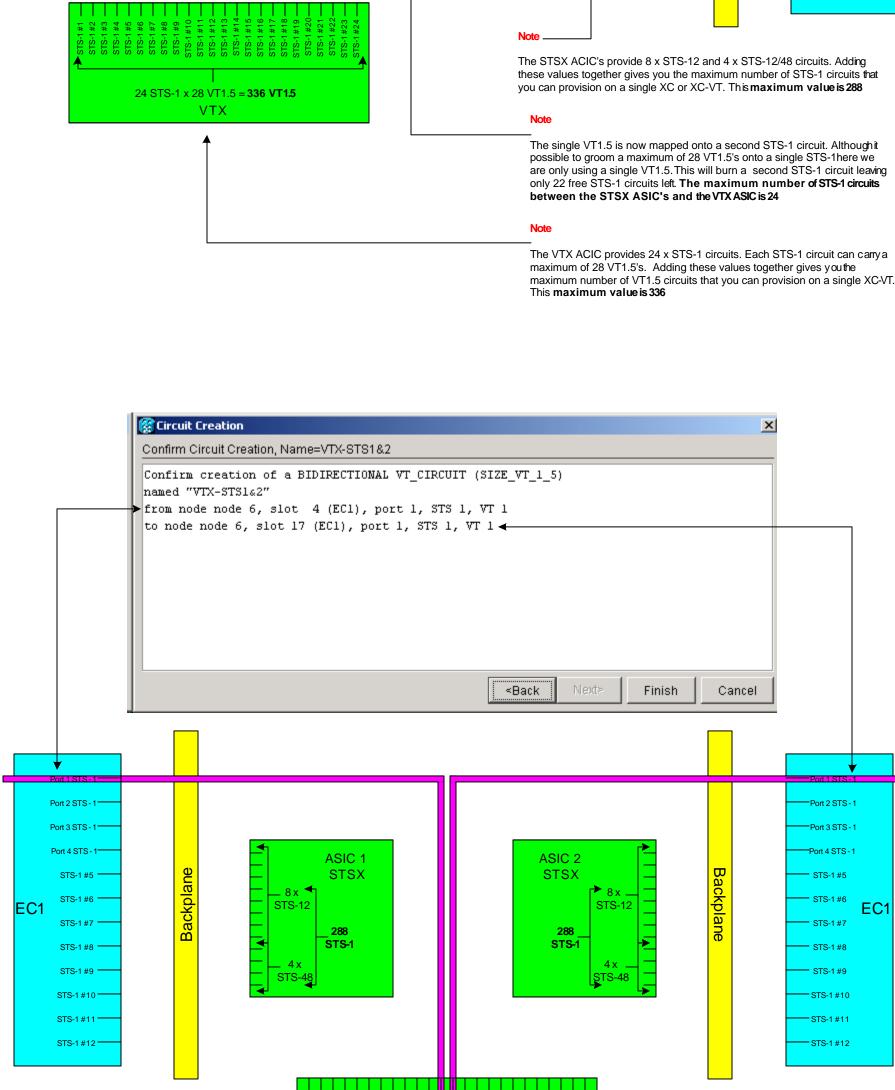
Ethernet (Electrical)

on 200Ghz spacing operate in the

- * An STS-1 on any input port can be mapped to any output port
- * The STS-1switches traffic at the STS-1 level. Traffic switched goes directly between the STSXASICs
- * The XC card is designed to be non blocking, which means that all 144 STS-1 connections can simultaneously be used to their maximim capacity
- * The maximum number of simultaneous STS-1 circuits that can pass through the XC card is 144
- * All 144 STS-1 circuits on the XC card can be used to their maximum capacity
- * The maximum number of VT1.5 connections that can pass through the XC-VT card is 336
- * All 336 VT1.5 connections can simultaneously be used to their maximim capacity
- * When calculating capacity in the VTX ASIC count the number of STS-1 circuits that terminate on the VTX ASIC
- * The maximum number of STS-1 ports on the VTX ASIC is 24. When all 24 ports are used , no additional VT 1.5's can be created
- * The XC card performs STS to STS switching only. There is no switching at the VTlevel
- * The XC-VT card additionally allows you to map VT1.5's from one STS to multiple STS's, or perform TSI on the VT 1.5s







24 STS-1 x 28 VT1.5 = **336 VT1.5**

Circuit Creation

Γ1(1) VT1(5) VT1(9) VT1(13) VT1(17) VT1(21) VT1(2

T2(2) VT2(6) VT2(10) VT2(14) VT2(18) VT2(22) VT2(26)

VT3(3) VT3(7) VT3(11) VT3(15) VT3(19) VT3(23) VT3(27)

VT4(4) VT4(8) VT4(12) VT4(16) VT4(20) VT4(24) VT4(28)

- Maximum number of 28 VT1.5's per STS-1 Connection

— Maximum number of 12 STS-1 Connections

288 336 336 336 336 336 336 336 336

288 336 336 336 336 336

Maximum bandwidth of the XC-VT is 12 x 28 / 2

or 336 VT1.5 connections

Destination → Destination

Circuit Destination, Name=VTX-STS1&2

Node: node 6 ←

32 character alphanumeric node name representing

the 15454 as seen in the network view on the CTC

Use Secondary Destination

Each STS-1 can carry up to 28 VT1.5's. In this example

we have groomed all of the 28 VT1.5's onto the STS-1

circuit connected to port 1 in order to use 100% of the

STS-1 circuit between the VTX and STSX ASC

available bandwidth. We have made maximum use of this